shape_aspect =>
plant_item_connector

5.1.9.33.5 length

#1: The attributes are for the individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'olet fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'length'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-

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property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'olet fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum length')
(representation_item.name = 'minimum length')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum length'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum length'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.33.6 skirt_outside_diameter

#1: The attributes are for the individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
shape_aspect <-
dimensional_size.applies_to
dimensional_size
dimensional_characteristic = dimensional_size
dimensional_characteristic <-
dimensional_characteristic_representation.dimension

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dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'olet fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'skirt outside diameter'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'olet fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum skirt outside diameter')
(representation_item.name = 'minimum skirt outside diameter')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum skirt outside diameter'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum skirt outside diameter'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.34 Orifice_flange

AIM element: piping_component_definition

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: piping_component_definition <=
product_definition

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{piping_component_definition
classification_item = piping_component_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
flange_fitting_class]
[group
group.name = 'orifice flange']}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'flange']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']}

5.1.9.34.1 jacking_screw_orientation

AIM element: shape_aspect.description

Source: 41

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect
shape_aspect.name = 'jacking screw'}

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shape_aspect
shape_aspect.description

5.1.9.34.2 tap

AIM element: plant_item_connector

Source: 227

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'tap'}
shape_aspect =>
plant_item_connector

5.1.9.34.3 tap_centreline_orientation

AIM element: axis2_placement_3d

Source: 42

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{[shape_aspect
shape_aspect.description = 'tap']
[shape_aspect =>
plant_item_connector]
shape_aspect
represented_definition = shape_aspect
represented_definition <-
property_definition_representation.definition
{property_definition_representation =>
shape_definition_representation}
property_definition_representation
property_definition_representation.used_representation ->
{representation =>

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shape_representation}
representation
representation.items [i] ->
{representation_item
representation_item.name = 'centreline orientation'}
representation_item =>
geometric_representation_item
placement =>
axis2_placement_3d

5.1.9.35 Perforated_cap

#1: The attributes are for the individual piping component.
#2: The attributes are for the definition of a family of piping components.

AIM element: #1: (piping_component_definition)
#2: (piping_component_class)

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: #1: (piping_component_definition <=
product_definition
{piping_component_definition
classification_item = piping_component_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
pipe_closure_fitting_class]
[group
group.name = 'perforated cap']
[group <-
group_relationship.related_group
{group_relationship
group_relationship.name = 'class hierarchy'}
group_relationship
group_relationship.relating_group ->
group
group.name = 'cap']}}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=

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{classification_assignment
classification_assignment.role ->
group_role
group_role.name = 'plant item type'}
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'perforated cap']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']})
#2: (piping_component_class <=
[characterized_object]
[group])
{[group =>
pipe_closure_fitting_class]
[(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'perforated cap']
[group <-
group_relationship.related_group
{group_relationship
group_relationship.name = 'class hierarchy'}
group_relationship
group_relationship.relating_group ->
group
group.name = 'cap']}

5.1.9.35.1 end_2_connector

AIM element: plant_item_connector

Source: 227

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-

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shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'end 2'}
shape_aspect =>
plant_item_connector

5.1.9.35.2 hole_diameter

#1: The attributes are for the individual piping component.
#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
dimensional_size.applies_to
dimensional_size
dimensional_characteristic = dimensional_size
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'pipe closure fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'hole diameter'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition

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represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'pipe closure fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum hole diameter')
(representation_item.name = 'minimum hole diameter')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum hole diameter'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum hole diameter'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.36 Orifice_plate

#1: The attributes are for the individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: #1: (piping_component_definition)
#2: (piping_component_class)

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: #1: (piping_component_definition <=
product_definition
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)

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(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'orifice plate']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']})
#2: (piping_component_class <=
[characterized_object]
[group])
227

5.1.9.36.1 beta_ratio

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
{representation_item
representation_item.name = 'beta ratio'}
representation_item =>
measure_representation_item <=
{measure_with_unit =>
ratio_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.36.2 bore_diameter

#1: The attributes are for the individual piping component.

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#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
shape_aspect <-
dimensional_size.applies_to
dimensional_size
dimensional_characteristic = dimensional_size
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'orifice plate fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'bore diameter'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'orifice plate fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum bore diameter')
(representation_item.name = 'minimum bore diameter')})

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([representation.items[i] ->
{representation_item
representation_item.name = 'maximum bore diameter'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum bore diameter'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.36.3 outside_diameter

#1: The attributes are for the individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
shape_aspect <-
dimensional_size.applies_to
dimensional_size
dimensional_characteristic = dimensional_size
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'orifice plate fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'outside diameter'})

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#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'orifice plate fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum outside diameter')
(representation_item.name = 'minimum outside diameter')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum outside diameter'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum outside diameter'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.36.4 thickness

#1: The attributes are for the individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>

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```
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'orifice plate fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'thickness'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'orifice plate fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum thickness')
(representation_item.name = 'minimum thickness')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum thickness'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum thickness'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]
```


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5.1.9.37 Outside_and_thickness

#1: The attributes are for the individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: #1: (shape_dimension_representation)
#2: (representation)

Source: 43, 47

Reference path: #1: ({shape_dimension_representation <=
shape_representation <=
[representation
representation.name = 'piping component dimensions']
[representation <-
property_definition_representation.used_representation
property_definition_representation
property_definition_representation.definition ->
(represented_definition
represented_definition = property_definition
{property_definition =>
product_definition_shape}
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition
product_definition =>
piping_component_definition)
(represented_definition
represented_definition = shape_aspect
shape_aspect =>
plant_item_connector)]})
#2: ({[representation
representation.name = 'piping component class size']
[representation <-
property_definition_representation.used_representation
property_definition_representation
property_definition_representation.definition ->
represented_definition
represented_definition = property_definition
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_object
characterized_object =>
piping_component_class]})

5.1.9.37.1 outside_diameter

#1: The attributes are for the individual piping component.

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#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_mandatory_shape_representation

Reference path: #1: (shape_dimension_representation <=
shape_representation <=
representation
representation.items[i] ->
{representation_item
representation_item.name = 'outside diameter'})
#2: (representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum outside diameter')
(representation_item.name = 'minimum outside diameter')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum outside diameter'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum outside diameter'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.37.2 thickness

#1: The attributes are for the individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_mandatory_shape_representation

Reference path: #1: (shape_dimension_representation <=
shape_representation <=
representation
representation.items[i] ->
{representation_item
representation_item.name = 'thickness'})
#2: (representation

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(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum thickness')
(representation_item.name = 'minimum thickness')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum thickness'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum thickness'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.38 Paddle_blank

#1: The attributes are for the individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: #1: (piping_component_definition)
#2: (piping_component_class)

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: #1: (piping_component_definition <=
product_definition
{piping_component_definition
classification_item = piping_component_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
blank_fitting_class]
[group
group.name = 'paddle blank']}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]

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applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'blank']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']})
227
#2: (piping_component_class <=
[characterized_object]
[group])

5.1.9.38.1 paddle_length

#1: The attributes are for the individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation

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dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'blank fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'paddle length'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'blank fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum paddle length')
(representation_item.name = 'minimum paddle length')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum paddle length'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum paddle length'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.38.2 paddle_width

#1: The attributes are for the individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object

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subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'blank fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'paddle width'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'blank fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum paddle width')
(representation_item.name = 'minimum paddle width')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum paddle width'}]
[representation.items[i] ->
{representation_item

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representation_item.name = 'minimum paddle width'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.39 Paddle_spacer

#1: The attributes are for the individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: #1: (piping_component_definition)
#2: (piping_component_class)

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: #1: (piping_component_definition <=
product_definition
{piping_component_definition
classification_item = piping_component_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
spacer_fitting_class]
[group
group.name = 'paddle spacer']}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)

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group.name = 'spacer']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']})
#2: (piping_component_class <=
[characterized_object]
[group])

5.1.9.39.1 inside_diameter

#1: The attributes are for the individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
shape_aspect <-
dimensional_size.applies_to
dimensional_size
dimensional_characteristic = dimensional_size
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'spacer fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'inside diameter'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-

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property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'spacer fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum inside diameter')
(representation_item.name = 'minimum inside diameter')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum inside diameter'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum inside diameter'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.39.2 paddle_length

#1: The attributes are for the individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]

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```
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'spacer fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'paddle length'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'spacer fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum paddle length')
(representation_item.name = 'minimum paddle length')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum paddle length'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum paddle length'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]
```

5.1.9.39.3 paddle_width

#1: The attributes are for the individual piping component.

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#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'spacer fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'paddle width'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'spacer fitting class dimensions'}
representation
(representation.items[i] ->

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{representation_item
(representation_item.name = 'maximum paddle width')
(representation_item.name = 'minimum paddle width')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum paddle width'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum paddle width'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.40 Perforated_plate

#1: The attributes are for the individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: #1: (piping_component_definition)
#2: (piping_component_class)

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: #1: (piping_component_definition <=
product_definition
{piping_component_definition
classification_item = piping_component_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
pipe_closure_fitting_class]
[group
group.name = 'perforated plate']
[group <-
group_relationship.related_group
{group_relationship
group_relationship.name = 'class hierarchy'}
group_relationship
group_relationship.relating_group ->
group
group.name = ' plate']}}
{product_definition

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product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
{classification_assignment
classification_assignment.role ->
group_role
group_role.name = 'plant item type'}
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'perforated plate']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']})
#2: (piping_component_class <=
[characterized_object]
[group])
{[group =>
pipe_closure_fitting_class]
[(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'perforated plate']
[group <-
group_relationship.related_group
{group_relationship
group_relationship.name = 'class hierarchy'}
group_relationship
group_relationship.relating_group ->
group
group.name = ' plate']}

5.1.9.40.1 end_2_connector

AIM element: plant_item_connector

Source: 227

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Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'end 2'}
shape_aspect =>
plant_item_connector

5.1.9.40.2 hole_diameter

#1: The attributes are for the individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
dimensional_size.applies_to
dimensional_size
dimensional_characteristic = dimensional_size
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'pipe closure fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item

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representation_item.name = 'hole diameter'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'pipe closure fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum hole diameter')
(representation_item.name = 'minimum hole diameter')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum hole diameter'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum hole diameter'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.41 Pipe

#1: The attributes are for the individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: #1: (piping_component_definition)
#2: (piping_component_class)

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: (piping_component_definition <=
product_definition
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->

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[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'pipe'}]
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']})
(piping_component_class <=
[characterized_object]
[group])

5.1.9.41.1 end_1_connector

AIM element: plant_item_connector

Source: 227

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition
characterized_definition = characterized_product_definition)
#2: (piping_component_class <=
[characterized_object]
[group]
characterized_definition = characterized_object)
characterized_definition <-
property_definition.definition
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'end 1'}
shape_aspect =>
plant_item_connector

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5.1.9.41.2 end_2_connector

AIM element: plant_item_connector

Source: 227

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition
characterized_definition = characterized_product_definition)
#2: (piping_component_class <=
[characterized_object]
[group]
characterized_definition = characterized_object)
characterized_definition <-
property_definition.definition
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'end 2'}
shape_aspect =>
plant_item_connector

5.1.9.41.3 additional_length

#1: The attributes are for the individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape

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```
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'pipe dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'additional length'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'spacer fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum additional length')
(representation_item.name = 'minimum additional length')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum additional length'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum additional length'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]
```

5.1.9.42 Pipe_closure

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#1: The attributes are for the individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: #1: (piping_component_definition)
#2: (piping_component_class)

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: #1: (piping_component_definition <=
product_definition
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->]
[product
product.frame_of_reference[i] ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'pipe closure']
product_context<=
application_context_element
application_context_element.name = 'plant item']}

#2: (piping_component_class <=
[characterized_object]
[group])
{(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'pipe closure'}

5.1.9.42.1 cap_or_plug

AIM element: group.name

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Source: 41

Reference path: piping_component_definition
classification_item = piping_component_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
{group =>
pipe_closure_fitting_class}
group
group.name
{(group.name = 'cap')
(group.name = 'plug')}

5.1.9.42.2 end_1_connector

AIM element: plant_item_connector

Source: 227

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'end 1'}
shape_aspect =>
plant_item_connector

5.1.9.42.3 height

#1: The attributes are for the individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition

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```
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'pipe closure fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'height'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'pipe closure fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum height')
(representation_item.name = 'minimum height')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum height'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum height'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
```


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length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.42.4 shape_type

AIM element: group.description

Source: 41

Reference path: piping_component_definition
classification_item = piping_component_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
{classification_assignment
classification_assignment.role ->
classification_role
classification_role.name = 'pipe closure fitting type classification'}
classification_assignment
classification_assignment.assigned_classification ->
{group =>
pipe_closure_fitting_class}
group
group.description
{(group.description = 'square')
(group.description = 'round')}

5.1.9.42.5 end_1_connector

AIM element: plant_item_connector

Source: 227

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'end 1'}
shape_aspect =>
plant_item_connector

5.1.9.43 Piping_component

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#1: The attributes are for the individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: #1 (piping_component_definition)
#2 (piping_component_class)

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: (piping_component_definition <=
product_definition
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->
product_context <=
application_context_element
application_context_element.name = 'plant item'})
(piping_component_class <=
[characterized_object]
[group])

5.1.9.43.1 side_connector

AIM element: plant_item_connector

Source: 227

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'side'}
shape_aspect =>
plant_item_connector

5.1.9.43.2 standard_point

AIM element: cartesian_point

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Source: 42

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'internal position'}
representation
representation.items [i] ->
{representation_item
representation_item.name = 'standard point'}
representation_item =>
geometric_representation_item =>
point =>
cartesian_point

5.1.9.43.3 pmi_record

AIM element: document.id

Source: 41

Reference path: piping_component_definition <=
product_definition
document_item = product_definition
document_item <-
applied_document_reference.items[i]
applied_document_reference <=
document_reference
document_reference.assigned_document ->
{document
document.kind ->
document_type
document_type.product_data_type = 'pmi record'}
document
document.id

5.1.9.43.4 mill_sheet_number

AIM element: document.id

Source: 41

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Reference path: piping_component_definition <=
product_definition
document_item = product_definition
document_item <-
applied_document_reference.items[i]
applied_document_reference <=
document_reference
document_reference.assigned_document ->
{document
document.kind ->
document_type
document_type.product_data_type = 'mill sheet'}
document
document.id

5.1.9.43.5 piping_component to family_definition

AIM element: IDENTICAL MAPPING

5.1.9.44 Piping_size_description

#1: The attributes are for the definition of a family of piping components.

#2: The attributes are for the individual piping component.

AIM element: #1: (shape_dimension_representation)
#2: (representation)

Source: 43, 47

Reference path: {(shape_dimension_representation <=
shape_representation <=
representation)
(representation)
document_item = representation
document_item <-
applied_document_reference.items[i]
applied_document_reference <=
document_reference
document_reference.assigned_document ->
document
document.kind ->
document_type
document_type.product_data_type = 'dimensional standard'}
#1: ({(shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'piping component dimensions'})
({representation
representation.name = 'piping component size'})
representation <-
property_definition_representation.used_representation
property_definition_representation

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property_definition_representation.definition ->
(represented_definition
represented_definition = property_definition
{property_definition =>
product_definition_shape}
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition
product_definition =>
piping_component_definition)(represented_definition
represented_definition = shape_aspect
shape_aspect =>
plant_item_connector)})
#2: ({[representation
representation.name = 'piping component class size']
[representation <-
property_definition_representation.used_representation
property_definition_representation
property_definition_representation.definition ->
represented_definition
represented_definition = property_definition
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_object
characterized_object =>
piping_component_class]})

5.1.9.44.1 dimensional_standard

#1: The attributes are for the definition of a family of piping components.

#2: The attributes are for the individual piping component.

AIM element: document

Source: 41

Rules: subtype_mandatory_shape_representation

Reference path: #1: (shape_dimension_representation <=
shape_representation <=
representation)
#2: (representation)
document_item = representation
document_item <-
applied_document_reference.items[i]
applied_document_reference <=
document_reference
document_reference.assigned_document ->
document

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{document.kind ->
document_type
document_type.product_data_type = 'dimensional standard'}

5.1.9.44.2 ovality_allowance

#1: The attributes are for the definition of a family of piping components.

#2: The attributes are for the individual piping component.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_mandatory_shape_representation

Reference path: #1: (shape_dimension_representation <=
shape_representation <=
representation)
#2: (representation)
representation.items[i] ->
{representation_item
(representation_item.name = 'ovality upper limit')
(representation_item.name = 'ovality lower limit')}
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.45 Piping_spool

AIM element: piping_spool_definition

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: piping_spool_definition <=
product_definition
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->
product_context<=
application_context_element

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application_context_element.name = 'plant item'}

5.1.9.45.1 tag_number

AIM element: product.id

Source: 41

Reference path: piping_spool_definition <=
product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.id

5.1.9.45.2 piping_type

AIM element: group.name

Source: 41

Reference path: piping_spool_definition <=
product_definition
classification_item = product_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
{classification_assignment
classification_assignment.role ->
group_role
group_role.name = 'piping type'}
classification_assignment
classification_assignment.assigned_classification ->
group
group.name

5.1.9.45.3 temporary_flag

AIM element: application_context.application

Source: 41

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: piping_spool_definition <=
product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product.frame_of_reference[i] ->

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product_context <=
application_context_element
application_context_element.frame_of_reference ->
application_context
application_context.application
{(application_context.application = 'temporary piece')
(application_context.application = 'permanent piece')}

5.1.9.46 Piping_support

AIM element: product

Source: 41

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: {[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group
group.name = 'piping support']
[group
group_relationship.related_group
group_relationship
{group_relationship.name = 'usage classification'}
group_relationship.relating_group ->
group
group.name = 'support component']]
[product
product.frame_of_reference[i] ->
product_context <=
application_context_element
application_context_element.name = 'plant item']}

5.1.9.46.1 orientation

AIM element: axis2_placement_3d.ref_direction

Source: 42

Reference path: product
product_definition_formation.of_product
product_definition_formation
product_definition.formation
product_definition
characterized_product_definition = product_definition
characterized_product_definition

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characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect.description = 'location point'}
shape_aspect
represented_definition = shape_aspect
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
{representation_item
representation_item.name = 'support orientation'}
representation_item =>
geometric_representation_item =>
placement =>
axis2_placement_3d
axis2_placement_3d.ref_direction

5.1.9.46.2 location_point

AIM element: placement.location

Source: 42

Reference path: product
product_definition_formation.of_product
product_definition_formation
product_definition.formation
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect.description = 'location point'}
shape_aspect
represented_definition = shape_aspect
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
{representation_item
representation_item.name = 'support location'}
representation_item =>

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geometric_representation_item =>
placement
placement.location

5.1.9.46.3 end_1_connector

AIM element: plant_item_connector

Source: 227

Reference path: product
product_definition_formation.of_product
product_definition_formation
product_definition.formation
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'end 1'}
shape_aspect =>
plant_item_connector

5.1.9.47 Plate

#1: The attributes are for the individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: #1: (piping_component_definition)
#2: (piping_component_class)

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: #1: (piping_component_definition <=
product_definition
{piping_component_definition
classification_item = piping_component_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>

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pipe_closure_fitting_class]
[group
group.name = 'plate']}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
{classification_assignment
classification_assignment.role ->
group_role
group_role.name = 'plant item type'}
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = ' plate'}
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']})
#2: (piping_component_class <=
[characterized_object]
[group])
{[group =>
pipe_closure_fitting_class]
[(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = ' plate']}

5.1.9.47.1 thickness

#1: The attributes are for the individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

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Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'pipe closure fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'thickness'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'pipe closure fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum thickness')
(representation_item.name = 'minimum thickness')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum thickness'}]
[representation.items[i] ->

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{representation_item
representation_item.name = 'minimum thickness'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.48 Plug

#1: The attributes are for the individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: #1: (piping_component_definition)
#2: (piping_component_class)

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: #1: (piping_component_definition <=
product_definition
{piping_component_definition
classification_item = piping_component_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
pipe_closure_fitting_class]
[group
group.name = 'plug']}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
{classification_assignment
classification_assignment.role ->
group_role
group_role.name = 'plant item type'}
classification_assignment
classification_assignment.assigned_classification ->
(group)

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(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = ' plug'}
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']})
#2: (piping_component_class <=
[characterized_object]
[group])
{[group =>
pipe_closure_fitting_class]
[(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = ' plug']}

5.1.9.48.1 height

#1: The attributes are for the individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location

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dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'pipe closure fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'height'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'pipe closure fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum height')
(representation_item.name = 'minimum height')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum height'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum height'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.49 Pressure_class

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: representation

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Source: 43

Reference path: #1: ({[representation
representation.name = 'piping component size']
[representation <-
property_definition_representation.used_representation
property_definition_representation
property_definition_representation.definition ->
(represented_definition
represented_definition = property_definition
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition
product_definition =>
piping_component_definition)
(represented_definition
represented_definition = shape_aspect
shape_aspect =>
plant_item_connector)]})
#2: ({[representation
representation.name = 'piping component class size']
[representation <-
property_definition_representation.used_representation
property_definition_representation
property_definition_representation.definition ->
represented_definition
represented_definition = property_definition
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_object
characterized_object =>
piping_component_class]})

5.1.9.49.1 nominal_size

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: representation
#1: ({representation
representation.name = 'piping component size'}
representation.items[i] ->
{representation_item
representation_item.name = 'nominal size'})

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#2: ({representation
representation.name = 'piping component class size'}
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum nominal size')
(representation_item.name = 'minimum nominal size')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum nominal size'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum nominal size'}])
representation_item =>
measure_representation_item <=
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.49.2 pressure_rating

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: representation
#1: ({representation
representation.name = 'piping component size'}
representation.items[i] ->
{representation_item
representation_item.name = 'pressure rating'})
#2: ({representation
representation.name = 'piping component class size'}
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum pressure rating')
(representation_item.name = 'minimum pressure rating')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum pressure rating'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum pressure rating'}])
representation_item =>
measure_representation_item <=
measure_with_unit
[{measure_with_unit.value_component ->
measure_value
measure_value = ratio_measure}
measure_with_unit.value_component]

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[{measure_with_unit.unit_component ->
unit
unit = derived_unit}
measure_with_unit.unit_component]

5.1.9.50 Reducer

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: #1: (piping_component_definition)
#2: (piping_component_class)

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: #1: (piping_component_definition <=
product_definition
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'reducer']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']})
#2: (piping_component_class <=
[characterized_object]
[group])

5.1.9.50.1 end_1_connector

AIM element: plant_item_connector

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Source: 227

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'end 1'}
shape_aspect =>
plant_item_connector

5.1.9.50.2 end_2_connector

AIM element: plant_item_connector

Source: 227

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'end 2'}
shape_aspect =>
plant_item_connector

5.1.9.50.3 end_to_end_length

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=

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```
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[{[shape_aspect =>
plant_item_connector]
[shape_aspect
shape_aspect.description = 'end 1']}
shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[{[shape_aspect =>
plant_item_connector]
[shape_aspect
shape_aspect.description = 'end 2']}
shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'reducer fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'end to end length'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'reducer fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum end to end length')
(representation_item.name = 'minimum end to end length')})
```


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([representation.items[i] ->
{representation_item
representation_item.name = 'maximum end to end length'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum end to end length'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.51 Reducing_flange

AIM element: piping_component_definition

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: piping_component_definition <=
product_definition
{piping_component_definition
classification_item = piping_component_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
flange_fitting_class]
[group
group.name = 'reducing flange']}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)

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group.name = 'flange']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']}

5.1.9.52 Reinforcing_component

AIM element: product

Source: 41

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: {[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group
group.name = 'reinforcing component']
[group
group_relationship.related_group
group_relationship
{group_relationship.name = 'usage classification'}
group_relationship.relating_group ->
group
group.name = 'support component']]
[product
product.frame_of_reference[i] ->
product_context <=
application_context_element
application_context_element.name = 'plant item']}

5.1.9.52.1 orientation

AIM element: axis2_placement_3d.ref_direction

Source: 42

Reference path: product
product_definition_formation.of_product
product_definition_formation
product_definition.formation
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition

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characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
shape_aspect
represented_definition = shape_aspect
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
{representation_item
representation_item.name = 'reinforcing orientation'}
representation_item =>
geometric_representation_item =>
placement =>
axis2_placement_3d
axis2_placement_3d.ref_direction

5.1.9.52.2 location_point

AIM element: placement.location

Source: 42

Reference path:
product
product_definition_formation.of_product
product_definition_formation
product_definition.formation
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
shape_aspect
represented_definition = shape_aspect
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
{representation_item
representation_item.name = 'reinforcing location'}
representation_item =>
geometric_representation_item =>
placement

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placement.location

5.1.9.52.3 end_1_connector

AIM element: plant_item_connector

Source: 227

Reference path: product
product_definition_formation.of_product
product_definition_formation
product_definition.formation
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'end 1'}
shape_aspect =>
plant_item_connector

5.1.9.53 Reinforcing_plate

AIM element: reinforcing_component_definition

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: reinforcing_component_definition <=
product_definition
{reinforcing_component_definition
classification_item = reinforcing_component_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
piping_support_fitting_-class]
[group
group.name = 'reinforcing plate']}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->

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[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'reinforcing component']
[product
product.frame_of_reference[i] ->
product_context <=
application_context_element
application_context_element.name = 'plant item']})

5.1.9.53.1 thickness

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_mandatory_shape_representation

Reference path: reinforcing_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'reinforcing plate dimensional shape'}

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representation
representation.items[i] ->
representation_item =>
{representation_item.name = 'thickness'}
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.54 Ring_spacer

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: #1: (piping_component_definition)
#2: (piping_component_class)

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: #1: (piping_component_definition <=
product_definition
{piping_component_definition
classification_item = piping_component_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
spacer_fitting_class]
[group
group.name = 'ring spacer']}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group

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group_relationship
group_relationship.relating_group ->
group)
group.name = 'spacer']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']})
#2: (piping_component_class <=
[characterized_object]
[group])

5.1.9.54.1 inside_diameter

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
shape_aspect <-
dimensional_size.applies_to
dimensional_size
dimensional_characteristic = dimensional_size
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'spacer fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'inside diameter'})
#2: (piping_component_class <=

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characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'spacer fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum inside diameter')
(representation_item.name = 'minimum inside diameter')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum inside diameter'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum inside diameter'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.55 Schedule

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: representation

Source: 43

Reference path: {representation
document_item = representation
document_item <-
applied_document_reference.items[i]
applied_document_reference <=
document_reference
document_reference.assigned_document ->
document <-
document_usage_constraint.source
document_usage_constraint
(document_usage_constraint.subject_element = 'pipe schedule')
(document_usage_constraint.subject_element = 'connector schedule')}
#1: ({[representation

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representation.name = 'piping component size']
[representation <-
property_definition_representation.used_representation
property_definition_representation
property_definition_representation.definition ->
(represented_definition
represented_definition = property_definition
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition
product_definition =>
piping_component_definition)
(represented_definition
represented_definition = shape_aspect
shape_aspect =>
plant_item_connector)]})
#2: ({[representation
representation.name = 'piping component class size']
[representation <-
property_definition_representation.used_representation
property_definition_representation
property_definition_representation.definition ->
represented_definition
represented_definition = property_definition
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_object
characterized_object =>
piping_component_class]})

5.1.9.55.1 nominal_size

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: representation
#1: ({representation
representation.name = 'piping component size'}
representation.items[i] ->
{representation_item
representation_item.name = 'nominal size'})
#2: ({representation

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representation.name = 'piping component class size'}
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum nominal size')
(representation_item.name = 'minimum nominal size')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum nominal size'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum nominal size'}])
representation_item =>
measure_representation_item <=
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.55.2 pipe_schedule

AIM element: document_usage_constraint.subject_element_value

Source: 41

Reference path: representation
document_item = representation
document_item <-
applied_document_reference.items[i]
applied_document_reference <=
document_reference
document_reference.assigned_document ->
document <-
document_usage_constraint.source
document_usage_constraint
document_usage_constraint.subject_element_value

5.1.9.56 Shoe

AIM element: piping_support_definition

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: piping_support_definition <=
product_definition
{piping_support_definition
classification_item = piping_support_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment

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classification_assignment.assigned_classification ->
[group =>
piping_support_fitting_-class]
[group
group.name = 'shoe']}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'piping support']
[product
product.frame_of_reference[i] ->
product_context <=
application_context_element
application_context_element.name = 'plant item']})

5.1.9.56.1 length

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_mandatory_shape_representation

Reference path: piping_support_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location

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dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'shoe dimensional shape'}
representation
representation.items[i] ->
representation_item =>
{representation_item.name = 'length'}
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.57 Slip_on_flange

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: #1: (piping_component_definition)
#2: (piping_component_class)

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: #1: (piping_component_definition <=
product_definition
{piping_component_definition
classification_item = piping_component_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
flange_fitting_neck_type_class]
[group
group.name = 'slip on flange']}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product

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classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'flange']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']})
#2: (piping_component_class <=
[characterized_object]
[group])

5.1.9.57.1 stand_off

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[{shape_aspect
shape_aspect.name = 'flange face'}
shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[{shape_aspect
shape_aspect.name = 'pipe end'}
shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>

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dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'slip on flange fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'stand off'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'slip on flange fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum stand off')
(representation_item.name = 'minimum stand off')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum stand off'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum stand off'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.58 Slip_on_jacket_flange

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: #1: (piping_component_definition)

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#2: (piping_component_class)

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: #1: (piping_component_definition <=
product_definition
{piping_component_definition
classification_item = piping_component_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
flange_fitting_neck_type_class]
[group
group.name = 'slip on jacket flange']
[group <-
group_relationship.related_group
{group_relationship
group_relationship.name = 'class hierarchy'}
group_relationship
group_relationship.relating_group ->
group
group.name = 'slip on flange']}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
{classification_assignment
classification_assignment.role ->
group_role
group_role.name = 'plant item type'}
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'slip on jacket flange']
[product
product.frame_of_reference[i] ->
product_context<=

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application_context_element
application_context_element.name = 'plant item']})
#2: (piping_component_class <=
[characterized_object]
[group])
{[group =>
flange_fitting_neck_type_class]
[group
group.name = 'slip on jacket flange']
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'slip on jacket flange'}

5.1.9.58.1 end_3_connector

AIM element: plant_item_connector

Source: 227

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'end 1'}
shape_aspect =>
plant_item_connector

5.1.9.59 Socket_weld_flange

AIM element: piping_component_definition

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: piping_component_definition <=
product_definition
{piping_component_definition
classification_item = piping_component_definition
classification_item <-

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applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
flange_fitting_neck_type_class]
[group
group.name = 'socket weld flange']}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'flange']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']}

5.1.9.60 Spacer

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: #1: (piping_component_definition)
#2: (piping_component_class)

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: #1: (piping_component_definition <=
product_definition
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product

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classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'spacer']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']})
#2: (piping_component_class <=
[characterized_object]
[group])

5.1.9.60.1 outside_diameter

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
shape_aspect <-
dimensional_size.applies_to
dimensional_size
dimensional_characteristic = dimensional_size
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->

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shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'spacer fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'outside diameter'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'spacer fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum outside diameter')
(representation_item.name = 'minimum outside diameter')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum outside diameter'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum outside diameter'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.60.2 thickness

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

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Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'spacer fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'thickness'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'spacer fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum thickness')
(representation_item.name = 'minimum thickness')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum thickness'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum thickness'}]))
representation_item =>

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measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.61 Specialty_item

AIM element: piping_component_definition

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: piping_component_definition <=
product_definition
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item'}

5.1.9.61.1 type

AIM element: group.name

Source: 41

Reference path: piping_component_definition
classification_item = piping_component_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
{classification_assignment
classification_assignment.role ->
classification_role
classification_role.name = 'specialty item type classification'}
classification_assignment
classification_assignment.assigned_classification ->
{group =>
specialty_item_class}
group
group.name

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5.1.9.62 Spectacle_blind

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: #1: (piping_component_definition)
#2: (piping_component_class)

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: #1: (piping_component_definition <=
product_definition
{piping_component_definition
classification_item = piping_component_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
blank_fitting_class]
[group
group.name = 'spectacle blind']}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'blank']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']})
#2: (piping_component_class <=
[characterized_object]

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[group])

5.1.9.62.1 arm_width

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'blank fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'arm width'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition

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property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'blank fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum arm width')
(representation_item.name = 'minimum arm width')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum arm width'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum arm width'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.62.2 centre_to_centre

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
[shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'centre'}
shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'centre'}

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```
shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'blank fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'centre to centre'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'blank fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum centre to centre')
(representation_item.name = 'minimum centre to centre')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum centre to centre'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum centre to centre'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]
```

5.1.9.62.3 inside_ring_diameter

#1: The attributes are for an individual piping component.

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#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
shape_aspect <-
dimensional_size.applies_to
dimensional_size
dimensional_characteristic = dimensional_size
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'blank fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'inside ring diameter'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'blank fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum inside ring diameter')
(representation_item.name = 'minimum inside ring diameter')})

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([representation.items[i] ->
{representation_item
representation_item.name = 'maximum inside ring diameter'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum inside ring diameter'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.63 Stay

AIM element: reinforcing_component_definition

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: reinforcing_component_definition <=
product_definition
{reinforcing_component_definition
classification_item = reinforcing_component_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
piping_support_fitting_-class]
[group
group.name = 'stay']}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)

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group.name = 'reinforcing component']
[product
product.frame_of_reference[i] ->
product_context <=
application_context_element
application_context_element.name = 'plant item']})

5.1.9.63.1 height

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_mandatory_shape_representation

Reference path: reinforcing_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'stay dimensional shape'}
representation
representation.items[i] ->
representation_item =>
{representation_item.name = 'height'}
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

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5.1.9.64 Stopper

AIM element: piping_support_definition

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: piping_support_definition <=
product_definition
{piping_support_definition
classification_item = piping_support_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
piping_support_fitting_-class]
[group
group.name = 'trunnion']}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'piping support']
[product
product.frame_of_reference[i] ->
product_context <=
application_context_element
application_context_element.name = 'plant item']})

5.1.9.64.1 length

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

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Rules: subtype_mandatory_shape_representation

Reference path: piping_support_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'stopper dimensional shape'}
representation
representation.items[i] ->
representation_item =>
{representation_item.name = 'length'}
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.65 Straight_pipe

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: #1: (piping_component_definition)
#2: (piping_component_class)

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

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Reference path: #1: (piping_component_definition <=
product_definition
{piping_component_definition
classification_item = piping_component_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
pipe_class]
[group
group.name = 'straight pipe']}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'pipe']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']})
#2: (piping_component_class <=
[characterized_object]
[group])

5.1.9.65.1 end_to_end_length

#1: The attributes are for an individual piping component.

#1a: The length is given as a numeric value.

#1b: The length is as required.

#2: The attributes are for the definition of a family of piping components.

AIM element: #1a: ([measure_with_unit.value_component]
[measure_with_unit.unit_component])

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#1b: (descriptive_representation_item.description)

#2: ([measure_with_unit.value_component]
[measure_with_unit.unit_component])

Source: 41, 45

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[{[shape_aspect =>
plant_item_connector]
[shape_aspect
shape_aspect.description = 'end 1']}
shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[{[shape_aspect =>
plant_item_connector]
[shape_aspect
shape_aspect.description = 'end 2']}
shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
#1a: (shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'pipe dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'end to end length'}
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit

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```
[measure_with_unit.value_component]
[measure_with_unit.unit_component])
#1b: (shape_aspect_relationship
shape_definition = shape_aspect_relationship
shape_definition
characterized_definition = shape_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
{representation_item
representation_item.name = 'end to end length'}
representation_item =>
descriptive_representation_item
descriptive_representation_item.description
{descriptive_representation_item.description = 'as required'}))
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'pipe class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum end to end length')
(representation_item.name = 'minimum end to end length')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum end to end length'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum end to end length'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component])
```


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5.1.9.65.2 end_to_end_cut_length

#1: The end_to_end_cut_length is a single value.

#2: The end_to_end_cut_length is a range of values.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: #1:(piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
{property_definition =>
product_definition_shape}
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
{property_definition_representation =>
shape_definition_representation}
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'pipe fabrication dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'end to end cut length'}
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component])
#2: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->

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{representation
representation.name = 'pipe fabrication dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum end to end length')
(representation_item.name = 'minimum end to end length')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum end to end length'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum end to end length'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component])

5.1.9.66 Swept_bend_pipe

AIM element: piping_component_definition

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: piping_component_definition <=
product_definition
{piping_component_definition
classification_item = piping_component_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
pipe_class]
[group
group.name = 'swept bend pipe']}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment

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classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'pipe']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']}

5.1.9.66.1 wall_thinning_allowance

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_mandatory_shape_representation

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'swept bend pipe dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'wall thinning allowance'}
representation_item =>
measure_representation_item <=

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{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.66.2 centreline_radius

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'pipe bend'}
shape_aspect <-
[shape_aspect_relationship.relating_shape_aspect
{shape_aspect_relationship
shape_aspect_relationship.name = 'pipe bend sweep angle centre point'}
shape_aspect_relationship
shape_aspect_relationship.related_shape_aspect ->
{shape_aspect
shape_aspect.description = 'sweep angle centre point'}
shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect_relationship.relating_shape_aspect
shape_aspect_relationship
{shape_aspect_relationship
shape_aspect_relationship.name = 'pipe bend sweep angle centreline'}
shape_aspect_relationship.related_shape_aspect ->
{shape_aspect
shape_aspect.description = 'pipe centreline'}
shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation

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representation.name = 'pipe bend dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'centreline radius'}
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.66.3 sweep_angle

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'pipe bend'}
shape_aspect <-
[shape_aspect_relationship.relating_shape_aspect
{shape_aspect_relationship
shape_aspect_relationship.name = 'pipe bend start'}
shape_aspect_relationship
shape_aspect_relationship.related_shape_aspect ->
{shape_aspect
shape_aspect.description = 'pipe bend start'}
shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect_relationship.relating_shape_aspect
shape_aspect_relationship
{shape_aspect_relationship
shape_aspect_relationship.name = 'pipe bend end'}
shape_aspect_relationship.related_shape_aspect ->
{shape_aspect
shape_aspect.description = 'pipe bend end'}
shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location

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dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'pipe bend dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'centreline radius'}
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.67 Tee

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: #1: (piping_component_definition)
#2: (piping_component_class)

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: #1: (piping_component_definition <=
product_definition
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)

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group.name = 'tee']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']})
#2: (piping_component_class <=
[characterized_object]
[group])

5.1.9.67.1 centre_to_end_1_length

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
[shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'centre'}
shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect.of_shape
{[shape_aspect =>
plant_item_connector]
[shape_aspect
shape_aspect.description = 'end 1']}
shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=

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{representation
representation.name = 'tee fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'centre to end 1 length'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'tee fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum centre to end 1 length')
(representation_item.name = 'minimum centre to end 1 length')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum centre to end 1 length'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum centre to end 1 length'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.67.2 centre_to_end_2_length

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition

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```
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
[shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'centre'}
shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect.of_shape
{[shape_aspect =>
plant_item_connector]
[shape_aspect
shape_aspect.description = 'end 2']}
shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'tee fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'centre to end 2 length'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'tee fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum centre to end 2 length')
(representation_item.name = 'minimum centre to end 2 length')})
([representation.items[i] ->
{representation_item
```


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representation_item.name = 'maximum centre to end 2 length'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum centre to end 2 length'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.67.3 centre_to_end_3_length

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
[shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'centre'}
shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect.of_shape
{[shape_aspect =>
plant_item_connector]
[shape_aspect
shape_aspect.description = 'end 3']}
shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->

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shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'tee fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'centre to end 3 length'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'tee fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum centre to end 3 length')
(representation_item.name = 'minimum centre to end 3 length')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum centre to end 3 length'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum centre to end 3 length'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.67.4 end_1_connector

AIM element: plant_item_connector

Source: 227

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>

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product_definition_shape <-
shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'end 1'}
shape_aspect =>
plant_item_connector

5.1.9.67.5 end_2_connector

AIM element: plant_item_connector

Source: 227

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'end 2'}
shape_aspect =>
plant_item_connector

5.1.9.67.6 end_3_connector

AIM element: plant_item_connector

Source: 227

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'end 3'}
shape_aspect =>
plant_item_connector

5.1.9.68 Threaded_flange

AIM element: piping_component_definition

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Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: piping_component_definition <=
product_definition
{piping_component_definition
classification_item = piping_component_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
flange_fitting_neck_type_class]
[group
group.name = 'threaded flange']}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'flange']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']}

5.1.9.69 Union

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: #1: (piping_component_definition)
#2: (piping_component_class)

Source: 227

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Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: #1: (piping_component_definition <=
product_definition
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'union']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']})
#2: (piping_component_class <=
[characterized_object]
[group])

5.1.9.69.1 end_1_connector

AIM element: plant_item_connector

Source: 227

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'end 1'}
shape_aspect =>
plant_item_connector

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5.1.9.69.2 end_2_connector

AIM element: plant_item_connector

Source: 227

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'end 2'}
shape_aspect =>
plant_item_connector

5.1.9.69.3 end_to_end_length

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[{[shape_aspect =>
plant_item_connector]
[shape_aspect
shape_aspect.description = 'end 1']}
shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[{[shape_aspect =>
plant_item_connector]
[shape_aspect

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```
shape_aspect.description = 'end 2']}
shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'union fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'end to end length'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'union fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum end to end length')
(representation_item.name = 'minimum end to end length')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum end to end length'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum end to end length'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]
```

5.1.9.69.4 major_outside_diameter

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#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
shape_aspect <-
dimensional_size.applies_to
dimensional_size
dimensional_characteristic = dimensional_size
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'union fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'major outside diameter'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'union fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item

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(representation_item.name = 'maximum major outside diameter')
(representation_item.name = 'minimum major outside diameter')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum major outside diameter'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum major outside diameter'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.69.5 minor_outside_diameter

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
shape_aspect <-
dimensional_size.applies_to
dimensional_size
dimensional_characteristic = dimensional_size
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'union fitting dimensional shape'}
representation
representation.items[i] ->

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{representation_item
representation_item.name = 'minor outside diameter'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'union fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum minor outside diameter')
(representation_item.name = 'minimum minor outside diameter')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum minor outside diameter'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum minor outside diameter'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.70 Valve

AIM element: piping_component_definition

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: piping_component_definition <=
product_definition
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]

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applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'valve']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']}

5.1.9.70.1 actuator_type

AIM element: descriptive_representation_item.description

Source: 45

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
{representation_item
representation_item.name = 'actuator type'}
representation_item =>
descriptive_representation_item
descriptive_representation_item.description

5.1.9.70.2 operation_mode

AIM element: descriptive_representation_item.description

Source: 45

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition

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characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
{representation_item
representation_item.name = 'operation mode'}
representation_item =>
descriptive_representation_item
descriptive_representation_item.description

5.1.9.70.3 type

AIM element: group.name

Source: 41

Reference path: piping_component_definition
classification_item = piping_component_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
{classification_assignment
classification_assignment.role ->
classification_role
classification_role.name = 'valve type classification'}
classification_assignment
classification_assignment.assigned_classification ->
{group =>
valve_class}
group
group.name

5.1.9.70.4 end_to_end_length

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition

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property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[{[shape_aspect =>
plant_item_connector]
[shape_aspect
shape_aspect.description = 'end 1']}
shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[{[shape_aspect =>
plant_item_connector]
[shape_aspect
shape_aspect.description = 'end 2']}
shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'valve dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'end to end length'}
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.70.5 valve_stem_orientation

AIM element: axis2_placement_3d.ref_direction

Source: 42

Reference path: (piping_component_definition <=
product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
{property_definition =>
product_definition_shape}
property_definition
represented_definition = property_definition

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represented_definition <-
property_definition_representation.definition
{property_definition_representation =>
shape_definition_representation}
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items [i] ->
{representation_item
representation_item.name = 'valve stem orientation'}
representation_item =>
geometric_representation_item =>
placement =>
axis2_placement_3d
axis2_placement_3d.ref_direction

5.1.9.71 Weld_neck_flange

AIM element: piping_component_definition

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: piping_component_definition <=
product_definition
{piping_component_definition
classification_item = piping_component_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
flange_fitting_neck_type_class]
[group
group.name = 'weld neck flange']}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship

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group_relationship.relating_group ->
group)
group.name = 'flange']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']}

5.1.9.72 Weld_neck_jacket_flange

AIM element: piping_component_definition

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: piping_component_definition <=
product_definition
{piping_component_definition
classification_item = piping_component_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
flange_fitting_neck_type_class]
[group
group.name = 'weld neck jacket flange']
[group <-
group_relationship.related_group
{group_relationship
group_relationship.name = 'class hierarchy'}
group_relationship
group_relationship.relating_group ->
group
group.name = 'weld neck flange']}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
{classification_assignment
classification_assignment.role ->
group_role
group_role.name = 'plant item type'}
classification_assignment

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classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'weld neck jacket flange']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']}

5.1.9.72.1 end_3_connector

AIM element: plant_item_connector

Source: 227

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'end 1'}
shape_aspect =>
plant_item_connector

5.1.9.73 Y_type_lateral

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: #1: (piping_component_definition)
#2: (piping_component_class)

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: #1: (piping_component_definition <=
product_definition
{product_definition

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product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'Y type lateral']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']})
#2: (piping_component_class <=
[characterized_object]
[group])

5.1.9.73.1 angle

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]

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shape_aspect_relationship =>
{dimensional_location =>
angular_location}
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'y type lateral fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'angle'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'y type lateral fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum angle')
(representation_item.name = 'minimum angle')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum angle'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum angle'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
plane_angle_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.73.2 centre_to_end_1_length

#1: The attributes are for an individual piping component.

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#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
[shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'centre'}
shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect.of_shape
{[shape_aspect =>
plant_item_connector]
[shape_aspect
shape_aspect.description = 'end 1']}
shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'y type lateral fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'centre to end 1 length'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-

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property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'y type lateral fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum centre to end 1 length')
(representation_item.name = 'minimum centre to end 1 length')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum centre to end 1 length'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum centre to end 1 length'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.73.3 centre_to_end_2_length

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
[shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'centre'}
shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect.of_shape
{[shape_aspect =>

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```
plant_item_connector]
[shape_aspect
shape_aspect.description = 'end 2']}
shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'y type lateral fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'centre to end 2 length'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'y type lateral fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum centre to end 2 length')
(representation_item.name = 'minimum centre to end 2 length')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum centre to end 2 length'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum centre to end 2 length'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]
```


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5.1.9.73.4 centre_to_end_3_length

#1: The attributes are for an individual piping component.

#2: The attributes are for the definition of a family of piping components.

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: #1: (piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
[shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'centre'}
shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect.of_shape
{[shape_aspect =>
plant_item_connector]
[shape_aspect
shape_aspect.description = 'end 3']}
shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'y type lateral fitting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'centre to end 3 length'})
#2: (piping_component_class <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-

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property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'y type lateral fitting class dimensions'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'maximum centre to end 3 length')
(representation_item.name = 'minimum centre to end 3 length')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum centre to end 3 length'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum centre to end 3 length'}]))
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.9.73.5 end_1_connector

AIM element: plant_item_connector

Source: 227

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'end 1'}
shape_aspect =>
plant_item_connector

5.1.9.73.6 end_2_connector

AIM element: plant_item_connector

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Source: 227

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'end 2'}
shape_aspect =>
plant_item_connector

5.1.9.73.7 end_3_connector

AIM element: plant_item_connector

Source: 227

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
{shape_aspect
shape_aspect.description = 'end 3'}
shape_aspect =>
plant_item_connector

5.1.10 Piping_inspection UoF

5.1.10.1 Connection_inspection_record

AIM element: material_property

Source: 45

Reference path: {material_property <=
property_definition
property_definition.description = 'connection inspection record'}

5.1.10.1.1 inspected_property_name

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AIM element: property_definition.name

Source: 41

Reference path: {material_property <=
property_definition
property_definition.name}

5.1.10.1.2 connection_type

AIM element: group.name

Source: 41

Reference path: material_property
classification_item = material_property
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
{classification_assignment.role ->
classification_role
classification_role.name = 'connection type'}
classification_assignment.assigned_classification ->
group
group.name

5.1.10.1.3 inspection_type

AIM element: group.name

Source: 41

Reference path: material_property
classification_item = material_property
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
{classification_assignment.role ->
classification_role
classification_role.name = 'inspection type'}
classification_assignment.assigned_classification ->
group
group.name

5.1.10.1.4 weld_id

AIM element: identification_assignment.assigned_id

Source: 41

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Reference path: material_property
identification_item = material_property
identification_item <-
applied_identification_assignment.items[i]
applied_identification_assignment <=
identification_assignment
{identification_assignment.role ->
identification_role
identification_role.name = 'weld id'}
identification_assignment.assigned_id

5.1.10.1.5 connecting_portion_id

AIM element: identification_assignment.assigned_id

Reference path: material_property
identification_item = document
identification_item <-
applied_identification_assignment.items[i]
applied_identification_assignment <=
identification_assignment
{identification_assignment.role ->
identification_role
identification_role.name = 'connecting portion id'}
identification_assignment.assigned_id

5.1.10.1.6 inspected_property_tolerance

AIM element: qualified_representation_item

Source: 45

Reference path: material_property <=
property_definition <-
property_definition_representation.definition
property_definition_representation
{ property_definition_representation =>
material_property_representation}
property_definition_representation.using_representation ->
representation
representation.items[i] ->
representation_item =>
{representation_item.name = 'inspected property tolerance'}
qualified_representation_item

5.1.10.1.7 inspected_property_measured_value

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

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Reference path: material_property <=
property_definition <-
property_definition_representation.definition
property_definition_representation
{ property_definition_representation =>
material_property_representation}
property_definition_representation.using_representation ->
representation
representation.items[i] ->
representation_item =>
{representation_item.name = 'inspected property measured value'}
measure_representation_item
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.10.1.8 connection_inspection_record to document

AIM element: PATH

Reference path: material_property
document_item = material_property
document_item <-
applied_document_reference.items[i]
applied_document_reference <=
document_reference
document_reference.assigned_document ->
document

5.1.10.2 Inspection_condition

AIM element: data_environment

Source: 45

Reference path: {data_environment.description = 'inspection condition'}

5.1.10.2.1 condition_name

AIM element: data_environment.name

Source: 45

Reference path: data_environment
data_environment.name

5.1.10.2.2 value

AIM element: [measure_representation_item.value_component]
[measure_representation_item.unit_component]

Source: 41

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Reference path: data_environment
data_environment.elements ->
property_definition_representation
{property_definition_representation.definition ->
represented_definition
represented_definition = property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_object}
property_definition_representation.using_representation ->
representation
representation.items[i] ->
representation_item =>
{representation_item.name = 'inspection condition value'}
measure_representation_item <=
measure_with_unit
[measure_representation_item.value_component]
[measure_representation_item.unit_component]

5.1.10.3 Piping_component_inspection_record

AIM element: material_property

Source: 45

Reference path: {material_property <=
property_definition
property_definition_description = 'piping component inspection record'}

5.1.10.3.1 inspected_property_name

AIM element: property_definition.name

Source: 41

Reference path: material_property <=
property_definition
property_definition.name

5.1.10.3.2 inspected_property_tolerance

AIM element: qualified_representation_item

Source: 45

Reference path: material_property <=
property_definition <-
property_definition_representation.definition
property_definition_representation
{ property_definition_representation =>
material_property_representation}
property_definition_representation.using_representation ->
representation

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representation.items[i] ->
representation_item =>
{representation_item.name = 'inspected property tolerance'}
qualified_representation_item

5.1.10.3.3 inspected_property_measured_value

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: material_property <=
property_definition <-
property_definition_representation.definition
property_definition_representation
{ property_definition_representation =>
material_property_representation}
property_definition_representation.using_representation ->
representation
representation.items[i] ->
representation_item =>
{representation_item.name = 'inspected property measured value'}
measure_representation_item
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.10.3.4 piping_component_inspection_record to piping_component

NOTE For the purpose of this mapping, only the subset of the mapping of the Piping_component specified in the reference path is applicable.

AIM element: PATH

Reference path: material_property <=
property_definition
{property_definition.description = 'piping component inspection record'}
property_definition.definition ->
characterized_definition =
characterized_product_definition ->
product_definition =>
piping_component_definition

5.1.10.3.5 piping_component_inspection_record to plant_item_connector

AIM element: PATH

Reference path: material_property <=
property_definition
{property_definition.description = 'piping component inspection record'}
property_definition.definition ->
characterized_definition =
shape_definition =

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shape_aspect =>
plant_item_connector

5.1.10.3.6 piping_component_inspection_record to document

AIM element: PATH

Reference path: material_property
document_item = material_property
document_item <-
applied_document_reference.items[i]
applied_document_reference <=
document_reference
document_reference.assigned_document ->
document

5.1.10.4 Piping_spool_inspection_record

AIM element: material_property

Source: 45

Reference path: {material_property <=
property_definition
property_definition.description = 'piping spool inspection record'}

5.1.10.4.1 inspected_property_name

AIM element: property_definition.name

Source: 41

Reference path: material_property <=
property_definition
property_definition.name

5.1.10.4.2 inspected_property_tolerance

AIM element: qualified_representation_item

Source: 45

Reference path: material_property <=
property_definition <-
property_definition_representation.definition
property_definition_representation
{ property_definition_representation =>
material_property_representation}
property_definition_representation.using_representation ->
representation
representation.items[i] ->
representation_item =>

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{representation_item.name = 'inspected property tolerance'}
qualified_representation_item

5.1.10.4.3 inspected_property_measured_value

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: material_property <=
property_definition <-
property_definition_representation.definition
property_definition_representation
{ property_definition_representation =>
material_property_representation}
property_definition_representation.using_representation ->
representation
representation.items[i] ->
representation_item =>
{representation_item.name = 'inspected property measured value'}
measure_representation_item
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.10.4.4 piping_spool_inspection_record to piping_spool

AIM element: PATH

Reference path: material_property =>
property_definition
{property_definition.description = 'piping spool inspection record'}
property_definition.definition ->
characterized_definition =
characterized_product_definition =
product_definition =>
piping_spool_definition

5.1.10.4.5 piping_spool_inspection_record to document

AIM element: PATH

Reference path: material_property
document_item = material_property
document_item <-
applied_document_reference.items[i]
applied_document_reference <=
document_reference
document_reference.assigned_document ->
document

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5.1.10.4.6 piping_spool_inspection_record to inspection_condition

AIM element: PATH

Reference path: material_property <=
property_definition <-
{property_definition.description = 'piping spool inspection record'}
property_definition_representation.definition
property_definition_representation =>
material_property_representation
material_property_representation.dependent_environment ->
data_environment
{data_environment.description = 'inspection condition'}

5.1.10.5 Shape_inspection_record

AIM element: property_definition

Source: 41

Reference path: {property_definition.description = 'shape inspection record'}

5.1.10.5.1 shape_inspection_property_name

AIM element: property_definition.name

Source: 41

Reference path:

5.1.10.5.2 shape_inspection_property_sequence_number

AIM element: descriptive_representation_item.description

Source: 45

Reference path: material_property <=
property_definition <-
property_definition_representation.definition
property_definition_representation
{ property_definition_representation =>
material_property_representation}
property_definition_representation.using_representation ->
representation
representation.items[i] ->
representation_item =>
{representation_item.name = 'inspected property sequence number'}
descriptive_representation_item
descriptive_representation_item.description

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5.1.10.5.3 inspected_property_tolerance

AIM element: qualified_representation_item

Source: 45

Reference path: material_property <=
property_definition <-
property_definition_representation.definition
property_definition_representation
{ property_definition_representation =>
material_property_representation}
property_definition_representation.using_representation ->
representation
representation.items[i] ->
representation_item =>
{representation_item.name = 'inspected property tolerance'}
qualified_representation_item

5.1.10.5.4 inspected_property_measured_value

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: material_property <=
property_definition <-
property_definition_representation.definition
property_definition_representation
{ property_definition_representation =>
material_property_representation}
property_definition_representation.using_representation ->
representation
representation.items[i] ->
representation_item =>
{representation_item.name = 'inspected property measured value'}
measure_representation_item
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.10.5.5 shape_inspection_record to piping_spool

AIM element: PATH

Reference path: property_definition
{property_definition.description = 'shape inspection record'}
property_definition.definition ->
characterized_definition =
characterized_product_definition =
product_definition =>
piping_spool_definition

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5.1.10.5.6 shape_inspection_record to plant_item_connector

AIM element: PATH

Reference path: property_definition
{property_definition.description = 'shape inspection record'}
property_definition.definition ->
characterized_definition =
shape_definition =
shape_aspect =>
plant_item_connector

5.1.11 Piping_system_functional_characterization UoF

5.1.11.1 Line_branch_connection

AIM element: line_branch_connection

Source: 227

Reference path: line_branch_connection <=
shape_aspect_relationship
{shape_aspect_relationship
[shape_aspect_relationship.description = 'branch location']
[shape_aspect_relationship.relating_shape_aspect ->
shape_aspect
shape_aspect.of_shape ->
product_definition_shape <=
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition
product_definition =>
plant_line_segment_definition]
[shape_aspect_relationship.related_shape_aspect ->
shape_aspect =>
plant_line_segment_termination]}

5.1.11.1.1 branch_sequence_id

AIM element: shape_aspect_relationship.name

Source: 41

Reference path: line_branch_connection <=
{shape_aspect_relationship
shape_aspect_relationship.relating_shape_aspect ->
shape_aspect
shape_aspect.of_shape ->
product_definition_shape <-

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[shape_aspect.of_shape
shape_aspect
shape_aspect.description = 'termination 1']
[shape_aspect.of_shape
shape_aspect
shape_aspect.description = 'termination 2']}
shape_aspect_relationship
shape_aspect_relationship.name

5.1.11.1.2 line_branch_connection to changed_line_branch_connection

AIM element: IDENTICAL MAPPING

5.1.11.2 Line_branch_termination

AIM element: plant_line_segment_termination

Source: 227

Reference path: plant_line_segment_termination <=
shape_aspect

5.1.11.2.1 line_branch_termination to line_branch_connection

AIM element: PATH

Reference path: plant_line_segment_termination <=
shape_aspect <-
shape_aspect_relationship.related_shape_aspect
shape_aspect_relationship

5.1.11.3 Line_piping_system_component_assignment

AIM element: product_definition_relationship

Source: 41

Reference path: {product_definition_relationship
[product_definition_relationship.name = 'realization']
[product_definition_relationship.relating_product_definition ->
{product_definition =>
plant_line_segment_definition}
product_definition
product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
application_context_element.name = 'functional definition']
[product_definition_relationship.related_product_definition ->
{product_definition =>
piping_component_definition}
product_definition
product_definition.frame_of_reference ->

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product_definition_context <=
application_context_element
(application_context_element.name = 'functional occurrence')
(application_context_element.name = 'physical occurrence')]}

5.1.11.3.1 line_piping_system_component_assignment to changed_line_-assignment

AIM element: IDENTICAL MAPPING

5.1.11.4 Line_plant_item_branch_connection

AIM element: line_plant_item_branch_connection

Source: 227

Reference path: line_plant_item_branch_connection <=
shape_aspect_relationship
{shape_aspect_relationship
[shape_aspect_relationship.relating_shape_aspect ->
shape_aspect
shape_aspect.of_shape ->
product_definition_shape <=
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition
product_definition =>
plant_line_segment_definition]
[shape_aspect_relationship.related_shape_aspect ->
shape_aspect =>
plant_item_connector]}

5.1.11.4.1 branch_sequence_id

AIM element: shape_aspect_relationship.name

Source: 41

Reference path: line_plant_item_branch_connection <=
{shape_aspect_relationship
shape_aspect_relationship.relating_shape_aspect ->
shape_aspect
shape_aspect.of_shape ->
product_definition_shape <-
[shape_aspect.of_shape
shape_aspect
shape_aspect.description = 'termination 1']
[shape_aspect.of_shape
shape_aspect

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shape_aspect.description = 'termination 2']}
shape_aspect_relationship
shape_aspect_relationship.name

5.1.11.4.2 line_plant_item_branch_connection to changed_line_plant_-item_branch_connection

AIM element: IDENTICAL MAPPING

5.1.11.5 Line_plant_item_branch_connector

AIM element: plant_item_connector

Source: 227

Reference path: plant_item_connector <=
shape_aspect
{shape_aspect
[shape_aspect.description = 'line plant item branch connector']
[shape_aspect.of_shape ->
product_definition_shape <=
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition
product_definition
product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
application_context_element.name = 'functional occurrence']}

5.1.11.5.1 line_plant_item_branch_connector to line_plant_item_branch_-connection

AIM element: PATH

Reference path: plant_item_connector <=
shape_aspect <-
shape_aspect_relationship.related_shape_aspect
shape_aspect_relationship =>
line_plant_item_branch_connection

5.1.11.6 Line_plant_item_connection

AIM element: line_plant_item_connection

Source: 227

Reference path: line_plant_item_connection <=
shape_aspect_relationship

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{shape_aspect_relationship
[shape_aspect_relationship.relating_shape_aspect ->
shape_aspect =>
plant_line_segment_termination]
[shape_aspect_relationship.related_shape_aspect ->
{shape_aspect <=
plant_item_connector}
shape_aspect
shape_aspect.of_shape ->
product_definition_shape <=
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition
(product_definition)
(product_definition =>
externally_defined_plant_item_definition)]}

5.1.11.6.1 line_plant_item_connection to changed_line_plant_item_-connection

AIM element: IDENTICAL MAPPING

5.1.11.7 Line_plant_item_connector

AIM element: plant_item_connector

Source: 227

Reference path: plant_item_connector <=
shape_aspect
{shape_aspect
[shape_aspect.description = 'line plant item connector']
[shape_aspect.of_shape ->
product_definition_shape <=
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition
product_definition
product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
application_context_element.name = 'functional occurrence'}

5.1.11.7.1 line_plant_item_connector to line_plant_item_connection

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AIM element: PATH

Reference path: plant_item_connector <=
shape_aspect <-
shape_aspect_relationship.relating_shape_aspect
shape_aspect_relationship =>
line_plant_item_connection

5.1.11.8 Line_plant_item_termination

AIM element: plant_line_segment_termination

Source: 227

Reference path: plant_line_segment_termination <=
shape_aspect

5.1.11.8.1 line_plant_item_termination to line_plant_item_connection

AIM element: PATH

Reference path: plant_line_segment_termination <=
shape_aspect <-
shape_aspect_relationship.related_shape_aspect
shape_aspect_relationship =>
line_plant_item_connection

5.1.11.9 Line_to_line_connection

AIM element: line_termination_connection

Source: 227

Reference path: line_termination_connection <=
shape_aspect_relationship

5.1.11.9.1 line_to_line_connection_id

AIM element: shape_aspect_relationship.name

Source: 41

Reference path: line_termination_connection <=
shape_aspect_relationship
shape_aspect_relationship.name

5.1.11.9.2 line_to_line_connection to changed_line_to_line_connection

AIM element: IDENTICAL MAPPING

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5.1.11.9.3 line_to_line_connection to line_to_line_termination

AIM element: PATH

Reference path: line_termination_connection <=
shape_aspect_relationship
[shape_aspect_relationship.relating_shape_aspect ->
shape_aspect =>
(connection_node)
(plant_line_segment_termination)]
[shape_aspect_relationship.related_shape_aspect ->
shape_aspect =>
plant_line_segment_termination]

5.1.11.10 Line_to_line_termination

AIM element: plant_line_segment_termination

Source: 227

Reference path: plant_line_segment_termination <=
shape_aspect

5.1.11.11 Piping_specification

AIM element: document

Source: 41

Reference path: {document
document.kind ->
document_type
document_type.product_data_type = 'piping specification'}

5.1.11.11.1 name

AIM element: document.name

Source: 41

5.1.11.11.2 owner

AIM element: (organization.name)
([person.first_name]
[person.last_name])

Source: 41

Reference path: document
(plant_spatial_configuration_organization_item = document
plant_spatial_configuration_organization_item <-
plant_spatial_configuration_organization_assignment.items[i]

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plant_spatial_configuration_organization_assignment <=
{organization_assignment
organization_assignment.role ->
organization_role
organization_role.name = 'owner'}
organization_assignment
organization_assignment.assigned_organization ->
organization
organization.name)
(plant_spatial_configuration_person_item = document
plant_spatial_configuration_person_item <-
plant_spatial_configuration_person_assignment.items[i]
plant_spatial_configuration_person_assignment <=
{person_assignment
person_assignment.role ->
person_role
person_role.name = 'owner'}
person_assignment
person_assignment.assigned_person ->
person
[person.first_name]
[person.last_name])

5.1.11.11.3 piping_specification_id

AIM element: document.id

Source: 41

5.1.11.11.4 service_description

AIM element: document_usage_constraint

Source: 41

Reference path: document <-
document_usage_constraint.source
document_usage_constraint
{document_usage_constraint
document_usage_constraint.subject_element = 'service description'}

5.1.11.11.5 piping_specification to changed_piping_specification

AIM element: IDENTICAL MAPPING

5.1.11.11.6 piping_specification to family_definition

AIM element: PATH

Reference path: document <-
document_reference.assigned_document
document_reference =>

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applied_document_reference
applied_document_reference.items[i] ->
document_item
document_item = piping_component_class
piping_component_class

5.1.11.11.7 piping_specification to piping_system_line_segment

AIM element: PATH

Reference path: document <-
document_reference.assigned_document
document_reference =>
applied_document_reference
applied_document_reference.items[i] ->
document_item
document_item = plant_line_segment_definition
plant_line_segment_definition

5.1.11.12 Piping_system_line

AIM element: plant_line_definition

Source: 227

Reference path: plant_line_definition <=
product_definition_with_associated_documents
{product_definition_with_associated_documents <=
product_definition
product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
application_context_element.name = 'functional definition'}

5.1.11.12.1 line_number

AIM element: product_definition.description

Source: 41

Reference path: plant_line_definition <=
product_definition_with_associated_documents <=
product_definition
product_definition.description

5.1.11.12.2 P_and_i_reference

AIM element: document

Source: 41

Reference path: plant_line_definition <=

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product_definition_with_associated_documents
product_definition_with_associated_documents.documentation_ids[i] ->
document

5.1.11.12.3 piping_system_line_id

AIM element: product_definition.id

Source: 41

Reference path: plant_line_definition <=
product_definition_with_associated_documents <=
product_definition
product_definition.id

5.1.11.12.4 piping_system_line to changed_piping_system_line

AIM element: IDENTICAL MAPPING

5.1.11.12.5 piping_system_line to piping_system_line_segment

AIM element: PATH

Reference path: plant_line_definition <=
product_definition_with_associated_documents <=
product_definition <-
product_definition_relationship.relating_product_definition
product_definition_relationship
product_definition_relationship.related_product_definition ->
product_definition =>
plant_line_segment_definition

5.1.11.13 Piping_system_line_segment

AIM element: plant_line_segment_definition

Source: 227

Reference path: plant_line_segment_definition <=
product_definition
{product_definition
product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
application_context_element.name = 'functional definition'}

5.1.11.13.1 coating_reference

AIM element: document_usage_constraint

Source: 41

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Reference path: plant_line_segment_definition
document_item = plant_line_segment_definition
document_item <-
applied_document_reference.items[i]
applied_document_reference <=
document_reference
document_reference.assigned_document ->
document <-
document_usage_constraint.source
document_usage_constraint
{document_usage_constraint
document_usage_constraint.subject_element = 'coating reference'}

5.1.11.13.2 corrosion_allowance

AIM element: ([measure_with_unit.value_component]
[measure_with_unit.unit_component])
([measure_with_unit.value_component]
[measure_with_unit.unit_component]
[document_usage_constraint.subject_element_value])

Source: 41

Reference path: plant_line_segment_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'line segment characteristics'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'corrosion allowance'}
(representation_item =>
measure_representation_item <=
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component])
([representation_item =>
measure_representation_item <=
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]]
[representation_item
document_item = representation_item

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document_item <-
applied_document_reference.items[i]
applied_document_reference <=
document_reference
document_reference.assigned_document ->
document <-
document_usage_constraint
document_usage_constraint.subject_element_value])

5.1.11.13.3 design_pressure

AIM element: ([measure_with_unit.value_component]
[measure_with_unit.unit_component])
([measure_with_unit.value_component]
[measure_with_unit.unit_component]
[document_usage_constraint.subject_element_value])

Source: 41

Reference path: plant_line_segment_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'line segment characteristics'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'design pressure'}
(representation_item =>
measure_representation_item <=
measure_with_unit
[{measure_with_unit.value_component ->
measure_value
measure_value = ratio_measure}
measure_with_unit.value_component]
[{measure_with_unit.unit_component ->
unit
unit = derived_unit}
measure_with_unit.unit_component])
([representation_item =>
measure_representation_item <=
measure_with_unit
[{measure_with_unit.value_component ->
measure_value

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measure_value = ratio_measure}
measure_with_unit.value_component]
[{measure_with_unit.unit_component ->
unit
unit = derived_unit}
measure_with_unit.unit_component]]
[representation_item
document_item = representation_item
document_item <-
applied_document_reference.items[i]
applied_document_reference <=
document_reference
document_reference.assigned_document ->
document <-
document_usage_constraint
document_usage_constraint.subject_element_value])

5.1.11.13.4 design_temperature

AIM element: ([measure_with_unit.value_component]
[measure_with_unit.unit_component])
([measure_with_unit.value_component]
[measure_with_unit.unit_component]
[document_usage_constraint.subject_element_value])

Source: 41

Reference path: plant_line_segment_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'line segment characteristics'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'design temperature'}
(representation_item =>
measure_representation_item <=
{measure_with_unit =>
thermodynamic_temperature_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component])
([representation_item =>

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measure_representation_item <=
{measure_with_unit =>
thermodynamic_temperature_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]]
[representation_item
document_item = representation_item
document_item <-
applied_document_reference.items[i]
applied_document_reference <=
document_reference
document_reference.assigned_document ->
document <-
document_usage_constraint
document_usage_constraint.subject_element_value])

5.1.11.13.5 elevation

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: plant_line_segment_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'line segment characteristics'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'elevation'}
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

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5.1.11.13.6 heat_tracing_type

AIM element: (heat_tracing_representation)
([heat_tracing_representation]
[document_usage_constraint.subject_element_value])

Source: 227

Reference path: plant_line_segment_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.items[i] ->
representation_item =>
descriptive_representation_item}
representation =>
(heat_tracing_representation)
([heat_tracing_representation]
[heat_tracing_representation
document_item = heat_tracing_representation
document_item <-
applied_document_reference.items[i]
applied_document_reference <=
document_reference
document_reference.assigned_document ->
document <-
document_usage_constraint
document_usage_constraint.subject_element_value])
41

5.1.11.13.7 line_size

AIM element: shape_dimension_representation

Source: 47

Rules: subtype_mandatory_shape_representation

Reference path: plant_line_segment_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-

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property_definition.definition
{property_definition =>
product_definition_shape}
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
{property_definition_representation =>
shape_definition_representation}
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.items[i] ->
representation_item
representation_item.name = 'line size'}
representation =>
shape_representation =>
shape_dimension_representation

5.1.11.13.8 segment_id

AIM element: product_definition.id

Source: 41

Reference path: plant_line_segment_definition <=
product_definition
product_definition.id

5.1.11.13.9 piping_system_line_segment to changed_piping_system_line_-segment

AIM element: IDENTICAL MAPPING

5.1.11.13.10 piping_system_line_segment to line_branch_connection

AIM element: PATH

Reference path: plant_line_segment_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
shape_aspect <-
shape_aspect_relationship.relating_shape_aspect
shape_aspect_relationship =>

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line_branch_connection

5.1.11.13.11 piping_system_line_segment to line_plant_item_ranch_-connection

AIM element: PATH

Reference path: plant_line_segment_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
shape_aspect <-
shape_aspect_relationship.relating_shape_aspect
shape_aspect_relationship =>
line_plant_item_branch_connection

5.1.11.13.12 piping_system_line_segment to line_piping_system_-component_assignment

AIM element: PATH

Reference path: plant_line_segment_definition <=
product_definition <-
product_definition_relationship.relating_product_definition
product_definition_relationship

5.1.11.13.13 piping_system_line_segment to piping_system_line_segment_-termination

AIM element: PATH

Reference path: plant_line_segment_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
shape_aspect =>
plant_line_segment_termination

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5.1.11.13.14 piping_system_line_segment to segment_insulation

AIM element: PATH

Reference path: plant_line_segment_definition <=
product_definition <-
product_definition_relationship.relating_product_definition
product_definition_relationship
{product_definition_relationship
product_definition_relationship.name = 'segment insulation'}

5.1.11.13.15 piping_system_line_segment to stream_design_case

AIM element: PATH

Reference path: plant_line_segment_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
stream_design_case

5.1.11.14 Piping_system_line_segment_termination

AIM element: plant_line_segment_termination

Source: 227

Reference path: plant_line_segment_termination <=
shape_aspect
{[shape_aspect
shape_aspect.name = 'piping line segment termination']
[shape_aspect <-
(shape_aspect_relationship.relating_shape_aspect)
(shape_aspect_relationship.related_shape_aspect)
shape_aspect_relationship =>
(line_branch_connection)
(line_plant_item_connection)
(line_termination_connection)]
[shape_aspect
shape_aspect.of_shape ->
product_definition_shape <=
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition
{product_definition =>
plant_line_segment_definition}

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product_definition
product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
application_context_element.name = 'functional definition']}

5.1.11.14.1 flow_direction

AIM element: descriptive_representation_item.description

Source: 45

Reference path: plant_line_segment_termination <=
shape_aspect
shape_definition = shape_aspect
shape_definition
characterized_definition = shape_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
{representation_item
representation_item.name = 'flow direction'}
representation_item =>
descriptive_representation_item
descriptive_representation_item.description
{(descriptive_representation_item.description = 'both')
(descriptive_representation_item.description = 'in')
(descriptive_representation_item.description = 'not specified')
(descriptive_representation_item.description = 'out')}

5.1.11.14.2 line_end_location

AIM element: (point)
(shape_aspect)

Source: 41, 42

Reference path: plant_line_segment_termination <=
(shape_aspect
shape_definition = shape_aspect
shape_definition
characterized_definition = shape_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition

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represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
{representation_item
representation_item.name = 'line end point'}
representation_item =>
geometric_representation_item =>
point)
(shape_aspect <-
shape_aspect_relationship.relating_shape_aspect
shape_aspect_relationship
shape_aspect_relationship.related_shape_aspect ->
{shape_aspect
shape_aspect.name = 'line end location'}
shape_aspect)

5.1.11.14.3 line_start_location

AIM element: (point)
(shape_aspect)

Source: 41, 42

Reference path: plant_line_segment_termination <=
(shape_aspect
shape_definition = shape_aspect
shape_definition
characterized_definition = shape_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
{representation_item
representation_item.name = 'line start point'}
representation_item =>
geometric_representation_item =>
point)
(shape_aspect <-
shape_aspect_relationship.relating_shape_aspect
shape_aspect_relationship
shape_aspect_relationship.related_shape_aspect ->
{shape_aspect
shape_aspect.name = 'line start location'}
shape_aspect)

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5.1.11.14.4 termination_id

AIM element: shape_aspect.name

Source: 41

Reference path: plant_line_segment_termination <=
shape_aspect
shape_aspect.name

5.1.11.14.5 piping_system_line_segment_termination to changed_piping_-system_line_segment_

AIM element: IDENTICAL MAPPINGtermination

5.1.11.15 Piping_system_line_termination

AIM element: plant_line_segment_termination

Source: 227

Reference path: plant_line_segment_termination <=
shape_aspect
{[shape_aspect
shape_aspect.name = 'piping line termination']
[shape_aspect
shape_aspect.of_shape ->
product_definition_shape <=
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition_relationship
product_definition_relationship
[product_definition_relationship.related_product_defintion ->
{product_definition =>
plant_line_segment_definition}
product_definition
product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
application_context_element.name = 'functional definition']
[product_definition_relationship.relating_product_defintion ->
{product_definition =>
product_definition_with_associated_documents =>
plant_line_definition}
product_definition
product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
application_context_element.name = 'functional definition']]}

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5.1.11.15.1 location

AIM element: cartesian_point

Source: 42

Reference path: plant_line_segment_termination <=
shape_aspect
represented_definition = shape_aspect
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'plant line termination position'}
representation
representation.items[i] ->
representation_item =>
geometric_representation_item =>
point =>
cartesian_point

5.1.11.15.2 position_on_pipe

AIM element: descriptive_representation_item.description

Source: 45

Reference path: plant_line_segment_termination <=
shape_aspect
represented_definition = shape_aspect
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'plant line termination position'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'position on pipe'}
representation_item =>
descriptive_representation_item
descriptive_representation_item.description

5.1.11.15.3 start_or_end

AIM element: descriptive_representation_item.description

Source: 45

Reference path: plant_line_segment_termination <=
shape_aspect

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represented_definition = shape_aspect
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'plant line termination position'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'start or end'}
representation_item =>
descriptive_representation_item
descriptive_representation_item.description
{(descriptive_representation_item.description = 'start')
(descriptive_representation_item.description = 'end')}

5.1.11.15.4 piping_system_line_termination to piping_system_line

AIM element: PATH

Reference path: plant_line_segment_termination <=
shape_aspect
shape_aspect.of_shape ->
product_definition_shape <=
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition_relationship
product_definition_relationship
product_definition_relationship.relating_product_defintion ->
{product_definition
product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
application_context_element.name = 'functional definition'}
product_definition =>
product_definition_with_associated_documents =>
plant_line_definition

5.1.11.16 Segment_insulation

AIM element: product_definition_relationship

Source: 41

Reference path: {product_definition_relationship
[product_definition_relationship.name = 'segment insulation']
[product_definition_relationship.relating_product_definition ->
product_definition =>

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plant_line_segment_definition]}

5.1.11.16.1 boundaries

AIM element: descriptive_representation_item.description

Source: 45

Reference path: product_definition_relationship
characterized_product_definition = product_definition_relationship
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
{property_definition =>
product_definition_shape}
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
{property_definition_representation =>
shape_definition_representation}
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'segment insulation characteristics'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'segment insulation boundary'}
representation_item <=
descriptive_representation_item
descriptive_representation_item.description

5.1.11.16.2 description

AIM element: product_definition_relationship.description

Source: 41

5.1.11.16.3 thickness

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: product_definition_relationship
characterized_product_definition = product_definition_relationship
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition

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{property_definition =>
product_definition_shape}
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
{property_definition_representation =>
shape_definition_representation}
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'segment insulation characteristics'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'thickness')
(representation_item.name = 'maximum thickness')
(representation_item.name = 'minimum thickness')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum thickness'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum thickness'}])
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.11.16.4 type

AIM element: product.name

Source: 41

Reference path: product_definition_relationship
product_definition_relationship.related_product_definition ->
product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.name

5.1.11.17 Stream_design_case

AIM element: stream_design_case

Source: 227

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Reference path: stream_design_case <=
[characterized_object]
[property_definition]

5.1.11.17.1 description

AIM element: characterized_object.description

Source: 41

Rules: subtype_exclusive_characterized_object

Reference path: stream_design_case <=
characterized_object
characterized_object.description

5.1.11.17.2 flow_rate

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: stream_design_case <=
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'stream flow characteristics'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'flow rate')
(representation_item.name = 'maximum flow rate')
(representation_item.name = 'minimum flow rate')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum flow rate'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum flow rate'}])
representation_item =>
measure_representation_item <=
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

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5.1.11.17.3 pressure

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: stream_design_case <=
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'stream flow characteristics'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'pressure')
(representation_item.name = 'maximum pressure')
(representation_item.name = 'minimum pressure')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum pressure'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum pressure'}])
representation_item =>
measure_representation_item <=
measure_with_unit
[{measure_with_unit.value_component ->
measure_value
measure_value = ratio_measure}
measure_with_unit.value_component]
[{measure_with_unit.unit_component ->
unit
unit = derived_unit}
measure_with_unit.unit_component]

5.1.11.17.4 stream_case_type

AIM element: property_definition.name

Source: 41

Reference path: stream_design_case <=
property_definition
property_definition.name

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5.1.11.17.5 stream_data_reference

AIM element: (descriptive_representation_item.description)
([descriptive_representation_item.description]
[document_usage_constraint.subject_element_value])

Source: 41, 45

Reference path: stream_design_case <=
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'stream flow characteristics'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'stream data reference'}
(representation_item =>
descriptive_representation_item
descriptive_representation_item.description)
([representation_item =>
descriptive_representation_item
descriptive_representation_item.description]
[representation_item
document_item = representation_item
document_item <-
applied_document_reference.items[i]
applied_document_reference <=
document_reference
document_reference.assigned_document ->
document <-
document_usage_constraint
document_usage_constraint.subject_element_value])

5.1.11.17.6 stream_design_id

AIM element: characterized_object.name

Source: 41

Rules: subtype_exclusive_characterized_object

Reference path: stream_design_case <=
characterized_object
characterized_object.name

5.1.11.17.7 stream_design_case to service_operating_case

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AIM element: PATH

Reference path: stream_design_case <=
property_definition <-
property_definition_relationship.relating_property_definition
property_definition_relationship

5.1.11.17.8 stream_design_case to stream_phase

AIM element: PATH

Rules: subtype_exclusive_characterized_object

Reference path: stream_design_case <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition =>
stream_phase

5.1.11.18 Stream_phase

AIM element: stream_phase

Source: 227

Reference path: stream_phase <=
property_definition

5.1.11.18.1 constituent_mole_fraction

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: stream_phase <=
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'stream phase characteristics'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'constituent mole fraction'}
representation_item =>
measure_representation_item <=
{measure_with_unit =>

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ratio_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.11.18.2 constituents

AIM element: descriptive_representation_item.description

Source: 45

Reference path: stream_phase <=
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'stream phase characteristics'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'constituents'}
representation_item =>
descriptive_representation_item
descriptive_representation_item.description

5.1.11.18.3 phase_density

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: stream_phase <=
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'stream phase characteristics'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'phase density'}
representation_item =>
measure_representation_item <=
measure_with_unit
[measure_with_unit.value_component]

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[measure_with_unit.unit_component]

5.1.11.18.4 phase_fraction

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: stream_phase <=
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'stream phase characteristics'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'phase fraction'}
representation_item =>
measure_representation_item <=
{measure_with_unit =>
ratio_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.11.18.5 specific_gravity

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: stream_phase <=
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'stream phase characteristics'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'specific gravity'}
representation_item =>
measure_representation_item <=
measure_with_unit

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[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.11.18.6 surface_tension

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: stream_phase <=
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'stream phase characteristics'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'surface tension'}
representation_item =>
measure_representation_item <=
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.11.18.7 temperature

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: stream_phase <=
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'stream phase characteristics'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'temperature')
(representation_item.name = 'maximum temperature')
(representation_item.name = 'minimum temperature')})
([representation.items[i] ->
{representation_item

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representation_item.name = 'maximum temperature'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum temperature'}])
representation_item =>
measure_representation_item <=
{measure_with_unit =>
thermodynamic_temperature_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.11.18.8 viscosity

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: stream_phase <=
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'stream phase characteristics'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'viscosity'}
representation_item =>
measure_representation_item <=
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.12 Plant_characterization UoF

5.1.12.1 Cableway_system

AIM element: cableway_system

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: cableway_system <=
product_definition

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{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant system'}

5.1.12.2 Ducting_system

AIM element: ducting_system

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: ducting_system <=
product_definition
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant system'}

5.1.12.2.1 type

AIM element: group.name

Source: 41

Reference path: ducting_system
classification_item = ducting_system
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
{classification_assignment
classification_assignment.role ->
classification_role
classification_role.name = 'ducting system type classification'}
classification_assignment
classification_assignment.assigned_classification ->
{group =>
system_class}
group

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group.name

5.1.12.2.2 ducting_system to stream_design_case

AIM element: PATH

Reference path: ducting_system <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
stream_design_case

5.1.12.3 Electrical_system

AIM element: electrical_system

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: electrical_system <=
product_definition
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant system'}

5.1.12.3.1 system_voltage_designation

AIM element: representation

Source: 43

Reference path: electrical_system <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition

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represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
{representation
[representation.name = 'system voltage designation']
[representation.items[i] ->
representation_item =>
measure_representation_item <=
measure_with_unit =>
electric_current_measure_with_unit]}

5.1.12.3.2 type

AIM element: group.name

Source: 41

Reference path: electrical_system
classification_item = electrical_system
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
{classification_assignment
classification_assignment.role ->
classification_role
classification_role.name = 'electrical system type classification'}
classification_assignment
classification_assignment.assigned_classification ->
{group =>
system_class}
group
group.name

5.1.12.4 External_classification

AIM element: externally_defined_class

Source: 227

Reference path: externally_defined_class <=
[group]
[externally_defined_item]

5.1.12.4.1 description

AIM element: group.description

Source: 41

Reference path: externally_defined_class <=

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group
group.description

5.1.12.4.2 name

AIM element: group.name

Source: 41

Reference path: externally_defined_class <=
group
group.name

5.1.12.4.3 source

AIM element: external_source.source_id

Source: 41

Reference path: externally_defined_class <=
externally_defined_item
externally_defined_item.source ->
(external_source)
(external_source =>
known_source)
external_source.source_id

5.1.12.5 Functional_plant

AIM element: product_definition

Source: 41

Reference path: {product_definition
[product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product =>
plant]
[product_definition.frame_of_reference ->
[product_definition_context <=
application_context_element
application_context_element.name = 'functional occurrence']
[product_definition_context
product_definition_context.life_cycle_stage = 'functional design']]}

5.1.12.5.1 functional_plant to functional_plant_satisfaction

AIM element: PATH

Reference path: product_definition <-
product_definition_relationship.relating_product_definition

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product_definition_relationship
{product_definition_relationship
product_definition_relationship.name = 'plant satisfaction'}

5.1.12.5.2 functional_plant to plant_system

AIM element: PATH

Reference path: product_definition <-
product_definition_relationship.relating_product_definition
product_definition_relationship
product_definition_relationship.related_product_definition ->
product_definition =>
(electrical_system)
(ducting_system)
(instrumentation_and_control_system)
(piping_system)
(structural_system)
(cableway_system)

5.1.12.6 Functional_plant_satisfaction

AIM element: product_definition_relationship

Source: 41

Reference path: {product_definition_relationship
product_definition_relationship.name = 'plant satisfaction'}

5.1.12.7 Hvac_system

AIM element: hvac_system

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: hvac_system <=
product_definition
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant system'}

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5.1.12.8 Instrumentation_and_control_system

AIM element: instrumentation_and_control_system

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: instrumentation_and_control_system <=
product_definition
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant system'}

5.1.12.8.1 type

AIM element: group.name

Source: 41

Reference path: instrumentation_and_control_system
classification_item = instrumentation_and_control_system
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
{classification_assignment
classification_assignment.role ->
classification_role
classification_role.name = 'instrumentation and control system type \ classification'}
classification_assignment
classification_assignment.assigned_classification ->
{group =>
system_class}
group
group.name

5.1.12.9 Line_less_piping_system

AIM element: line_less_piping_system

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

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Reference path: line_less_piping_system <=
product_definition
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant system'}

5.1.12.9.1 line_less_piping_system to piping_system_component

AIM element: PATH

Reference path: line_less_piping_system <=
product_definition <-
product_definition_relationship.relating_product_definition
{product_definition_relationship =>
product_definition_usage =>
assembly_component_usage}
product_definition_relationship
product_definition_relationship.related_product_definition ->
product_definition =>
piping_component_definition

5.1.12.9.2 line_less_piping_system to stream_design_case

AIM element: PATH

Reference path: line_less_piping_system <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
stream_design_case

5.1.12.10 Location_in_plant

AIM element: (axis2_placement_2d)
(axis2_placement_3d)

Source: 42

Reference path: {(axis2_placement_2d <=)
(axis2_placement_3d <=)
placement <=
geometric_representation_item <=

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representation_item <-
representation.items[i]
{representation =>
shape_representation}
representation <-
property_definition_representation.used_representation
{property_definition_representation =>
shape_definition_representation}
property_definition_representation
property_definition_representation.definition ->
represented_definition
represented_definition = property_definition
{property_definition =>
product_definition_shape}
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition
{product_definition
product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
application_context_element.name = 'physical occurrence'}
product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product =>
plant}

5.1.12.11 Manufacturing_line

AIM element: plant

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: plant <=
product
{product
product.frame_of_reference[i] ->
product_context <=
application_context_element
application_context_element.name = 'manufacturing line'}

5.1.12.12 Piping_system

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AIM element: piping_system

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: piping_system <=
product_definition
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant system'}

5.1.12.12.1 code

AIM element: document_usage_constraint.subject_element_value

Source: 41

Reference path: piping_system
document_item = piping_system
document_item <-
applied_document_reference.items[i]
applied_document_reference <=
document_reference
document_reference.assigned_document ->
document <-
document_usage_constraint.source
document_usage_constraint
document_usage_constraint.subject_element_value
{document_usage_constraint.subject_element = 'piping system code'}

5.1.12.12.2 description

AIM element: product_definition_formation.description

Source: 41

Reference path: piping_system <=
product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.description

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5.1.12.12.3 approval_state

AIM element: approval_status.name

Source: 41

Reference path: piping_system
piping_system = approval_item
approval_item <-
applied_approval_assignment.items[i]
applied_approval_assignment <=
approval_assignment
approval_assignment.assigned_approval ->
approval
approval.status ->
approval_status
approval_status.name

5.1.12.12.4 piping_system to piping_system_line

AIM element: PATH

Reference path: piping_system <=
product_definition <-
product_definition_relationship.relating_product_definition
product_definition_relationship
product_definition_relationship.related_product_definition ->
product_definition =>
product_definition_with_associated_documents =>
plant_line_definition

5.1.12.13 Planned_physical_plant

AIM element: product_definition

Source: 41

Reference path: {product_definition
[product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product =>
plant]
[product_definition.frame_of_reference ->
[product_definition_context <=
application_context_element
application_context_element.name = 'physical occurrence']
[product_definition_context
product_definition_context.life_cycle_stage = 'physical design']]}

5.1.12.13.1 planned_physical_plant to changed_planned_physical_plant

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AIM element: IDENTICAL MAPPING

5.1.12.13.2 planned_physical_plant to functional_plant_satisfaction

AIM element: PATH

Reference path: product_definition <-
product_definition_relationship.related_product_definition
product_definition_relationship
{product_definition_relationship
product_definition_relationship.name = 'plant satisfaction'}

5.1.12.13.3 planned_physical_plant to location_in_plant

AIM element: PATH

Rules: subtype_mandatory_shape_representation

Reference path: product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
{property_definition =>
product_definition_shape}
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
{property_definition_representation =>
shape_definition_representation}
property_definition_representation
property_definition_representation.used_representation ->
{representation =>
shape_representation}
representation
representation.items[i] ->
representation_item =>
geometric_representation_item =>
placement =>
(axis2_placement_2d)
(axis2_placement_3d)

5.1.12.13.4 planned_physical_plant to sited_plant

AIM element: PATH

Reference path: product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-

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property_definition.definition
property_definition =>
sited_plant

5.1.12.14 Plant

AIM element: plant

Source: 227

Reference path: plant <=
product
{product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition
product_definition.frame_of_reference ->
product_definition_context
(product_definition_context.life_cycle_stage = 'physical design')
(product_definition_context.life_cycle_stage = 'functional design')}

5.1.12.14.1 definition_coordinate_system

AIM element: representation_context.context_identifier

Source: 43

Reference path: plant <=
product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.items[i] ->
[representation_item
representation_item.name = 'plant placement reference']
[representation_item =>
geometric_representation_item =>
placement =>
((axis2_placment_2d

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axis2_placement_2d.ref_direction ->
direction <=
geometric_representation_item <=
representation_item
(representation_item.name = 'plant north')
(representation_item.name = 'forward perpendicular')
(representation_item.name = 'aft perpendicular'))
(axis2_placement_2d))
((axis2_placment_3d
axis2_placement_3d.axis ->
direction <=
geometric_representation_item <=
representation_item
(representation_item.name = 'plant north')
(representation_item.name = 'forward perpendicular')
(representation_item.name = 'aft perpendicular'))
(axis2_placement_3d.ref_direction ->
direction <=
geometric_representation_item <=
representation_item
(representation_item.name = 'plant north')
(representation_item.name = 'forward perpendicular')
(representation_item.name = 'aft perpendicular'))
(axis2_placement_3d))]}
representation
representation.context_of_items ->
{representation_context =>
geometric_representation_context}
representation_context
representation_context.context_identifier

5.1.12.14.2 description

AIM element: product.description

Source: 41

Reference path: plant <=
product
product.description

5.1.12.14.3 name

AIM element: product.name

Source: 41

Reference path: plant <=
product
product.name

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5.1.12.14.4 operator

AIM element: (organization)
(person_and_organization)

Source: 41

Reference path: plant
(plant_spatial_configuration_organization_item = plant
plant_spatial_configuration_organization_item <-
plant_spatial_configuration_organization_assignment.items[i]
plant_spatial_configuration_organization_assignment <=
{organization_assignment
organization_assignment.role ->
organization_role
organization_role.name = 'plant operator'}
organization_assignment
organization_assignment.assigned_organization ->
organization)
(plant_spatial_configuration_person_and_organization_item = plant
plant_spatial_configuration_person_and_organization_item <-
plant_spatial_configuration_person_and_organization_assignment.items[i]
plant_spatial_configuration_person_and_organization_assignment <=
{person_and_organization_assignment
person_and_organization_assignment.role ->
person_and_organization_role
person_and_organization_role.name = 'plant operator'}
person_and_organization_assignment
person_and_organization_assignment.assigned_person_and_organization ->
person_and_organization)

5.1.12.14.5 owners

AIM element: (person)
(organization)
(person_and_organization)

Source: 41

Reference path: plant
(plant_spatial_configuration_person_item = plant
plant_spatial_configuration_person_item <-
plant_spatial_configuration_person_assignment.items[i]
plant_spatial_configuration_person_assignment <=
{person_assignment
person_assignment.role ->
person_role
person_role.name = 'plant owner'}
person_assignment
person_assignment.assigned_person ->
person)
(plant_spatial_configuration_organization_item = plant
plant_spatial_configuration_organization_item <-
plant_spatial_configuration_organization_assignment.items[i]

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plant_spatial_configuration_organization_assignment <=
{organization_assignment
organization_assignment.role ->
organization_role
organization_role.name = 'plant owner'}
organization_assignment
organization_assignment.assigned_organization ->
organization)
(plant_spatial_configuration_person_and_organization_item = plant
plant_spatial_configuration_person_and_organization_item <-
plant_spatial_configuration_person_and_organization_assignment.items[i]
plant_spatial_configuration_person_and_organization_assignment <=
{person_and_organization_assignment
person_and_organization_assignment.role ->
person_and_organization_role
person_and_organization_role.name = 'plant owner'}
person_and_organization_assignment
person_and_organization_assignment.assigned_person_and_organization ->
person_and_organization)

5.1.12.14.6 plant_id

AIM element: product.id

Source: 41

Reference path: plant <=
product
product.id

5.1.12.14.7 length_between_perpendiculars

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: plant <=
product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.using_representation ->
representation

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representation.items[i] ->
representation_item =>
{representation_item.name = 'length between perpendiculars '}
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.12.14.8 plant_type

AIM element: group.name

Source: 41

Reference path: product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
{classification_assignment
classification_assignment.role ->
classification_role
classification_role.name = 'plant type classification'}
classification_assignment
classification_assignment.assigned_classification ->
group
group.name

5.1.12.14.9 plant to changed_plant

AIM element: IDENTICAL MAPPING

5.1.12.14.10 plant to external_classification

AIM element: PATH

Reference path: plant <=
product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
group =>
externally_defined_class

5.1.12.14.11 plant to functional_plant

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AIM element: PATH

Rules: application_context_requires_ap_definition
dependent_instantiable_application_context
dependent_instantiable_product_definition_context
product_definition_context_name_constraint

Reference path: plant <=
product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition
{product_definition
product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
application_context_element.name = 'functional occurrence'}

5.1.12.14.12 plant to planned_physical_plant

AIM element: PATH

Rules: application_context_requires_ap_definition
dependent_instantiable_application_context
dependent_instantiable_product_definition_context
product_definition_context_name_constraint
product_definition_usage_constraint

Reference path: plant <=
product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition
{product_definition
product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
application_context_element.name = 'physical occurrence'}

5.1.12.14.13 plant to plant_process_capability

AIM element: PATH

Reference path: plant <=
product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition
characterized_product_definition = product_definition
characterized_product_definition

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characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
process_capability

5.1.12.14.14 plant to sub_plant_relationship (contains)

AIM element: PATH

Reference path: plant <=
product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition <-
product_definition_relationship.relating_product_definition
product_definition_relationship
{product_definition_relationship
product_definition_relationship.name = 'sub plant'}

5.1.12.14.15 plant to sub_plant_relationship (used in)

AIM element: PATH

Reference path: plant <=
product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition <-
product_definition_relationship.related_product_definition
product_definition_relationship
{product_definition_relationship
product_definition_relationship.name = 'sub plant'}

5.1.12.15 Plant_process_capability

AIM element: process_capability

Source: 227

Reference path: process_capability <=
property_definition

5.1.12.15.1 plant_process_capability_id

AIM element: property_definition.name

Source: 41

Reference path: process_capability <=

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property_definition
property_definition.name

5.1.12.15.2 production_capacity

AIM element: representation

Source: 43

Reference path: process_capability <=
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
{representation
representation.name = 'production capacity'}

5.1.12.15.3 production_type

AIM element: descriptive_representation_item.description

Source: 45

Reference path: process_capability <=
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'production capacity'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'production type'}
representation_item =>
descriptive_representation_item
descriptive_representation_item.description

5.1.12.15.4 plant_process_capability to changed_plant_process_capability

AIM element: IDENTICAL MAPPING

5.1.12.16 Plant_system

AIM element: (electrical_system)
(ducting_system)
(instrumentation_and_control_system)

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(piping_system)
(structural_system)
(cableway_system)

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: (electrical_system <=)
(ducting_system <=)
(instrumentation_and_control_system <=)
(piping_system <=)
(structural_system <=)
(cableway_system <=)
product_definition
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant system'}
227
227

5.1.12.16.1 name

AIM element: product_definition.description

Source: 41

Reference path: (electrical_system <=)
(ducting_system <=)
(instrumentation_and_control_system <=)
(piping_system <=)
(structural_system <=)
(cableway_system <=)
product_definition
product_definition.description

5.1.12.16.2 plant_system_id

AIM element: product_definition.id

Source: 41

Reference path: (electrical_system <=)
(ducting_system <=)
(instrumentation_and_control_system <=)

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(piping_system <=)
(structural_system <=)
(cableway_system <=)
product_definition
product_definition.id

5.1.12.16.3 service_description

AIM element: property_definition.name

Source: 41

Reference path: (electrical_system <=)
(ducting_system <=)
(instrumentation_and_control_system <=)
(piping_system <=)
(structural_system <=)
(cableway_system <=)
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
property_definition.name

5.1.12.16.4 plant_system to changed_plant_system

AIM element: IDENTICAL MAPPING

5.1.12.16.5 plant_system to external_classification

AIM element: PATH

Reference path: (electrical_system
classification_item = electrical_system)
(ducting_system
classification_item = ducting_system)
(instrumentation_and_control_system
classification_item = instrumentation_and_control_system)
(piping_system
classification_item = piping_system)
(structural_system
classification_item = structural_system)
(cableway_system
classification_item = cableway_system)
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->

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group =>
externally_defined_class

5.1.12.16.6 plant_system to plant_item

AIM element: PATH

Reference path: (electrical_system <=)
(ducting_system <=)
(instrumentation_and_control_system <=)
(piping_system <=)
(structural_system <=)
(cableway_system <=)
product_definition <-
product_definition_relationship.relating_product_definition
product_definition_relationship
product_definition_relationship.related_product_definition ->
(product_definition)
(product_definition =>
externally_defined_plant_item_definition)
(product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product)

5.1.12.16.7 plant_system to plant_system_assembly (sub-system)

AIM element: PATH

Reference path: (electrical_system <=)
(ducting_system <=)
(instrumentation_and_control_system <=)
(piping_system <=)
(structural_system <=)
(cableway_system <=)
product_definition <-
product_definition_relationship.related_product_definition
product_definition_relationship
product_definition_relationship.relating_product_definition ->
product_definition
(electrical_system)
(ducting_system)
(instrumentation_and_control_system)
(piping_system)
(structural_system)
(cableway_system)

5.1.12.16.8 plant_system to plant_system_assembly (super-system)

AIM element: PATH

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Reference path: (electrical_system <=)
(ducting_system <=)
(instrumentation_and_control_system <=)
(piping_system <=)
(structural_system <=)
(cableway_system <=)
product_definition <-
product_definition_relationship.relating_product_definition
product_definition_relationship
product_definition_relationship.related_product_definition ->
product_definition
(electrical_system)
(ducting_system)
(instrumentation_and_control_system)
(piping_system)
(structural_system)
(cableway_system)

5.1.12.17 Plant_system_assembly

AIM element: (electrical_system)
(ducting_system)
(instrumentation_and_control_system)
(piping_system)
(structural_system)
(cableway_system)

Source: 227

Reference path: (electrical_system <=)
(ducting_system <=)
(instrumentation_and_control_system <=)
(piping_system <=)
(structural_system <=)
(cableway_system <=)
product_definition
227
227

5.1.12.18 Structural_system

AIM element: structural_system

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: structural_system <=
product_definition
{product_definition
product_definition.formation ->

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product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant system'}

5.1.12.18.1 type

AIM element: group.name

Source: 41

Reference path: structural_system
classification_item = structural_system
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
{classification_assignment
classification_assignment.role ->
classification_role
classification_role.name = 'structural system type classification'}
classification_assignment
classification_assignment.assigned_classification ->
{group =>
system_class}
group
group.name

5.1.12.19 Sub_plant_relationship

AIM element: product_definition_relationship

Source: 41

Reference path: {product_definition_relationship
product_definition_relationship.name = 'sub plant'}

5.1.12.19.1 location_and_orientation

AIM element: (axis2_placement_2d)
(axis2_placement_3d)

Source: 42

Rules: subtype_mandatory_shape_representation

Reference path: product_definition_relationship
characterized_product_definition = product_definition_relationship
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-

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property_definition.definition
{property_definition =>
product_definition_shape}
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation =>
shape_representation}
representation
representation.items[i] ->
representation_item =>
geometric_representation_item =>
placement =>
(axis2_placement_2d)
(axis2_placement_3d)

5.1.12.19.2 sub_plant_relationship to changed_sub_plant_relationship

AIM element: IDENTICAL MAPPING

5.1.12.20 Train

AIM element: plant

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: plant <=
product
{product
product.frame_of_reference[i] ->
product_context <=
application_context_element
application_context_element.name = 'train'}

5.1.12.21 Unit

AIM element: plant

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: plant <=
product

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{product
product.frame_of_reference[i] ->
product_context <=
application_context_element
application_context_element.name = 'unit'}

5.1.13 Plant_csg_shape_representation UoF

5.1.13.1 Block

AIM element: block

Source: 42

5.1.13.2 Circular_ellipsoid

AIM element: ellipsoid

Source: 42

5.1.13.3 Cone

AIM element: right_circular_cone

Source: 42

5.1.13.4 Csg_element

AIM element: (csg_primitive)
(boolean_result)
faceted_brep
(plant_design_csg_primative)

Source: 42, 227

5.1.13.5 Cylinder

AIM element: right_circular_cylinder

Source: 42

5.1.13.6 Eccentric_cone

AIM element:
eccentric_cone

Source: 42

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5.1.13.7 Eccentric_cylinder

AIM element:
eccentric_cone

Source: 42

Reference path: {eccentric_cone
eccentric_cone.ratio = 1}

5.1.13.8 Eccentric_pyramid

AIM element: rectangular_pyramid

Source: 42

5.1.13.9 Extrusion

AIM element: extruded_area_solid

Source: 42

Reference path: {extruded_area_solid <=
swept_area_solid
swept_area_solid.swept_area ->
curve_bounded_surface
[curve_bounded_surface.basis_surface ->
surface =>
elementary_surface =>
plane]
[curve_bounded_surface.boundaries[i] ->
surface_boundary
surface_boundary = boundary_curve
boundary_curve <=
composite_curve_on_surface <=
composite_curve
composite_curve.segments[i] ->
composite_curve_segment
composite_curve_segment.parent_curve ->
surface_curve
surface_curve.curve_3d ->
curve =>
bounded_curve =>
trimmed_curve
trimmed_curve.basis_curve ->
curve =>
(line)
(conic)]}

5.1.13.10 Faceted_brep

AIM element: faceted_brep

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Source: 42

5.1.13.11 Hemisphere

AIM element: plant_design_csg_primitive

Source: 227

Reference path: plant_design_csg_primitive <=
[{solid_model <=
geometric_representation_item <=
representation_item
representation_item.name = 'hemisphere'}
solid_model]
[{shape_representation <=
representation
representation.name = 'hemisphere'}
shape_representation]

5.1.13.12 Pyramid

AIM element: rectangular_pyramid

Source: 42

5.1.13.13 Reducing_torus

AIM element:
cyclide_segment_solid

Source: 42

5.1.13.14 Solid_of_revolution

AIM element: revolved_area_solid

Source: 42

Reference path: {revolved_area_solid <=
swept_area_solid
swept_area_solid.swept_area ->
curve_bounded_surface
curve_bounded_surface.boundaries[i] ->
surface_boundary
surface_boundary = boundary_curve
boundary_curve <=
composite_curve_on_surface <=
composite_curve
composite_curve.segments[i] ->
composite_curve_segment
composite_curve_segment.parent_curve ->
surface_curve

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surface_curve.curve_3d ->
curve =>
bounded_curve =>
trimmed_curve
trimmed_curve.basis_curve ->
curve =>
(line)
(conic)}

5.1.13.15 Sphere

AIM element: sphere

Source: 42

5.1.13.16 Square_to_round

AIM element: plant_design_csg_primitive

Source: 42

Reference path: plant_design_csg_primitive <=
[{solid_model <=
geometric_representation_item <=
representation_item
representation_item.name = 'rectangle to ellipse'
solid_model]
[{shape_representation <=
representation
representation.name = 'rectangle to ellipse'}
shape_representation]

5.1.13.17 Torus

AIM element: torus

Source: 42

5.1.13.18 Trimmed_block

AIM element: plant_design_csg_primitive

Source: 227

Reference path: plant_design_csg_primitive <=
[{solid_model <=
geometric_representation_item <=
representation_item
representation_item.name = 'trimmed block'
solid_model]
[{shape_representation <=
representation

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representation.name = 'trimmed block'}
shape_representation]

5.1.13.19 Trimmed_cone

AIM element: eccentric_cone

Source: 42

Reference path: {eccentric_cone
eccentric_cone.semi_axis_1 = eccentric_cone.semi_axis_2}

5.1.13.20 Trimmed_cylinder

AIM element: eccentric_cone

Source: 42

5.1.13.21 Trimmed_pyramid

AIM element: plant_design_csg_primitive

Source: 227

Reference path: plant_design_csg_primitive <=
[{solid_model <=
geometric_representation_item <=
representation_item
representation_item.name = 'trimmed pyramid'}
solid_model]
[{shape_representation <=
representation
representation.name = 'trimmed pyramid'}
shape_representation]

5.1.13.22 Trimmed_sphere

AIM element: plant_design_csg_primitive

Source: 227

Reference path: plant_design_csg_primitive <=
[{solid_model <=
geometric_representation_item <=
representation_item
representation_item.name = 'trimmed sphere'}
solid_model]
[{shape_representation <=
representation
representation.name = 'trimmed sphere'}
shape_representation]

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5.1.13.23 Trimmed_torus

AIM element: cyclide_segment_solid

Source: 42

5.1.14 Plant_item_characterization UoF

5.1.14.1 Analysis_data_point

AIM element: shape_aspect

Source: 41

Reference path: {shape_aspect
shape_aspect.description = 'analysis data point'}

5.1.14.1.1 id

AIM element: identification_assignment.assigned_id

Source: 41

Reference path: identification_item = shape_aspect
identification_item <-
applied_identification_assignment.items[i]
applied_identification_assignment <=
identification_assignment
{identification_assignment.role ->
identification_role
identification_role.name = 'analysis data point id'}
identification_assignment.assigned_id

5.1.14.1.2 name

AIM element: shape_aspect.name

Source: 41

5.1.14.1.3 location

AIM element: (axis2_placement_2d)
(axis2_placement_3d)

Source: 42

Reference path: shape_aspect
shape_definition = shape_aspect
shape_definition
characterized_definition = shape_definition
characterized_definition <-
property_definition.definition

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property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
{representation_item
representation_item.name = 'analysis data point location'}
representation_item =>
geometric_representation_item =>
placement =>
(axis2_placement_2d)
(axis2_placement_3d)

5.1.14.2 Bolt

AIM element: bolt_and_nut_component_definition

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: bolt_and_nut_component_definition <=
product_definition
{bolt_and_nut_component_definition
classification_item = piping_support_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
bolt_and_nut_component_class]
[group
group.name = 'bolt']}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship

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group_relationship.relating_group ->
group)
group.name = 'bolt and nut component']
[product
product.frame_of_reference[i] ->
product_context <=
application_context_element
application_context_element.name = 'plant item']})

5.1.14.2.1 bolt_type

AIM element: group.name

Source: 41

Reference path: bolt_and_nut_component_definition
classification_item = piping_support_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
group <-
{[group =>
bolt_and_nut_component_class]
[group
group.name = 'bolt']}
group_relationship.relating_group
group_relationship
{group_relationship.name = 'class hierarchy'}
group_relationship.related_group ->
group
{group =>
bolt_and_nut_component_class}
group.name

5.1.14.3 Clamp

AIM element: product

Source: 41

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: {[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->

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[group
group.name = 'clamp']
[group
group_relationship.related_group
group_relationship
{group_relationship.name = 'usage classification'}
group_relationship.relating_group ->
group
group.name = 'connection component']]
[product
product.frame_of_reference[i] ->
product_context <=
application_context_element
application_context_element.name = 'plant item']}

5.1.14.4 Bolt_and_nut_component

AIM element: product

Source: 41

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: {[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group
group.name = 'bolt and nut component']
[group
group_relationship.related_group
group_relationship
{group_relationship.name = 'usage classification'}
group_relationship.relating_group ->
group
group.name = 'connection component']]
[product
product.frame_of_reference[i] ->
product_context <=
application_context_element
application_context_element.name = 'plant item']}

5.1.14.4.1 nominal_size

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

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Source: 41

Reference path: product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.using_representation ->
representation
{ representation.name = 'connection component size'}
representation
representation.items[i] ->
representation_item =>
{representation_item.name = 'nominal size'}
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.14.4.2 quantity

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition
{product_definition =>
bolt_and_nut_component_definition}
product_definition <-
product_definition_relationship.related_product_definition
product_definition_relationship =>
{product_definition_relationship.relating_product_definition ->
product_definition =>
bolt_and_nut_set_definition}
product_definition_usage =>
assembly_component_usage =>
quantified_assembly_component_usage
quantified_assembly_component_usage.quantity ->
measure_with_unit

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{measure_with_unit =>
count_measure_with_unit}
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.14.5 Bolt_and_nut_set

AIM element: bolt_and_nut_set_definition

Source: 227

Reference path: bolt_and_nut_set_definition <=
product_definition

5.1.14.5.1 set_id

AIM element: product_definition.id

Reference path: bolt_and_nut_set_definition <=
product_definition
product_definition.id

5.1.14.5.2 quantity_used

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: bolt_and_nut_set_definition <=
product_definition <-
product_definition_relationship.related_product_definition
product_definition_relationship =>
{product_definition_relationship.relating_product_definition ->
product_definition =>
connection_material_definition}
product_definition_usage =>
assembly_component_usage =>
quantified_assembly_component_usage
quantified_assembly_component_usage.quantity ->
measure_with_unit
{measure_with_unit =>
count_measure_with_unit}
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.14.5.3 bolt_and_nut_set to connection_material

AIM element: PATH

Reference path bolt_and_nut_set_definition <=
product_definition <-

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product_definition_relationship.related_product_definition
product_definition_relationship
{product_definition_relationship =>
product_definition_usage =>
(assembly_component_usage)
(assembly_component_usage =>
quantified_assembly_component_usage)}
product_definition_relationship.relating_product_definition ->
product_definition =>
connection_material_definition

5.1.14.5.4 bolt_and_nut_set to bolt_and_nut_component

AIM element: PATH

Reference path: bolt_and_nut_set_definition <=
product_definition <-
product_definition_relationship.relating_product_definition
product_definition_relationship
{product_definition_relationship =>
product_definition_usage =>
(assembly_component_usage)
(assembly_component_usage =>
quantified_assembly_component_usage)}
product_definition_relationship.related_product_definition ->
product_definition =>
bolt_and_nut_component_definition

5.1.14.6 Clamp_set

AIM element: clamp_set_definition

Source: 227

Reference path: clamp_set_definition <=
product_definition

5.1.14.6.1 set_id

AIM element: product_definition.id

Reference path: clamp_set_definition <=
product_definition
product_definition.id

5.1.14.6.2 quantity

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

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Reference path: clamp_set_definition <=
product_definition <-
product_definition_relationship.related_product_definition
product_definition_relationship =>
{product_definition_relationship.relating_product_definition ->
product_definition =>
connection_material_definition}
product_definition_usage =>
assembly_component_usage =>
quantified_assembly_component_usage
quantified_assembly_component_usage.quantity ->
measure_with_unit
{measure_with_unit =>
count_measure_with_unit}
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.14.6.3 clamp_set to connection_material

AIM element: PATH

Reference path clamp_set_definition <=
product_definition <-
product_definition_relationship.related_product_definition
product_definition_relationship
{product_definition_relationship =>
product_definition_usage =>
(assembly_component_usage)
(assembly_component_usage =>
quantified_assembly_component_usage)}
product_definition_relationship.relating_product_definition ->
product_definition =>
connection_material_definition

5.1.14.6.4 clamp_set to clamp

AIM element: PATH

Reference path: clamp_set_definition <=
product_definition <-
product_definition_relationship.relating_product_definition
product_definition_relationship
{product_definition_relationship =>
product_definition_usage =>
(assembly_component_usage)
(assembly_component_usage =>
quantified_assembly_component_usage)}
product_definition_relationship.related_product_definition ->
product_definition =>
clamp_component_definition

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5.1.14.6.5 clamp_set to bolt_and_nut_component

AIM element: PATH

Reference path: clamp_set_definition <=
product_definition <-
product_definition_relationship.relating_product_definition
product_definition_relationship
{product_definition_relationship =>
product_definition_usage =>
(assembly_component_usage)
(assembly_component_usage =>
quantified_assembly_component_usage)}
product_definition_relationship.related_product_definition ->
product_definition =>
bolt_and_nut_component_definition

5.1.14.7 Cable_support

AIM element: product

Source: 41

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: {[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group
group.name = 'cable support']
[group <-
group_relationship.related_group
{group_relationship
group_relationship.name = 'usage classification'}
group_relationship
group_relationship.relating_group ->
group
group.name = 'support component']]
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']}

5.1.14.7.1 cable_support_type

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AIM element: group.name

Source: 41

Reference path: product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
{classification_assignment
classification_assignment.role ->
classification_role
classification_role.name = 'cable support type classification'}
classification_assignment
classification_assignment.assigned_classification ->
group
group.name

5.1.14.8 Catalogue_definition

AIM element: catalogue

Source: 227

Reference path: catalogue <=
(external_source)
(external_source =>
known_source)
[document]

5.1.14.8.1 catalogue_id

AIM element: document.id

Source: 41

Reference path: catalogue <=
document
document.id

5.1.14.8.2 catalogue_name

AIM element: document.name

Source: 41

Reference path: catalogue <=
document
document.name

5.1.14.8.3 catalogue_version

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AIM element: document.description

Source: 41

Reference path: catalogue <=
document
document.description

5.1.14.8.4 catalogue_definition to catalogue_connector

AIM element: PATH

Rules: subtype_mandatory_pre_defined_item

Reference path: catalogue <=
(external_source)
(external_source =>
known_source) <-
externally_defined_item.source
externally_defined_item =>
catalogue_connector

5.1.14.8.5 catalogue_definition to catalogue_item

AIM element: PATH

Rules: subtype_mandatory_pre_defined_item

Reference path: catalogue <=
(external_source)
(external_source =>
known_source) <-
externally_defined_item.source
externally_defined_item =>
externally_defined_plant_item_definition =>
catalogue_item

5.1.14.9 Catalogue_item

AIM element: catalogue_item

Source: 227

Reference path: catalogue_item <=
externally_defined_plant_item_definition <=
[product_definition
{product_definition
product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
application_context_element.name = 'physical definition'}]
[externally_defined_item
{externally_defined_item

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externally_defined_item.source ->
(external_source)
(external_source =>
known_source) =>
catalogue}]

5.1.14.9.1 item_name

AIM element: product.name

Source: 41

Reference path: catalogue_item <=
externally_defined_plant_item_definition <=
product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.name

5.1.14.9.2 item_version

AIM element: product_definition_formation.id

Source: 41

Reference path: catalogue_item <=
externally_defined_plant_item_definition <=
product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.id

5.1.14.9.3 model_number

AIM element: product.id

Source: 41

Reference path: catalogue_item <=
externally_defined_plant_item_definition <=
product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.id

5.1.14.9.4 catalogue_item to catalogue_item_substitute (has as substitute)

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AIM element: PATH

Reference path: catalogue_item <=
externally_defined_plant_item_definition <=
product_definition <-
product_definition_relationship.related_product_definition
product_definition_relationship <-
product_definition_substitute.context_relationship
product_definition_substitute

5.1.14.9.5 catalogue_item to catalogue_item_substitute (is substitute)

AIM element: PATH

Reference path: catalogue_item <=
externally_defined_plant_item_definition <=
product_definition <-
product_definition_substitute.substitute_definition
product_definition_substitute

5.1.14.9.6 catalogue_item to plant_item_definition (is defined by)

AIM element: PATH

Reference path: catalogue_item <=
externally_defined_plant_item_definition

5.1.14.10 Catalogue_item_substitute

AIM element: product_definition_substitute

Source: 41

5.1.14.11 Connected_collection

AIM element: assembly_component_usage

Source: 44

Reference path: {assembly_component_usage <=
product_definition_usage <=
product_definition_relationship
(product_definition_relationship.name = 'connected collection')
(product_definition_relationship.name = 'connected hierarchical collection')}

5.1.14.11.1 connected_collection to plant_item_connection

AIM element: PATH

Reference path: assembly_component_usage <=
product_definition_usage <=
product_definition_relationship

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product_definition_relationship.relating_product_definition ->
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
shape_aspect =>
plant_item_connection

5.1.14.12 Connection_component

AIM element: product

Source: 41

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: {[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
group
group.name = 'connection component']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']}

5.1.14.13 Connection_material

AIM element: connection_material_definition

Source: 227

Reference path connection_material_definition <=
product_definition

5.1.14.13.1 material_name

AIM element: material_designation.name

Source: 45

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Reference path: connection_material_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
shape_aspect =>
plant_item_connection <=
shape_aspect_relationship
shape_aspect_relationship
shape_definition = shape_aspect_relationship
shape_definition
characterized_definition = shape_definition
characterized_definition <-
material_designation.definitions[i]
material_designation
material_designation.name

5.1.14.14 Design_project

AIM element: design_project

Source: 227

Reference path: design_project <=
organization

5.1.14.14.1 description

AIM element: organization.description

Source: 41

Reference path: design_project <=
organization
organization.description

5.1.14.14.2 design_project_id

AIM element: organization.id

Source: 41

Reference path: design_project <=
organization
organization.id

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5.1.14.14.3 name

AIM element: organization.name

Source: 41

Reference path: design_project <=
organization
organization.name

5.1.14.14.4 owner

AIM element: organization.name

Source: 41

Reference path: design_project
plant_spatial_configuration_organization_item = design_project
plant_spatial_configuration_organization_item <-
plant_spatial_configuration_organization_assignment.items[i]
plant_spatial_configuration_organization_assignment <=
{organization_assignment
organization_assignment.role ->
organization_role
organization_role.name = 'project owner'}
organization_assignment
organization_assignment.assigned_organization ->
organization
organization.name

5.1.14.14.5 design_project to project_design_assignment

AIM element: PATH

Reference path: design_project <=
organization <-
organization_assignment.assigned_organization
organization_assignment =>
design_project_assignment

5.1.14.15 Document

AIM element: document

Source: 41

Reference path

5.1.14.15.1 document_id

AIM element: document.id

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Source: 41

Reference path: document
document.id

5.1.14.15.2 version_id

AIM element: identification_assignment.assigned_id

Source: 41

Reference path: document
identification_item = document
identification_item <-
applied_identification_assignment.items[i]
applied_identification_assignment <=
identification_assignment
{identification_assignment.role ->
identification_role
identification_role.name = 'document version id'}
identification_assignment.assigned_id

5.1.14.15.3 document_type

AIM element: document_type.product_data_type

Source: 41

Reference path: document
document.kind ->
document_type
document_type.product_data_type

5.1.14.15.4 internal_document_reference

AIM element: [document_usage_constraint.subject_element]
[document_usage_constraint.subject_element_value]

Source: 41

Reference path: document <-
document_usage_constraint.source
document_usage_constraint
[document_usage_constraint.subject_element]
[document_usage_constraint.subject_element_value]

5.1.14.15.5 document to plant_item

#1: The whole document is associated with the plant_item

#2: Part of the document is associated with the plant_item

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AIM element: PATH

Reference path: document
#1: (document <-
document_usage_constraint.source
document_usage_constraint <-
document_usage_constraint_assignment.assigned_document_usage
document_usage_constraint_assignment =>
applied_document_usage_constraint_assignment
applied_document_usage_constraint_assignment.items[i] ->
document_usage_constraint_item=
(product_definition)
(externally_defined_plant_item_definition)
(product))
#2: (document <-
document_reference.assigned_document
document_reference =>
applied_document_reference
applied_document_reference.items[i] ->
document_item =
(product_definition)
(externally_defined_plant_item_definition)
(product))

5.1.14.15.6 document to plant_item_connector

#1: The whole document is associated with the plant_item_connector

#2: Part of the document is associated with the plant_item_connector

AIM element: PATH

Reference path: document
#1: (document <-
document_usage_constraint.source
document_usage_constraint <-
document_usage_constraint_assignment.assigned_document_usage
document_usage_constraint_assignment =>
applied_document_usage_constraint_assignment
applied_document_usage_constraint_assignment.items[i] ->
document_usage_constraint_item =
plant_item_connector)
#2: (document <-
document_reference.assigned_document
document_reference =>
applied_document_reference
applied_document_reference.items[i] ->
document_item =
plant_item_connector)

5.1.14.16 Ducting_component

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AIM element: product

Source: 41

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: {[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
group
group.name = 'ducting component']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']}

5.1.14.17 Electrical_component

AIM element: product

Source: 41

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: {[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
group
group.name = 'electrical component']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']}

5.1.14.18 Equipment

AIM element: product

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Source: 41

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: {[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
group
group.name = 'equipment']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']}

5.1.14.18.1 equipment_characteristics

AIM element: ([representation_item.name]
[(descriptive_representation_item.description)
([measure_with_unit.value_component]
[measure_with_unit.unit_component])])

([representation_item.name]
[(descriptive_representation_item.description)
([measure_with_unit.value_component]
[measure_with_unit.unit_component])]
[document_usage_constraint.subject_element_value])

Source: 41, 43, 45

Reference path: product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
{property_definition
property_definition.name = 'general characteristics'}
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->

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representation
representation.items[i] ->
[representation_item
representation_item.name]
[representation_item =>
(descriptive_representation_item
descriptive_representation_item.description)
(measure_representation_item <=
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component])]
[(representation_item)
(representation_item
document_item = representation_item
document_item <-
applied_document_reference.items[i]
applied_document_reference <=
document_reference
document_reference.assigned_document ->
document <-
document_usage_constraint.source
document_usage_constraint
document_usage_constraint.subject_element_value)]

5.1.14.18.2 equipment_type

AIM element: group.name

Source: 41

Reference path: product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
{classification_assignment
classification_assignment.role ->
classification_role
classification_role.name = 'equipment type classification'}
classification_assignment
classification_assignment.assigned_classification ->
group
group.name

5.1.14.18.3 heat_tracing_type

AIM element: (heat_tracing_representation)
([heat_tracing_representation]
[document_usage_constraint.subject_element_value])

Source: 227

Reference path: product <-

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product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation =>
(heat_tracing_representation)
([heat_tracing_representation]
[heat_tracing_representation
document_item = heat_tracing_representation
document_item <-
applied_document_reference.items[i]
applied_document_reference <=
document_reference
document_reference.assigned_document ->
document <-
document_usage_constraint.source
document_usage_constraint
document_usage_constraint.subject_element_value])
41

5.1.14.18.4 insulation_specification

AIM element: document_usage_constraint.subject_element_value

Source: 41

Reference path: product
document_item = product
document_item <-
applied_document_reference.items[i]
applied_document_reference <=
document_reference
document_reference.assigned_document ->
document <-
document_usage_constraint.source
document_usage_constraint
document_usage_constraint.subject_element_value

5.1.14.18.5 rated_temperature

AIM element: [measure_with_unit.value_component]

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[measure_with_unit.unit_component]

Source: 41

Reference path: product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition <-
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.using_representation ->
representation
{representation.name = 'equipment characteristics'}
(representation.items[i] ->
{representation_item
(representation_item.name = 'rated temperature')
(representation_item.name = 'maximum rated temperature')
(representation_item.name = 'minimum rated temperature')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum rated temperature'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum rated temperature'}])
representation_item =>
measure_representation_item <=
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.14.18.6 shock_qualification_status

AIM element: descriptive_representation_item.description

Source: 45

Reference path: product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-

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property_definition.definition
property_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.using_representation ->
representation
{representation.name = 'equipment characteristics'}
representation.items[i] ->
representation_item
{representation_item.name = 'shock qualification status')
representation_item =>
descriptive_representation_item
descriptive_representation_item.description

5.1.14.18.7 vibration_amplitude

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition <-
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.using_representation ->
representation
{representation.name = 'equipment characteristics'}
(representation.items[i] ->
{representation_item
(representation_item.name = 'vibration amplitude')
(representation_item.name = 'maximum vibration amplitude')
(representation_item.name = 'minimum vibration amplitude')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum vibration amplitude'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum vibration amplitude'}])
representation_item =>
measure_representation_item <=
measure_with_unit

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[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.14.18.8 vibration_frequency

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition <-
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.using_representation ->
representation
{representation.name = 'equipment characteristics'}
(representation.items[i] ->
{representation_item
(representation_item.name = 'vibration frequency')
(representation_item.name = 'maximum vibration frequency')
(representation_item.name = 'minimum vibration frequency')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum vibration frequency'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum vibration frequency'}])
representation_item =>
measure_representation_item <=
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.14.18.9 equipment to equipment_trim_piping

AIM element: PATH

Reference path: product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation

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product_definition <-
product_definition_relationship.relating_product_definition
product_definition_relationship
{product_definition_relationship
product_definition_relationship.name = 'trim piping'}

5.1.14.18.10 equipment to supplied_equipment

AIM element: IDENTICAL MAPPING

5.1.14.19 Equipment_breaching

AIM element: product

Source: 41

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: {[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group
group.name = 'equipment breaching']
[group <-
group_relationship.related_group
{group_relationship
group_relationship.name = 'usage classification'}
group_relationship
group_relationship.relating_group ->
group
group.name = 'ducting component']]
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']}

5.1.14.20 Equipment_trim_piping

AIM element: product_definition_relationship

Source: 41

Reference path: {product_definition_relationship
[product_definition_relationship.relating_product_definition ->
product_definition
product_definition.formation ->

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product_definition_formation
product_definition_formation.of_product ->
product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
group
group.name = 'equipment']
[product_definition_relationship.related_product_definition ->
product_definition =>
piping_component_definition]
[product_definition_relationship.name = 'trim piping']}

5.1.14.21 Externally_defined_document

AIM element: externally_defined_document

Source: 227

Reference path: externally_defined_document <=
[document]
[externally_defined_item]

5.1.14.21.1 source_id

AIM element: external_source.source_id

Source: 41

Reference path: externally_defined_document <=
externally_defined_item
externally_defined_item.source ->
external_source
external_source.source_id

5.1.14.21.2 source_description

AIM element: description_attribute.attribute_value

Source: 41

Reference path: externally_defined_document <=
externally_defined_item
externally_defined_item.source ->
external_source
description_attribute_select = external_source
description_attribute_select <-
description_attribute.described_item
description_attribute

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description_attribute.attribute_value

5.1.14.22 Externally_defined_user_defined_attribute_value

AIM element: externally_defined_representation_item

Source: 227

Reference path: externally_defined_representation <=
[representation_item]
[externally_defined_item]

5.1.14.22.1 source

AIM element: external_source.name

Source: 41

Reference path: externally_defined_representation_item <=
externally_defined_item
externally_defined_item.source ->
external_source
external_source.name

5.1.14.23 Functional_design_view

AIM element: (product_definition)
(externally_defined_plant_item_definition)

Source: 41, 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: (product_definition)
(externally_defined_plant_item_definition <=
[externally_defined_item]
[product_definition])
{product_definition
[product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']
[product_definition.frame_of_reference ->
[product_definition_context <=
application_context_element
(application_context_element.name = 'functional definition')
(application_context_element.name = 'functional occurrence')]

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[product_definition_context
product_definition_context.life_cycle_stage = 'functional design']]}

5.1.14.23.1 tag_number

AIM element: product_definition.id

Source: 41

Reference path: (product_definition)
(externally_defined_plant_item_definition <=
product_definition)
{product_definition
product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
application_context_element.name = 'functional occurrence'}
product_definition.id

5.1.14.23.2 functional_design_view to functional_plant_item_satisfaction

AIM element: PATH

Reference path: (product_definition <-)
(externally_defined_plant_item_definition <=
product_definition <-)
product_definition_relationship.relating_product_definition
product_definition_relationship
{product_definition_relationship
product_definition_relationship.name = 'plant item satisfaction'}

5.1.14.24 Functional_plant_item_satisfaction

AIM element: product_definition_relationship

Source: 41

Reference path: {product_definition_relationship
product_definition_relationship.name = 'plant item satisfaction'}

5.1.14.25 Hexagon_head_bolt

AIM element: bolt_and_nut_component_definition

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: bolt_and_nut_component_definition <=
product_definition

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```
{bolt_and_nut_component_definition
classification_item = piping_support_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
bolt_and_nut_component_class]
[group
group.name = 'hexagon head bolt']
[group <-
group_relationship.related_group
group_relationship
{group_relationship.name = 'class hierarchy'}
group_relationship.relating_group ->
group
{[group.name = 'bolt']
[group =>
bolt_and_nut_component_class]}}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'bolt and nut component']
[product
product.frame_of_reference[i] ->
product_context <=
application_context_element
application_context_element.name = 'plant item']})
```

5.1.14.25.1 length

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_mandatory_shape_representation

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Reference path: bolt_and_nut_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'hexagon head bolt dimensional shape'}
representation
representation.items[i] ->
representation_item =>
{representation_item.name = 'length'}
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.14.26 Hierarchically_organized_collection

AIM element: assembly_component_usage

Source: 44

Reference path: {assembly_component_usage <=
product_definition_usage <=
product_definition_relationship
(product_definition_relationship.name = 'hierarchical collection')
(product_definition_relationship.name = 'connected hierarchical collection')}

5.1.14.27 Installed_physical_design_view

AIM element: (product_definition)
(externally_defined_plant_item_definition)

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Source: 41, 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: (product_definition)
(externally_defined_plant_item_definition <=
[externally_defined_item]
[product_definition])
{product_definition
[product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']
[product_definition.description = 'installed']
[product_definition.frame_of_reference ->
[product_definition_context <=
application_context_element
application_context_element.name = 'physical occurrence']
[product_definition_context
product_definition_context.life_cycle_stage = 'physical design']]}

5.1.14.27.1 serial_number

AIM element: product_definition.id

Source: 41

Reference path: (product_definition)
(externally_defined_plant_item_definition <=
product_definition)
product_definition.id

5.1.14.28 Instrument

AIM element: product

Source: 41

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: {[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=

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classification_assignment
classification_assignment.assigned_classification ->
[group
group.name = 'instrument']
[group <-
group_relationship.related_group
{group_relationship
group_relationship.name = 'usage classification'}
group_relationship
group_relationship.relating_group ->
group
group.name = 'instrumentation and control component']]
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']
[product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition <-
product_definition_relationship.related_product_definition
{product_definition_relationship
product_definition_relationship.name = 'control loop element'}
product_definition_relationship
product_definition_relationship.relating_product_definition ->
product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
group
group.name = 'control loop']}

5.1.14.28.1 control_loop_id

AIM element: product.id

Source: 41

Reference path: product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition <-
product_definition_relationship.related_product_definition
{product_definition_relationship

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product_definition_relationship.name = 'control loop element'}
product_definition_relationship
product_definition_relationship.relating_product_definition ->
product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.id

5.1.14.28.2 instrument_type

AIM element: group.name

Source: 41

Reference path: product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
{classification_assignment
classification_assignment.role ->
classification_role
classification_role.name = 'instrument type classification'}
classification_assignment
classification_assignment.assigned_classification ->
group
group.name

5.1.14.28.3 sensor_type

AIM element: descriptive_representation_item.description

Source: 45

Reference path: product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation

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representation.items[i] ->
{representation_item
representation_item.name = 'sensor type'}
representation_item =>
descriptive_representation_item
descriptive_representation_item.description

5.1.14.28.4 signal_type

AIM element: descriptive_representation_item.description

Source: 45

Reference path: product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
{representation_item
representation_item.name = 'signal type'}
representation_item =>
descriptive_representation_item
descriptive_representation_item.description

5.1.14.28.5 stream_interaction_type

AIM element: descriptive_representation_item.description

Source: 45

Reference path: product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition

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property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
{representation_item
representation_item.name = 'stream interaction type'}
representation_item =>
descriptive_representation_item
descriptive_representation_item.description

5.1.14.29 Instrumentation_and_control_component

AIM element: product

Source: 41

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: {[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
group
group.name = 'instrumentation and control component']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']}

5.1.14.30 Insulation

AIM element: product

Source: 41

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: {[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]

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applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
group
group.name = 'insulation']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element

5.1.14.31 Material_specification_selection

AIM element: [material_property]
[document]

Source: 41, 45

Reference path: {document
document.kind ->
document_type
document_type.product_data_type = 'material specification'}

5.1.14.31.1 description

AIM element: property_definition.description

Source: 41

Reference path: material_property <=
property_definition
property_definition.description

5.1.14.31.2 material_specification_id

AIM element: document.id

Source: 41

5.1.14.31.3 required_or_optional

AIM element: group.name

Source: 41

Reference path: document <-
document_reference.assigned_document
document_reference =>
applied_document_reference
classification_item = applied_document_reference
classification_item <-
applied_classification_assignment.items[i]applied_classification_assignment <=
classification_ssignment

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classification_ssignment.assigned__classification>
group
{(group.name = 'required')
(group.name = 'optional')}

5.1.14.31.4 selection_id

AIM element: document_usage_constraint.subject_element

Source: 41

Reference path: document <-
document_usage_constraint.source
document_usage_constraint
document_usage_constraint.subject_element

5.1.14.31.5 type

AIM element: document_usage_constraint.subject_element_value

Source: 41

Reference path: document <-
document_usage_constraint.source
document_usage_constraint
document_usage_constraint.subject_element_value

5.1.14.31.6 material_specification_selection to material_specification_-subset_reference

AIM element: PATH

Reference path: document <-
document_relationship.relating_document
document_relationship
{document_relationship
document_relationship.description = 'subset'}

5.1.14.32 Material_specification_subset_reference

AIM element: document_relationship

Source: 41

Reference path: {document_relationship
document_relationship.description = 'subset'}

5.1.14.32.1 subset_id

AIM element: document_relationship.name

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Source: 41

5.1.14.33 Nozzle

AIM element: product

Source: 41

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: {[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
group
group.name = 'nozzle']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']}

5.1.14.34 Nut

AIM element: bolt_and_nut_component_definition

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: bolt_and_nut_component_definition <=
product_definition
{bolt_and_nut_component_definition
classification_item = piping_support_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
bolt_and_nut_component_class]
[group
group.name = 'nut']}
{product_definition
product_definition.formation ->
product_definition_formation

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product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'bolt and nut component']
[product
product.frame_of_reference[i] ->
product_context <=
application_context_element
application_context_element.name = 'plant item']})

5.1.14.34.1 nut_type

AIM element: group.name

Source: 41

Reference path: bolt_and_nut_component_definition
classification_item = piping_support_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
group <-
{[group =>
bolt_and_nut_component_class]
[group
group.name = 'nut']}
group_relationship.relating_group
group_relationship
{group_relationship.name = 'class hierarchy'}
group_relationship.related_group ->
group
{group =>
bolt_and_nut_component_class}
group.name

5.1.14.35 Offline_instrument

AIM element: product

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Source: 41

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: {[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group
group.name = 'offline instrument']
[group <-
group_relationship.related_group
{group_relationship
group_relationship.name = 'usage classification'}
group_relationship
group_relationship.relating_group ->
group
group.name = 'instrument']]
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']}

5.1.14.36 Physical_design_view

AIM element: (product_definition)
(externally_defined_plant_item_definition)

Source: 41, 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: (product_definition)
(externally_defined_plant_item_definition <=
[externally_defined_item]
[product_definition])
{product_definition
[product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']
[product_definition.frame_of_reference ->

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[product_definition_context <=
application_context_element
(application_context_element.name = 'physical definition')
(application_context_element.name = 'physical occurrence')]
[product_definition_context
product_definition_context.life_cycle_stage = 'physical design']]}

5.1.14.36.1 physical_design_view to functional_plant_item_satisfaction

AIM element: PATH

Reference path: (product_definition <-)
(externally_defined_plant_item_definition <=
product_definition <-)
product_definition_relationship.related_product_definition
product_definition_relationship
{product_definition_relationship
product_definition_relationship.name = 'plant item satisfaction'}

5.1.14.36.2 physical_design_view to installed_physical_design_view

5.1.14.37 Piping_assembly

AIM element: product_definition

Source: 41

Reference path: {product_definition
product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
application_context_element.name = 'fabrication assembly'}

5.1.14.37.1 piping_assembly_number

AIM element: product_definition.id

Source: 41

5.1.14.37.2 piping_assembly to piping_assembly_assignment

AIM element: PATH

Reference path: product_definition <-
product_definition_relationship.relating_product_definition
product_definition_relationship =>
product_definition_usage

5.1.14.38 Piping_assembly_assignment

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AIM element: product_definition_usage

Source: 44

Reference path: {product_definition_usage <=
product_definition_relationship
[product_definition_relationship.relating_product_definition ->
product_definition
product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
application_context_element.name = 'fabrication assembly']
[product_definition_relationship.related_product_definition ->
{(product_definition)
(product_definition =>
externally_defined_plant_item_definition}
product_definition
product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
(application_context_element.name = 'functional occurrence')
(application_context_element.name = 'physical occurrence')]}

5.1.14.39 Piping_system_component

AIM element: piping_component_definition

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: piping_component_definition <=
product_definition
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item'}

5.1.14.39.1 coating_reference

AIM element: descriptive_representation_item.description

Source: 45

Reference path: piping_component_definition <=
product_definition

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characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'system coating and lining'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'coating'}
representation_item =>
descriptive_representation_item
descriptive_representation_item.description

5.1.14.39.2 corrosion_allowance

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'system coating and lining'}
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'corrosion allowance')
(representation_item.name = 'maximum corrosion allowance')
(representation_item.name = 'minimum corrosion allowance')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum corrosion allowance'}]
[representation.items[i] ->
{representation_item

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representation_item.name = 'minimum corrosion allowance'}])
representation_item =>
measure_representation_item <=
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.14.39.3 heat_tracing_type

AIM element: (heat_tracing_representation)
([heat_tracing_representation]
[document_usage_constraint.subject_element_value])

Source: 227

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation =>
(heat_tracing_representation)
([heat_tracing_representation]
[heat_tracing_representation
document_item = heat_tracing_representation
document_item <-
applied_document_reference.items[i]
applied_document_reference <=
document_reference
document_reference.assigned_document ->
document <-
document_usage_constraint.source
document_usage_constraint
document_usage_constraint.subject_element_value])
41

5.1.14.39.4 lining

AIM element: descriptive_representation_item.description

Source: 45

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition

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characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
representation.name = 'system coating and lining'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'lining'}
representation_item =>
descriptive_representation_item
descriptive_representation_item.description

5.1.14.39.5 piping_system_component to equipment_trim_piping

AIM element: PATH

Reference path: piping_component_definition <=
product_definition <-
product_definition_relationship.related_product_definition
{product_definition_relationship
product_definition_relationship.name = 'trim piping'}
product_definition_relationship

5.1.14.39.6 piping_system_component to line_piping_system_component_-assignment

AIM element: PATH

Reference path: piping_component_definition <=
product_definition <-
product_definition_relationship.related_product_definition
{product_definition_relationship
product_definition_relationship.name = 'realization'}
product_definition_relationship

5.1.14.39.7 piping_system_component to piping_size_description

AIM element: PATH

Rules: subtype_mandatory_shape_representation

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition

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characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
{property_definition =>
product_definition_shape}
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
{property_definition_representation =>
shape_definition_representation}
property_definition_representation
property_definition_representation.used_representation ->
representation =>
shape_representation =>
shape_dimension_representation

5.1.14.40 Plain_washer

AIM element: bolt_and_nut_component_definition

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: bolt_and_nut_component_definition <=
product_definition
{bolt_and_nut_component_definition
classification_item = piping_support_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
bolt_and_nut_component_class]
[group
group.name = 'plain washer']
[group <-
group_relationship.related_group
group_relationship
{group_relationship.name = 'class hierarchy'}
group_relationship.relating_group ->
group
{[group.name = 'washer']
[group =>
bolt_and_nut_component_class]}}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->

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[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'bolt and nut component']
[product
product.frame_of_reference[i] ->
product_context <=
application_context_element
application_context_element.name = 'plant item']})

5.1.14.40.1 thickness

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_mandatory_shape_representation

Reference path: bolt_and_nut_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'plain washer dimensional shape'}

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representation
representation.items[i] ->
representation_item =>
{representation_item.name = 'thickness'}
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.14.40.2 outside_diameter

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_mandatory_shape_representation

Reference path: bolt_and_nut_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'plain washer dimensional shape'}
representation
representation.items[i] ->
representation_item =>
{representation_item.name = 'outside diameter'}
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit

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[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.14.41 Planned_physical_plant_item

AIM element: (product_definition)
(externally_defined_plant_item_definition)

Source: 41, 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: (product_definition)
(externally_defined_plant_item_definition <=
[product_definition]
[externally_defined_item])
{product_definition
[product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']
[product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
(application_context_element.name = 'functional occurrence')
(application_context_element.name = 'physical occurrence')]}

5.1.14.41.1 stock_code

AIM element: identification_assignment.assigned_id

Source: 41

Reference path: (product_definition)
(externally_defined_plant_item_definition <=
[product_definition]
[externally_defined_item])
product_definition
identified_item = product_definition
identification_assignment.items[i] ->
{identification_assignment
identification_assignment.role ->
identification_role
identification_role.name = 'stock code'}
identification_assignment
identification_assignment.assigned_id

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5.1.14.41.2 global_unambiguous_identifier

AIM element: identification_assignment.assigned_id

Source: 41

Reference path: (product_definition)
(externally_defined_plant_item_definition <=
[product_definition]
[externally_defined_item])
product_definition
identified_item = product_definition
identification_assignment.items[i] ->
{identification_assignment
identification_assignment.role ->
identification_role
identification_role.name = 'global unambiguous identifier'}
identification_assignment
identification_assignment.assigned_id

5.1.14.41.3 planned_physical_plant_item to plant_item_connector_-occurrence

AIM element: PATH

Reference path: (product_definition)
(externally_defined_plant_item_definition <=
product_definition)
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
shape_aspect =>
plant_item_connector

5.1.14.41.4 planned_physical_plant_item to piping_spool_assignment

AIM element: PATH

Reference path: (product_definition <-)
(externally_defined_plant_item_definition <=
product_definition <-)
product_definition_relationship.related_product_definition
product_definition_relationship =>
product_definition_usage

5.1.14.41.5 planned_physical_plant_item to support_usage (supported by)

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AIM element: PATH

Reference path: (product_definition <-)
(externally_defined_plant_item_definition <=
product_definition <-)
product_definition_relationship.related_product_definition
{product_definition_relationship
(product_definition_relationship.name = 'support usage')
(product_definition_relationship.name = 'support usage connection')}
product_definition_relationship

5.1.14.41.6 planned_physical_plant_item to support_usage (supports)

AIM element: PATH

Reference path: (product_definition <-)
(externally_defined_plant_item_definition <=
product_definition <-)
product_definition_relationship.relating_product_definition
{product_definition_relationship
(product_definition_relationship.name = 'support usage')
(product_definition_relationship.name = 'support usage connection')}
product_definition_relationship

5.1.14.42 Plant_item

AIM element: (product_definition)
(externally_defined_plant_item_definition)
(product)

Source: 41, 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: (product_definition)
(externally_defined_plant_item_definition <=
[product_definition]
[externally_defined_item])
(product)
{(product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product)
(product)
product.frame_of_reference[i] ->
[product_context
product_context.discipline_type = 'process plant']
[product_context <=
application_context_element
application_context_element.name = 'plant item']}

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{(product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition)
(product_definition)
product_definition.frame_of_reference ->
product_definition_context
(product_definition_context.life_cycle_stage = 'physical design')
(product_definition_context.life_cycle_stage = 'functional design')}

5.1.14.42.1 description

AIM element: product.description

Source: 41

Reference path: (product_definition)
(externally_defined_plant_item_definition <=
product_definition)
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.description

5.1.14.42.2 name

AIM element: product.name

Source: 41

Reference path: (product_definition)
(externally_defined_plant_item_definition <=
product_definition)
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.name

5.1.14.42.3 plant_item_id

AIM element: product.id

Source: 41

Reference path: (product_definition)
(externally_defined_plant_item_definition <=
product_definition)
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->

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product
product.id

5.1.14.42.4 status

AIM element: group.name

Source: 41

Reference path: (product_definition)
(externally_defined_plant_item_definition <= product_definition)
classification_item = product_definition
classification_item <- applied_classification_assignment.items[i]
applied_classification_assignment <= {classification_assignment
classification_assignment.role -> group_role
group_role.name = 'plant item status'}
classification_assignment
classification_assignment.assigned_classification -> group
group.name

5.1.14.42.5 type

AIM element: group.name

Source: 41

Reference path: (product_definition)
(externally_defined_plant_item_definition <= product_definition)
product_definition.formation -> product_definition_formation
product_definition_formation.of_product -> product classification_item = product
classification_item <- applied_classification_assignment.items[i]
applied_classification_assignment <= {classification_assignment
classification_assignment.role -> classification_role
classification_role.name = 'plant item type classification'}
classification_assignment
classification_assignment.assigned_classification -> group
group.name

5.1.14.42.6 plant_item to changed_plant_item

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AIM element: IDENTICAL MAPPING

5.1.14.42.7 plant_item to external_classification

AIM element: PATH

Reference path: (product_definition)
(externally_defined_plant_item_definition <=
product_definition)
classification_item = product_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
group =>
externally_defined_class

5.1.14.42.8 plant_item to insulation

AIM element: PATH

Reference path: (product_definition <-)
(externally_defined_plant_item_definition <=
product_definition <-)
(product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition <-)
product_definition_relationship.relating_product_definition
{product_definition_relationship
product_definition_relationship.name = 'item insulation'}
product_definition_relationship
product_definition_relationship.related_product_definition ->
product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
{product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
group
group.name = 'insulation'}

5.1.14.42.9 plant_item to plant_item_collection (element)

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AIM element: PATH

Reference path: (product_definition <-)
(externally_defined_plant_item_definition <=
product_definition <-)
(product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition <-)
product_definition_relationship.related_product_definition
product_definition_relationship

5.1.14.42.10 plant_item to plant_item_collection (group)

AIM element: PATH

Reference path: (product_definition <-)
(externally_defined_plant_item_definition <=
product_definition <-)
(product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition <-)
product_definition_relationship.relating_product_definition
product_definition_relationship

5.1.14.42.11 plant_item to plant_item_design_view

AIM element: (IDENTICAL MAPPING)
(PATH)

Source:

Reference path: product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
(product_definition)
(product_definition =>
externally_defined_plant_item_definition)

5.1.14.42.12 plant_item to plant_item_shape

AIM element: PATH

Reference path: (product_definition)
(externally_defined_plant_item_definition <=
product_definition)
(product <-
product_definition_formation.of_product
product_definition_formation <-

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product_definition.formation
product_definition)
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape

5.1.14.42.13 plant_item to plant_item_weight

AIM element: PATH

Reference path: (product_definition)
(externally_defined_plant_item_definition <=
product_definition)
(product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition)
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation =>
plant_item_weight_representation

5.1.14.42.14 plant_item to reference_geometry

AIM element: PATH

Reference path: (product_definition)
(externally_defined_plant_item_definition <=
product_definition)
(product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition)
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-

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shape_aspect.of_shape
shape_aspect =>
derived_shape_aspect =>
reference_geometry

5.1.14.42.15 plant_item to required_material_description

#1: The quantity is not known or not yet specified.

#2: The quantity is known.

AIM element: PATH

Reference path: (product_definition <-)
(externally_defined_plant_item_definition <=
product_definition <-)
(product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition <-)
product_definition_relationship.relating_product_definition
{product_definition_relationship =>
#1: (product_definition_usage)
#2: (product_definition_usage =>
make_from_usage_option)}
product_definition_relationship
product_definition_relationship.related_product_definition ->
product_definition

5.1.14.42.16 plant_item to spare_plant_item_usage (as primary)

AIM element: PATH

Reference path: (product_definition <-)
(externally_defined_plant_item_definition <=
product_definition <-)
(product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition <-)
product_definition_relationship.related_product_definition
product_definition_relationship
{product_definition_relationship
product_definition_relationship.name = 'spare plant item usage'}

5.1.14.42.17 plant_item to spare_plant_item_usage (as spare)

AIM element: PATH

Reference path: (product_definition <-)
(externally_defined_plant_item_definition <=

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product_definition <-)
(product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition <-)
product_definition_relationship.related_product_definition
product_definition_relationship
{product_definition_relationship
product_definition_relationship.name = 'spare plant item usage'}

5.1.14.42.18 plant_item to analysis_data_point

AIM element: PATH

Reference path: (product_definition)
(externally_defined_plant_item_definition <=
product_definition)
(product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition)
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
shape_aspect
{shape_aspect.description = 'analysis data point'}

5.1.14.43 Plant_item_collection

AIM element: product_definition_relationship

Source: 41

Reference path: {product_definition_relationship
[product_definition_relationship.relating_product_definition ->]
[product_definition_relationship.related_product_definition ->]
(product_definition)
(product_definition =>
externally_defined_plant_item_definition)}

5.1.14.43.1 location_and_orientation

AIM element: (axis2_placement_2d)
(axis2_placement_3d)

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Source: 42

Reference path: product_definition_relationship
characterized_product_definition = product_definition_relationship
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
representation_item =>
geometric_representation_item =>
placement =>
(axis2_placement_2d)
(axis2_placement_3d)

5.1.14.43.2 usage_type

AIM element: product_definition_relationship.name

Source: 41

5.1.14.43.3 plant_item_collection to changed_plant_item_collection

AIM element: IDENTICAL MAPPING

5.1.14.44 Plant_item_definition

AIM element: (product_definition)
(externally_defined_plant_item_definition)

Source: 41, 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: (product_definition)
(externally_defined_plant_item_definition <=
[product_definition]
[externally_defined_item])
{product_definition
[product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->

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product_context<=
application_context_element
application_context_element.name = 'plant item']
[product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
(application_context_element.name = 'functional definition')
(application_context_element.name = 'physical definition')]}

5.1.14.44.1 plant_item_definition to catalogue_item (is defined as)

#1: Instances of the definition use the same catalogue item.

#2: Instances of the definition use different catalogue items.

AIM element: PATH

Reference path: (product_definition <-)
(externally_defined_plant_item_definition <=
product_definition <-)
#1: (product_definition_relationship.related_product_definition
{product_definition_relationship
product_definition_relationship.name = 'catalogue usage'}
product_definition_relationship
product_definition_relationship.relating_product_definition ->)
#2: (product_definition_relationship.relating_product_definition
{product_definition_relationship
product_definition_relationship.name = 'definition usage'}
product_definition_relationship
product_definition_relationship.related_product_definition ->
{product_definition
product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
(application_context_element.name = 'physical occurrence')
(application_context_element.name = 'functional occurrence')}
(product_definition <-)
({product_definition =>
externally_defined_plant_item_definition}
product_definition <-)
product_definition_relationship.related_product_definition
{product_definition_relationship
product_definition_relationship.name = 'catalogue usage'}
product_definition_relationship
product_definition_relationship.relating_product_definition ->)
product_definition =>
externally_defined_plant_item_definition =>
catalogue_item

5.1.14.44.2 plant_item_definition to connector_definition

AIM element: PATH

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Reference path: (product_definition)
(externally_defined_plant_item_definition <=
product_definition)
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
shape_aspect =>
plant_item_connector

5.1.14.44.3 plant_item_definition to planned_physical_plant_item

#1: The definition is physical.

#2: The definition is functional.

AIM element: PATH

Rules: application_context_requires_ap_definition
dependent_instantiable_application_context
dependent_instantiable_product_definition_context
product_definition_context_name_constraint
product_definition_usage_constraint

Reference path: #1: ((product_definition <-)
(externally_defined_plant_item_definition <=
product_definition <-)
{product_definition
product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
application_context_element.name = 'physical definition'}
product_definition_relationship.relating_product_definition
{product_definition_relationship
product_definition_relationship.name = 'definition usage'}
product_definition_relationship
product_definition_relationship.related_product_definition ->
{product_definition
product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
application_context_element.name = 'physical occurrence'}
(product_definition)
(product_definition =>
externally_defined_plant_item_definition))
#2: ((product_definition <-)
(externally_defined_plant_item_definition <=
product_definition <-)
{product_definition
product_definition.frame_of_reference ->

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product_definition_context <=
application_context_element
application_context_element.name = 'functional definition'}
product_definition_relationship.relating_product_definition
{product_definition_relationship
product_definition_relationship.name = 'definition usage'}
product_definition_relationship
product_definition_relationship.related_product_definition ->
{product_definition
product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
application_context_element.name = 'functional occurrence'}
(product_definition)
(product_definition =>
externally_defined_plant_item_definition))

5.1.14.45 Plant_item_design_view

AIM element: (product_definition)
(externally_defined_plant_item_definition)

Source: 41, 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: (product_definition)
(externally_defined_plant_item_definition <=
[externally_defined_item]
[product_definition])
{product_definition
[product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']
[product_definition.frame_of_reference ->
[product_definition_context <=
application_context_element
(application_context_element.name = 'functional definition')
(application_context_element.name = 'functional occurrence')
(application_context_element.name = 'physical definition')
(application_context_element.name = 'physical occurrence')]
[product_definition_context
(product_definition_context.life_cycle_stage = 'physical design')
(product_definition_context.life_cycle_stage = 'functional design')]]}

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5.1.14.46 Plant_item_instance

AIM element: (product_definition)
(externally_defined_plant_item_definition)

Source: 41, 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: (product_defintion)
(externally_defined_plant_item_definition <=
[product_definition]
[externally_defined_item])
{product_definition
[product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']
[product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
(application_context_element.name = 'functional occurrence')
(application_context_element.name = 'physical occurrence')]}

5.1.14.46.1 plant_item_instance to plant_item_interference (first item)

AIM element: PATH

Reference path: (product_definition <-)
(externally_defined_plant_item_definition <=
product_definition <-)
product_definition_relationship.relating_product_definition
product_definition_relationship =>
plant_item_interference

5.1.14.46.2 plant_item_instance to plant_item_interference(second item)

AIM element: PATH

Reference path: (product_definition <-)
(externally_defined_plant_item_definition <=
product_definition <-)
product_definition_relationship.related_product_definition
product_definition_relationship =>
plant_item_interference

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5.1.14.46.3 plant_item_instance to plant_item_location

#1: The plant item is placed relative to another plant item.

#2a: The plant item is placed in a building, plant, or site.

#2b: The plant item is defined in the coordinate space of a building, plant, or site.

AIM element: PATH

Rules: subtype_mandatory_shape_representation

Reference path:

```
(product_definition)
(externally_defined_plant_item_definition <=
product_definition)
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
{property_definition =>
product_definition_shape}
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
{property_definition_representation =>
shape_definition_representation}
property_definition_representation
property_definition_representation.used_representation ->
{representation =>
shape_representation}
#1: (representation <-
representation_map.mapped_representation
representation_map <-
mapped_item.mapping_source
mapped_item
{mapped_item <=
representation_item
representation_item.name = 'relative item location'})
#2a: (
representation
representation.items[i] ->
{representation_item
representation_item.name = 'placed shape'}
representation_item =>
mapped_item
mapped_item.mapping_target ->
representation_item =>
geometric_representation_item =>
placement =>
(axis2_placement_2d)
(axis2_placement_3d))
#2b: (
```


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representation
representation.items[i] ->
representation_item =>
geometric_representation_item =>
placement =>
(axis2_placement_2d)
(axis2_placement_3d))

5.1.14.46.4 plant_item_instance to project_design_assignment

AIM element: PATH

Reference path: (product_definition)
(externally_defined_plant_item_definition <=
product_definition)
design_project_item = product_definition
design_project_item <-
design_project_assignment.items[i]
design_project_assignment

5.1.14.46.5 plant_item_instance to relative_item_location

AIM element: PATH

Reference path: (product_definition)
(externally_defined_plant_item_definition <=
product_definition)
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
{property_definition =>
product_definition_shape}
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
{representation_item =>
geometric_representation_item =>
placement =>
(axis2_placement_2d)
(axis2_placement_3d)}
representation_item <-
mapped_item.mapping_target
mapped_item
{mapped_item <=
representation_item

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representation_item.name = 'relative item location'}

5.1.14.47 Plant_item_location

#1: The plant item is placed relative to another plant item.

#2: The plant item is placed in a building, plant, or site.

AIM element: #1: (mapped_item)
#2: ((axis2_placement_2d)
(axis2_placement_3d))

Source: 43, 42

5.1.14.47.1 location_and_orientation

#1: The plant item is placed relative to another plant item.

#2: The plant item is placed in a building, plant, or site.

AIM element: [(axis2_placement_2d)
(axis2_placement_3d)]
[cartesian_point]

Source: 42

Reference path: #1: (mapped_item
mapped_item.mapping_target ->
representation_item =>
geometric_representation_item =>
[placement =>
(axis2_placement_2d)
(axis2_placement_3d)]
[placement
placement.location ->
cartesian_point])
#2: ([(axis2_placement_2d)
(axis2_placement_3d)]
[(axis2_placement_2d <=)
(axis2_placement_3d <=)
placement
placement.location ->
cartesian_point])

5.1.14.47.2 location_id

#1: The plant item is placed relative to another plant item.

#2: The plant item is placed in a building, plant, or site.

AIM element: representation_item.name

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Source: 43

Reference path: #1: (mapped_item
mapped_item.mapping_target ->
{representation_item =>
geometric_representation_item =>
placement =>
(axis2_placement_2d)
(axis2_placement_3d)})
#2: ((axis2_placement_2d <=)
(axis2_placement_3d <=)
placement <=
geometric_representation_item <=)
representation_item
representation_item.name

5.1.14.47.3 plant_item_location to changed_plant_item_location

#1: The plant item is placed relative to another plant item.

#2: The plant item is placed in a building, plant, or site.

AIM element: #1: (PATH)
#2: (IDENTICAL MAPPING)

Source:

Reference path: #1: mapped_item
mapped_item.mapping_target ->
representation_item =>
geometric_representation_item =>
placement =>
(axis2_placement_2d
{axis2_placement_2d
change_item = axis2_placement_2d})
(axis2_placement_3d
{axis2_placement_3d
change_item = axis2_placement_3d})

5.1.14.48 Plant_item_weight

AIM element: plant_item_weight_representation

Source: 227

Reference path: plant_item_weight_representation <=
property_definition_representation
{property_definition_representation
property_definition_representation.used_representation ->
representation
representation.name = 'item weight'}

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5.1.14.48.1 centre_of_gravity

AIM element: geometric_representation_item

Source: 42

Reference path: plant_item_weight_representation <=
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
{representation_item
representation_item.name = 'centre of gravity'}
representation_item =>
geometric_representation_item

5.1.14.48.2 weight_state

AIM element: type_qualifier.name

Source: 45

Reference path: plant_item_weight_representation <=
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
({[representation_item
representation_item.name = 'weight value']
[representation_item =>
measure_representation_item]}
representation_item =>
qualified_representation_item
qualified_representation_item.qualifiers[i] ->
value_qualifier
value_qualifier = type_qualifier
type_qualifier
{(type_qualifier.name = 'empty')
(type_qualifier.name = 'full')
(type_qualifier.name = 'operating')
(type_qualifier.name = 'shipping')
(type_qualifier.name = 'test')})
({[representation_item
(representation_item.name = 'maximum weight value')
(representation_item.name = 'minimum weight value')]
[representation_item =>
measure_representation_item]}
representation_item =>
qualified_representation_item
qualified_representation_item.qualifiers[i] ->
value_qualifier
value_qualifier = type_qualifier
type_qualifier

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type_qualifier.name = 'operating'})

5.1.14.48.3 weight_value

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: plant_item_weight_representation <=
property_definition_representation
property_definition_representation.used_representation ->
representation
(representation.items[i] ->
{representation_item
(representation_item.name = 'weight value')
(representation_item.name = 'maximum weight value')
(representation_item.name = 'minimum weight value')})
([representation.items[i] ->
{representation_item
representation_item.name = 'maximum weight value'}]
[representation.items[i] ->
{representation_item
representation_item.name = 'minimum weight value'}])
{representation_item =>
qualified_representation_item}
representation_item =>
measure_representation_item <=
measure_with_unit
[measure_with_unit.value_component]
[{measure_with_unit.unit_component ->
unit
unit = derived_unit}
measure_with_unit.unit_component]

5.1.14.49 Plant_volume

AIM element: (plant_item_route)
(reserved_space)
(system_space)
(product_definition_shape)
(shape_aspect)

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: ((plant_item_route <=
product_definition_shape)
(product_definition_shape)
{product_definition_shape <=

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property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition
product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item'})
((reserved_space <=
shape_aspect)
(shape_aspect)
{shape_aspect
shape_aspect.of_shape ->
product_definition_shape <=
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition
product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item'})
(system_space <=
product_definition_shape
{product_definition_shape <=
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition
product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->
product_context<=
application_context_element

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application_context_element.name = 'plant system'})

5.1.14.49.1 type

AIM element: (property_definition.name)
(shape_aspect.name)

Source: 41

Reference path: ((plant_item_route <=
product_definition_shape <=)
(system_space <=
product_definition_shape <=)
(product_definition_shape <=)
property_definition
property_definition.name)
((reserved_space <=
shape_aspect)
(shape_aspect)
shape_aspect.name)

5.1.14.50 Process_ducting

AIM element: piping_component_definition

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: piping_component_definition <=
product_definition
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group
group.name = 'process ducting']
[group <-
group_relationship.related_group
{group_relationship
group_relationship.name = 'usage classification'}
group_relationship
group_relationship.relating_group ->

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group
group.name = 'ducting component']]
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']}

5.1.14.50.1 gauge

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_mandatory_shape_representation

Reference path: piping_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'process ducting dimensional shape'}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'gauge'}
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

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5.1.14.51 Project_design_assignment

AIM element: design_project_assignment

Source: 227

Reference path: design_project_assignment <=
organization_assignment
{organization_assignment
organization_assignment.assigned_organization ->
organization =>
design_project}

5.1.14.52 Relative_item_location

AIM element: mapped_item

Source: 43

Reference path: {[mapped_item <=
representation_item
representation_item.name = 'relative item location']
[mapped_item
mapped_item.mapping_target ->
[representation_item =>
geometric_representation_item =>
placement =>
(axis2_placement_2d)
(axis2_placement_3d)]
[representation_item <-
representation.items[i]
representation <-
property_definition_representation.used_representation
property_definition_representation
property_definition_representation.definition ->
represented_definition
represented_definition = property_definition
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition
product_definition
product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
(application_context_element.name = 'functional occurrence')
(application_context_element.name = 'physical occurrence')]]}

5.1.14.53 Required_material_description

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AIM element: product_definition

Source: 41

Reference path: {product_definition
product_definition.frame_of_reference ->
{product_definition_context
product_definition_context.life_cycle_stage = 'requirement definition'}
product_definition_context =>
application_context_element
application_context_element.name = 'material'}

5.1.14.53.1 description

AIM element: property_definition.description

Source: 41

Reference path: product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
{property_definition =>
material_property}
property_definition <-
property_definition_relationship.relating_property_definition
{property_definition_relationship
property_definition_relationship.name = 'requirement allocation'}
property_definition_relationship
property_definition_relationship.related_property_definition ->
{property_definition =>
material_property =>
required_material_property}
property_definition
property_definition.description

5.1.14.53.2 material_requirement_id

AIM element: product.id

Source: 41

Reference path: product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.id

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5.1.14.53.3 required_material_description to changed_required_material_-description

AIM element: IDENTICAL MAPPING

5.1.14.53.4 required_material_description to material_specification_-selection

AIM element: PATH

Reference path: product_definition
[characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
material_property]
[document_item = product_definition
document_item <-
applied_document_reference.items[i]
applied_document_reference <=
document_reference
document_reference.assigned_document ->
document]

5.1.14.54 Reserved_space

AIM element: reserved_space

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: reserved_space <=
shape_aspect
{shape_aspect
shape_aspect.of_shape ->
product_definition_shape <=
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition
product_definition
[product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
(application_context_element.name = 'functional occurrence')

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(application_context_element.name = 'physical occurrence')]
[product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']}

5.1.14.55 Route

AIM element: plant_item_route

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: plant_item_route <=
product_definition_shape
{product_definition_shape <=
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition
product_definition
[product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
application_context_element.name = 'physical occurrence']
[product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']}

5.1.14.55.1 route to piping_system_line_segment

AIM element: PATH

Rules: product_definition_usage_constraint

Reference path: plant_item_route <=
product_definition_shape <=
property_definition
property_definition.definition ->

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characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition
product_definition <-
product_definition_relationship.related_product_definition
product_definition_relationship
product_definition_relationship.relating_product_definition
product_definition =>
plant_line_segment_definition

5.1.14.56 Spare_plant_item_usage

AIM element: product_definition_relationship

Source: 41

Reference path: {product_definition_relationship
product_definition_relationship.name = 'spare plant item usage'}

5.1.14.57 Spring_washer

AIM element: bolt_and_nut_component_definition

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: bolt_and_nut_component_definition <=
product_definition
{bolt_and_nut_component_definition
classification_item = piping_support_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
bolt_and_nut_component_class]
[group
group.name = 'spring washer']
[group <-
group_relationship.related_group
group_relationship
{group_relationship.name = 'class hierarchy'}
group_relationship.relating_group ->
group
{[group.name = 'washer']
[group =>
bolt_and_nut_component_class]}}
{product_definition

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product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'bolt and nut component']
[product
product.frame_of_reference[i] ->
product_context <=
application_context_element
application_context_element.name = 'plant item']})

5.1.14.57.1 thickness

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_mandatory_shape_representation

Reference path: bolt_and_nut_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=

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shape_representation <=
{representation
representation.name = 'spring washer dimensional shape'}
representation
representation.items[i] ->
representation_item =>
{representation_item.name = 'thickness'}
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.14.57.2 outside_diameter

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_mandatory_shape_representation

Reference path: bolt_and_nut_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'spring washer dimensional shape'}
representation
representation.items[i] ->
representation_item =>
{representation_item.name = 'outside diameter'}
measure_representation_item <=
{measure_with_unit =>

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length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.14.58 Structural_component

AIM element: product

Source: 41

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: {[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
group
group.name = 'structural component']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']}

5.1.14.58.1 exact_section

AIM element: shape_aspect

Source: 41

Reference path: product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
shape_aspect

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5.1.14.58.2 size_designator

AIM element: descriptive_representation_item.description

Source: 45

Reference path: product <-
product_definition_formation.of_product
product_definition_formation <-
product_definition.formation
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation
document_item = representation
document_item <-
applied_document_reference.items[i]
applied_document_reference <=
document_reference
document_reference.assigned_document ->
document}
representation
representation.items[i] ->
{representation_item
representation_item.name = 'size designator'}
representation_item =>
descriptive_representation_item
descriptive_representation_item.description

5.1.14.58.3 type

AIM element: group.name

Source: 41

Reference path: product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
{classification_assignment
classification_assignment.role ->
classification_role
classification_role.name = 'structural component type classification'}
classification_assignment

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classification_assignment.assigned_classification ->
group
group.name

5.1.14.59 Stud_bolt

AIM element: bolt_and_nut_component_definition

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: bolt_and_nut_component_definition <=
product_definition
{bolt_and_nut_component_definition
classification_item = piping_support_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
bolt_and_nut_component_class]
[group
group.name = 'stud bolt']
[group <-
group_relationship.related_group
group_relationship
{group_relationship.name = 'class hierarchy'}
group_relationship.relating_group ->
group
{[group.name = 'bolt']
[group =>
bolt_and_nut_component_class]}}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'bolt and nut component']

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[product
product.frame_of_reference[i] ->
product_context <=
application_context_element
application_context_element.name = 'plant item']})

5.1.14.59.1 length

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_mandatory_shape_representation

Reference path: bolt_and_nut_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'stud bolt dimensional shape'}
representation
representation.items[i] ->
representation_item =>
{representation_item.name = 'length'}
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.14.60 Supplied_equipment

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AIM element: product

Source: 41

Reference path: {[product <-
product_definition_formation.of_product
product_definition_formation =>
product_definition_formation_with_specified_source
product_definition_formation_with_specified_source.make_or_buy = 'BUY']
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
group
group.name = 'equipment']}

5.1.14.60.1 delivery_date

AIM element: (date_assignment.role)
(date_and_time_assignment.role)

Source: 41

Reference path: product
(dated_item = product
dated_item <-
applied_date_assignment.items[i]
applied_date_assignment <=
date_assignment
date_assignment.role)
(date_and_time_item = product
date_and_time_item <-
applied_date_and_time_assignment.items[i]
applied_date_and_time_assignment <=
date_and_time_assignment
date_and_time_assignment.role)

5.1.14.60.2 purchase_order_number

AIM element: action_directive.name

Source: 41

Reference path: product
purchase_item = product
purchase_item <-
purchase_assignment.items[i]
purchase_assignment <=
action_assignment
action_assignment.assigned_action ->

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action =>
executed_action =>
directed_action
directed_action.directive ->
action_directive
action_directive.name

5.1.14.60.3 requisition_number

#1: Prior to purchase order being issue.

#2: A purchase order exists.

AIM element: versioned_action_request.id

Source: 41

Reference path: product
#1: (action_request_item = product
action_request_item <-
applied_action_request_assignment.items[i]
applied_action_request_assignment <=
action_request_assignment
action_request_assignment.assigned_action_request ->)
#2: (purchase_item = product
purchase_item <-
purchase_assignment.items[i]
purchase_assignment <=
action_assignment
action_assignment.assigned_action ->
action =>
executed_action =>
directed_action
directed_action.directive ->
action_directive
action_directive.requests[i] ->)
versioned_action_request
versioned_action_request.id

5.1.14.61 Supplier

AIM element: organization

Source: 41

5.1.14.61.1 supplier_id

AIM element: organization.id

Source: 41

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5.1.14.61.2 vendor_name

AIM element: organization.name

Source: 41

5.1.14.61.3 supplier to catalogue_definition

AIM element: PATH

Reference path:
organization <-
organization_assignment.assigned_organization
{organization_assignment
organization_assignment.role ->
organization_role
organization_role.name = 'publisher'}
organization_assignment =>
plant_spatial_configuration_organization_assignment
plant_spatial_configuration_organization_assignment.items[i] ->
plant_spatial_configuration_organization_item
plant_spatial_configuration_organization_item = catalogue
catalogue

5.1.14.61.4 supplier to supplied_equipment

AIM element: PATH

Reference path:
organization <-
organization_assignment.assigned_organization
{organization_assignment
organization_assignment.role ->
organization_role
organization_role.name = 'supplier'}
organization_assignment =>
plant_spatial_configuration_organization_assignment
plant_spatial_configuration_organization_assignment.items[i] ->
plant_spatial_configuration_organization_item
plant_spatial_configuration_organization_item = product_definition_formation
{product_definition_formation =>
product_definition_formation_with_specified_source}
product_definition_formation
product_definition_formation.of_product ->
product
{product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
group
group.name = 'equipment'}

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5.1.14.62 Support_component

AIM element: product

Source: 41

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: {[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
group
group.name = 'support component']
[product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant item']}

5.1.14.63 Support_constraints

AIM element: support_constraint_representation

Source: 227

Reference path: support_constraint_representation <=
representation

5.1.14.63.1 gap

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: support_constraint_representation <=
representation
representation.items[i] ->
{representation_item
(representation_item.name = 'negative x')
(representation_item.name = 'positive x')
(representation_item.name = 'negative y')
(representation_item.name = 'positive y')
(representation_item.name = 'negative z')
(representation_item.name = 'positive z')
(representation_item.name = 'negative x rotation')
(representation_item.name = 'positive x rotation')

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(representation_item.name = 'negative y rotation')
(representation_item.name = 'positive y rotation')
(representation_item.name = 'negative z rotation')
(representation_item.name = 'positive z rotation')}
representation_item =>
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.14.63.2 k

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: support_constraint_representation <=
representation
representation.items[i] ->
representation_item =>
measure_representation_item <=
{measure_with_unit =>
ratio_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.14.63.3 restrained

AIM element: descriptive_representation_item.description

Source: 45

Reference path: support_constraint_representation <=
representation
representation.items[i] ->
representation_item =>
descriptive_representation_item
descriptive_representation_item.description

5.1.14.63.4 support_constraint_id

AIM element: representation.name

Source: 43

Reference path: support_constraint_representation <=
representation
representation.name

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5.1.14.63.5 support_constraints to support_usage (negative x-direction)

AIM element: PATH

Reference path:
support_constraint_representation <=
{representation
representation.items[i] ->
representation_item
representation_item.name = 'negative x'}
representation <-
property_definition_representation.used_representation
property_definition_representation
property_definition_representation.definition ->
represented_definition
represented_definition = property_definition
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition_relationship
{product_definition_relationship
(product_definition_relationship.name = 'support usage')
(product_definition_relationship.name = 'support usage connection')}
product_definition_relationship

5.1.14.63.6 support_constraints to support_usage (positive x-direction)

AIM element: PATH

Reference path:
support_constraint_representation <=
{representation
representation.items[i] ->
representation_item
representation_item.name = 'positive x'}
representation <-
property_definition_representation.used_representation
property_definition_representation
property_definition_representation.definition ->
represented_definition
represented_definition = property_definition
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition_relationship
{product_definition_relationship
(product_definition_relationship.name = 'support usage')
(product_definition_relationship.name = 'support usage connection')}
product_definition_relationship

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5.1.14.63.7 support_constraints to support_usage (negative y-direction)

AIM element: PATH

Reference path:
support_constraint_representation <=
{representation
representation.items[i] ->
representation_item
representation_item.name = 'negative y'}
representation <-
property_definition_representation.used_representation
property_definition_representation
property_definition_representation.definition ->
represented_definition
represented_definition = property_definition
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition_relationship
{product_definition_relationship
(product_definition_relationship.name = 'support usage')
(product_definition_relationship.name = 'support usage connection')}
product_definition_relationship

5.1.14.63.8 support_constraints to support_usage (positive y-direction)

AIM element: PATH

Reference path:
support_constraint_representation <=
{representation
representation.items[i] ->
representation_item
representation_item.name = 'positive y'}
representation <-
property_definition_representation.used_representation
property_definition_representation
property_definition_representation.definition ->
represented_definition
represented_definition = property_definition
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition_relationship
{product_definition_relationship
(product_definition_relationship.name = 'support usage')
(product_definition_relationship.name = 'support usage connection')}
product_definition_relationship

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5.1.14.63.9 support_constraints to support_usage (negative z-direction)

AIM element: PATH

Reference path:
support_constraint_representation <=
{representation
representation.items[i] ->
representation_item
representation_item.name = 'negative z'}
representation <-
property_definition_representation.used_representation
property_definition_representation
property_definition_representation.definition ->
represented_definition
represented_definition = property_definition
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition_relationship
{product_definition_relationship
(product_definition_relationship.name = 'support usage')
(product_definition_relationship.name = 'support usage connection')}
product_definition_relationship

5.1.14.63.10 support_constraints to support_usage (positive z-direction)

AIM element: PATH

Reference path:
support_constraint_representation <=
{representation
representation.items[i] ->
representation_item
representation_item.name = 'positive z'}
representation <-
property_definition_representation.used_representation
property_definition_representation
property_definition_representation.definition ->
represented_definition
represented_definition = property_definition
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition_relationship
{product_definition_relationship
(product_definition_relationship.name = 'support usage')
(product_definition_relationship.name = 'support usage connection')}
product_definition_relationship

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5.1.14.63.11 support_constraints to support_usage (negative rotation x-axis)

AIM element: PATH

Reference path:
support_constraint_representation <=
{representation
representation.items[i] ->
representation_item
representation_item.name = 'negative x rotation'}
representation <-
property_definition_representation.used_representation
property_definition_representation
property_definition_representation.definition ->
represented_definition
represented_definition = property_definition
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition_relationship
{product_definition_relationship
(product_definition_relationship.name = 'support usage')
(product_definition_relationship.name = 'support usage connection')}
product_definition_relationship

5.1.14.63.12 support_constraints to support_usage (positive rotation x-axis)

AIM element: PATH

Reference path:
support_constraint_representation <=
{representation
representation.items[i] ->
representation_item
representation_item.name = 'positive x rotation'}
representation <-
property_definition_representation.used_representation
property_definition_representation
property_definition_representation.definition ->
represented_definition
represented_definition = property_definition
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition_relationship
{product_definition_relationship
(product_definition_relationship.name = 'support usage')
(product_definition_relationship.name = 'support usage connection')}
product_definition_relationship

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5.1.14.63.13 support_constraints to support_usage (negative rotation y-axis)

AIM element: PATH

Reference path:
support_constraint_representation <=
{representation
representation.items[i] ->
representation_item
representation_item.name = 'negative y rotation'}
representation <-
property_definition_representation.used_representation
property_definition_representation
property_definition_representation.definition ->
represented_definition
represented_definition = property_definition
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition_relationship
{product_definition_relationship
(product_definition_relationship.name = 'support usage')
(product_definition_relationship.name = 'support usage connection')}
product_definition_relationship

5.1.14.63.14 support_constraints to support_usage (positive rotation y-axis)

AIM element: PATH

Reference path:
support_constraint_representation <=
{representation
representation.items[i] ->
representation_item
representation_item.name = 'positive y rotation'}
representation <-
property_definition_representation.used_representation
property_definition_representation
property_definition_representation.definition ->
represented_definition
represented_definition = property_definition
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition_relationship
{product_definition_relationship
(product_definition_relationship.name = 'support usage')
(product_definition_relationship.name = 'support usage connection')}
product_definition_relationship

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5.1.14.63.15 support_constraints to support_usage (negative rotation z-axis)

AIM element: PATH

Reference path: {representation
representation.items[i] ->
representation_item
representation_item.name = 'negative z rotation'}
representation <-
property_definition_representation.used_representation
property_definition_representation
property_definition_representation.definition ->
represented_definition
represented_definition = property_definition
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition_relationship
{product_definition_relationship
(product_definition_relationship.name = 'support usage')
(product_definition_relationship.name = 'support usage connection')}
product_definition_relationship

5.1.14.63.16 support_constraints to support_usage (positive rotation z-axis)

AIM element: PATH

Reference path: support_constraint_representation <=
{representation
representation.items[i] ->
representation_item
representation_item.name = 'positive z rotation'}
representation <-
property_definition_representation.used_representation
property_definition_representation
property_definition_representation.definition ->
represented_definition
represented_definition = property_definition
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition_relationship
{product_definition_relationship
(product_definition_relationship.name = 'support usage')
(product_definition_relationship.name = 'support usage connection')}
product_definition_relationship

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5.1.14.64 Support_usage

AIM element: product_definition_relationship

Source: 41

Reference path: {product_definition_relationship
product_definition_relationship.name = 'support usage'}

5.1.14.64.1 detail_sheet_reference

AIM element: document

Source: 41

Reference path: product_definition_relationship
document_item = product_definition_relationship
document_item <-
applied_document_reference.items[i]
applied_document_reference <=
document_reference
document_reference.assigned_document ->
{document
document.kind ->
document_type
document_type.product_data_type = 'drawing'}
document

5.1.14.64.2 function

AIM element: product_definition_relationship.description

Source: 41

5.1.14.65 Support_usage_connection

AIM element: product_definition_relationship

Source: 41

Reference path: {product_definition_relationship
product_definition_relationship.name = 'support usage connection'}

5.1.14.65.1 support_usage_connection to plant_item_connection_-occurrence

AIM element: PATH

Rules: application_context_requires_ap_definition
dependent_instantiable_application_context
dependent_instantiable_product_definition_context

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product_definition_context_name_constraint
product_definition_usage_constraint

Reference path: product_definition_relationship
[product_definition_relationship.relating_product_definition ->]
[product_definition_relationship.related_product_definition ->]
{product_definition
product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
(application_context_element.name = 'functional occurrence')
(application_context_element.name = 'physical occurrence')}
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
shape_aspect =>
plant_item_connection

5.1.14.66 System_space

AIM element: system_space

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: system_space <=
product_definition_shape
{product_definition_shape <=
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition
[product_definition =>
(electrical_system)
(ducting_system)
(instrumentation_and_control_system)
(piping_system)
(structural_system)
(cableway_system)]
[product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->

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product
product.frame_of_reference[i] ->
product_context<=
application_context_element
application_context_element.name = 'plant system']}

5.1.14.67 Toothed_lock_washer

AIM element: bolt_and_nut_component_definition

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: bolt_and_nut_component_definition <=
product_definition
{bolt_and_nut_component_definition
classification_item = piping_support_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
bolt_and_nut_component_class]
[group
group.name = 'toothed lock washer']
[group <-
group_relationship.related_group
group_relationship
{group_relationship.name = 'class hierarchy'}
group_relationship.relating_group ->
group
{[group.name = 'washer']
[group =>
bolt_and_nut_component_class]}}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->

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group)
group.name = 'bolt and nut component']
[product
product.frame_of_reference[i] ->
product_context <=
application_context_element
application_context_element.name = 'plant item']})

5.1.14.67.1 thickness

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_mandatory_shape_representation

Reference path: bolt_and_nut_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'toothed lock washer dimensional shape'}
representation
representation.items[i] ->
representation_item =>
{representation_item.name = 'thickness'}
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

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5.1.14.67.2 outside_diameter

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_mandatory_shape_representation

Reference path: bolt_and_nut_component_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'toothed lock washer dimensional shape'}
representation
representation.items[i] ->
representation_item =>
{representation_item.name = 'outside diameter'}
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.14.68 Trunnion

AIM element: piping_support_definition

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

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Reference path: piping_support_definition <=
product_definition
{piping_support_definition
classification_item = piping_support_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
piping_support_fitting_-class]
[group
group.name = 'trunnion']}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'piping support']
[product
product.frame_of_reference[i] ->
product_context <=
application_context_element
application_context_element.name = 'plant item']})

5.1.14.68.1 length

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Rules: subtype_mandatory_shape_representation

Reference path: piping_support_definition <=
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition

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property_definition =>
product_definition_shape <-
shape_aspect.of_shape
[shape_aspect <-
shape_aspect_relationship.relating_shape_aspect]
[shape_aspect <-
shape_aspect_relationship.related_shape_aspect]
shape_aspect_relationship =>
dimensional_location
dimensional_characteristic = dimensional_location
dimensional_characteristic <-
dimensional_characteristic_representation.dimension
dimensional_characteristic_representation
dimensional_characteristic_representation.representation ->
shape_dimension_representation <=
shape_representation <=
{representation
representation.name = 'trunnion dimensional shape'}
representation
representation.items[i] ->
representation_item =>
{representation_item.name = 'length'}
measure_representation_item <=
{measure_with_unit =>
length_measure_with_unit}
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.14.69 User_defined_attribute_value

AIM element: (measure_representation_item)

(descriptive_representation_item)

Source: 45

Reference path: {(measure_representation_item <=)
(descriptive_representation_item <=)
representation_item <-
representation.items[i]
representation
representation.name = 'user defined attributes'}

5.1.14.69.1 name

AIM element: representation_item.name

Source: 43

Reference path: (measure_representation_item <=)
(descriptive_representation_item <=)
representation_item

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representation_item.name

5.1.14.69.2 value

AIM element: ([measure_with_unit.value_component]
[measure_with_unit.unit_component])

(descriptive_representation_item.description)

Source: 41

Reference path: (measure_representation_item <=
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component])

(descriptive_representation_item
descriptive_representation_item.description)

45

5.1.14.69.3 user_defined_attribute_value to plant_item

AIM element: PATH

Reference path: (measure_representation_item <=)
(descriptive_representation_item <=)
representation_item <-
representation.items[i]
representation <-
property_definition_representation.used_representation
property_definition_representation
property_definition_representation.definition ->
represented_definition
represented_definition = property_definition
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition
(product_definition)
(product_definition =>
externally_defined_plant_item_definition)
(product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product)

5.1.14.70 Washer

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AIM element: bolt_and_nut_component_definition

Source: 227

Rules: dependent_instantiable_product_context
product_context_discipline_type_constraint
value_for_application_context

Reference path: bolt_and_nut_component_definition <=
product_definition
{bolt_and_nut_component_definition
classification_item = piping_support_definition
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
[group =>
bolt_and_nut_component_class]
[group
group.name = 'washer']}
{product_definition
product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
[product
classification_item = product
classification_item <-
applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
(group)
(group <-
group_relationship.related_group
group_relationship
group_relationship.relating_group ->
group)
group.name = 'bolt and nut component']
[product
product.frame_of_reference[i] ->
product_context <=
application_context_element
application_context_element.name = 'plant item']})

5.1.14.70.1 washer_type

AIM element: group.name

Source: 41

Reference path: bolt_and_nut_component_definition
classification_item = piping_support_definition
classification_item <-

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applied_classification_assignment.items[i]
applied_classification_assignment <=
classification_assignment
classification_assignment.assigned_classification ->
group <-
{[group =>
bolt_and_nut_component_class]
[group
group.name = 'washer']}
group_relationship.relating_group
group_relationship
{group_relationship.name = 'class hierarchy'}
group_relationship.related_group ->
group
{group =>
bolt_and_nut_component_class}
group.name

5.1.15 Shape UoF

5.1.15.1 Detail_shape

AIM element: representation.name

Source: 43

Reference path: {representation.name = 'detail'}

5.1.15.2 Envelope_shape

AIM element: representation.name

Source: 43

Reference path: {representation.name = 'envelope'}

5.1.15.3 Hybrid_shape_representation

AIM element: hybrid_shape_representation

Source: 227

Reference path: hybrid_shape_representation <=
shape_representation

5.1.15.4 Interfering_shape_element

AIM element: interfering_shape_element

Source: 227

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Reference path: interfering_shape_element <=
[shape_aspect_relationship]
[shape_aspect]

5.1.15.4.1 interference_colour

AIM element: descriptive_colour

Source: 227

Reference path: interfering_shape_element <=
shape_aspect
shape_definition = shape_aspect
shape_definition
characterized_definition = shape_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
{representation_item
representation_item.name = 'interference colour'}
representation_item =>
descriptive_representation_item =>
{descriptive_colour <=
colour}
descriptive_colour

5.1.15.5 Outline_shape

AIM element: representation.name

Source: 43

Reference path: {representation.name = 'outline'}

5.1.15.6 Plant_csg_shape_representation

AIM element: plant_csg_shape_representation

Source: 227

Reference path: plant_csg_shape_representation <=
shape_representation

5.1.15.7 Plant_item_centreline

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AIM element: centre_of_symmetry

Source: 47

5.1.15.8 Plant_item_interference

AIM element: plant_item_interference

Source: 227

Reference path: plant_item_interference <=
product_definition_relationship

5.1.15.8.1 interference_id

AIM element: product_definition_relationship.name

Source: 41

Reference path: plant_item_interference <=
product_definition_relationship
product_definition_relationship.name

5.1.15.8.2 type

AIM element: product_definition_relationship.description

Source: 41

Reference path: plant_item_interference <=
product_definition_relationship
product_definition_relationship.description

5.1.15.8.3 plant_item_interference to interfering_shape_element

AIM element: PATH

Reference path: plant_item_interference <=
product_definition_relationship
product_definition_relationship.relating_product_definition ->
product_definition
characterized_product_definition = product_definition
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition =>
product_definition_shape <-
shape_aspect.of_shape
shape_aspect =>
interfering_shape_element

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5.1.15.8.4 plant_item_interference to plant_item_interference_status

AIM element: PATH

Reference path: plant_item_interference <=
product_definition_relationship
(plant_spatial_configuration_organization_item = product_definition_relationship
plant_spatial_configuration_organization_item <-
plant_spatial_configuration_organization_assignment.items[i]
plant_spatial_configuration_organization_assignment)
(plant_spatial_configuration_person_item = product_definition_relationship
plant_spatial_configuration_person_item <-
plant_spatial_configuration_person_assignment.items[i]
plant_spatial_configuration_person_assignment)
(characterized_product_definition = product_definition_relationship
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation)

5.1.15.8.5 plant_item_interference to shape_interference_zone_usage

AIM element: PATH

Rules: subtype_mandatory_shape_representation

Reference path: plant_item_interference <=
product_definition_relationship
characterized_product_definition = product_definition_relationship
characterized_product_definition
characterized_definition = characterized_product_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
{representation =>
shape_representation}
representation
representation.items[i] ->
representation_item =>
mapped_item

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5.1.15.9 Plant_item_interference_status

AIM element: representation

Source: 43

Reference path: {representation
representation.name = 'plant item interference status'}

5.1.15.9.1 assessor

AIM element: (organization.name)
([person.first_name]
[person.last_name])

Source: 41

Reference path: (representation
plant_spatial_configuration_organization_item = representation
plant_spatial_configuration_organization_item <-
plant_spatial_configuration_organization_assignment.items [i]
plant_spatial_configuration_organization_assignment <=
organization_assignment
organization_assignment.assigned_organization ->
organization
organization.name)
(representation
plant_spatial_configuration_person_item = representation
plant_spatial_configuration_person_item <-
plant_spatial_configuration_person_assignment.items [i]
plant_spatial_configuration_person_assignment <=
person_assignment
person_assignment.assigned_person ->
person
[person.first_name]
[person.last_name])

5.1.15.9.2 status

AIM element: descriptive_representation_item.description

Source: 45

Reference path: representation
representation.items[i] ->
{representation_item
representation_item.name = 'interference status'}
representation_item =>
descriptive_representation_item
descriptive_representation_item.description

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5.1.15.10 Plant_item_shape

AIM element: product_definition_shape

Source: 41

Reference path: {product_definition_shape <=
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition
product_definition
product_definition.frame_of_reference ->
product_definition_context <=
application_context_element
(application_context_element.name = 'physical definition')
(application_context_element.name = 'physical occurrence')}

5.1.15.10.1 clash_detection_class

AIM element: property_definition.description

Source: 41

Reference path: product_definition_shape <=
property_definition
property_definition.description
{(property_definition.description = 'hard')
(property_definition.description = 'ignore')
(property_definition.description = 'soft')}

5.1.15.10.2 origin

AIM element: (axis2_placement_2d)
(axis2_placement_3d)

Source: 42

Reference path: product_definition_shape <=
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
{representation_item
representation_item.name = 'plant item orientation'}
representation_item =>
geometric_representation_item =>

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{placement
placement.location ->
cartesian_point <=
point <=
geometric_representation_item <=
representation_item
representation_item.name = 'plant item location'}
placement =>
(axis2_placement_2d)
(axis2_placement_3d)

5.1.15.10.3 shape_id

AIM element: property_definition.name

Source: 41

Reference path: product_definition_shape <=
property_definition
property_definition.name

5.1.15.10.4 plant_item_shape to changed_plant_item_shape

AIM element: IDENTICAL MAPPING

5.1.15.10.5 plant_item_shape to shape_representation

AIM element: PATH

Reference path: product_definition_shape <=
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
{property_definition_representation =>
shape_definition_representation}
property_definition_representation.used_representation ->
representation =>
shape_representation =>
(plant_csg_shape_representation)
(hybrid_shape_representation)

5.1.15.11 Reference_geometry

AIM element: reference_geometry

Source: 227

Reference path: reference_geometry <=
derived_shape_aspect

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5.1.15.11.1 name

AIM element: shape_aspect.name

Source: 41

Reference path: reference_geometry <=
derived_shape_aspect <=
shape_aspect
shape_aspect.name

5.1.15.11.2 reference_geometry_id

AIM element: representation_item.name

Source: 43

Reference path: reference_geometry <=
derived_shape_aspect <=
shape_aspect
shape_definition = shape_aspect
shape_definition
characterized_definition = shape_definition
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
representation_item
representation_item.name

5.1.15.11.3 reference_geometry to changed_reference_geometry

AIM element: IDENTICAL MAPPING

5.1.15.11.4 reference_geometry to shape_representation_element

AIM element: PATH

Reference path: reference_geometry <=
derived_shape_aspect <=
shape_aspect
shape_definition = shape_aspect
shape_definition
characterized_definition = shape_definition
characterized_definition <-
property_definition.definition
property_definition

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represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
representation_item

5.1.15.12 Shape_interference_zone_usage

AIM element: mapped_item

Source: 43

5.1.15.13 Shape_parameter

AIM element: measure_representation_item

Source: 45

Reference path: {measure_representation_item <=
representation_item <-
representation.items[i]
representation =>
shape_representation =>
hybrid_shape_representation}

5.1.15.13.1 name

AIM element: representation_item.name

Source: 43

Reference path: measure_representation_item <=
representation_item
representation_item.name

5.1.15.13.2 value

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: measure_representation_item <=
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

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5.1.15.14 Shape_representation

AIM element: (hybrid_shape_representation)
(plant_csg_shape_representation)

Source: 227

Reference path: (hybrid_shape_representation <=)
(plant_csg_shape_representation <=)
shape_representation
{shape_representation <=
representation
(representation.name = 'detail')
(representation.name = 'envelope')
(representation.name = 'outline')}

5.1.15.14.1 shape_representation to shape_representation_element_usage

AIM element: PATH

Rules: subtype_mandatory_shape_representation

Reference path: property_definition_representation
property_definition_representation.used_representation ->
{representation =>
shape_representation =>
(plant_csg_shape_representation)
(hybrid_shape_representation)}
representation
representation.items[i] ->
representation_item

5.1.15.15 Shape_representation_element

AIM element: representation_item

Source: 43

5.1.15.15.1 element_id

AIM element: representation_item.name

Source: 43

5.1.15.15.2 shape_representation_element to shape_interference_zone_-usage

AIM element: PATH

Reference path: representation_item <-
representation_map.mapping_origin
representation_map <-

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mapped_item.mapping_source
mapped_item

5.1.15.15.3 shape_representation_element to shape_representation_-element_usage

AIM element: IDENTICAL MAPPING

Rules: subtype_mandatory_shape_representation

5.1.15.16 Shape_representation_element_usage

AIM element: representation_item

Source: 43

5.1.15.16.1 element_colour

AIM element: descriptive_colour

Source: 227

Rules: subtype_mandatory_shape_representation

Reference path: representation_item <-
representation_item_relationship.related_representation_item
{representation_item_relationship
representation_item_relationship.name = 'element color association'}
representation_item_relationship
representation_item_relationship.relating_representation_item ->
{representation_item
representation_item.name = 'element colour'}
representation_item =>
descriptive_representation_item =>
{descriptive_colour <=
colour}
descriptive_colour

5.1.15.16.2 layer

AIM element: presentation_layer_assignment

Source: 46

Rules: subtype_mandatory_shape_representation

Reference path: representation_item
layered_item = representation_item
layered_item <-
presentation_layer_assignment.assigned_items[i]
presentation_layer_assignment

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5.1.15.16.3 shape_representation_element_usage to interfering_shape_-element

AIM element: PATH

Rules: subtype_mandatory_shape_representation

Reference path: representation_item <-
item_identified_representation_usage.identified_item
item_identified_representation_usage
item_identified_representation_usage.definition ->
represented_definition
represented_definition = shape_aspect
shape_aspect =>
interfering_shape_element

5.1.16 Site_characterization UoF

5.1.16.1 Breakline

AIM element: polyline

Source: 42

5.1.16.1.1 breakline to survey_point

AIM element: PATH

Reference path: polyline
polyline.points[i] ->
cartesian_point
{cartesian_point <=
point <=
geometric_representation_item <=
representation_item
representation_item.name = 'survey point'}

5.1.16.2 Building

AIM element: site_building

Source: 227

Reference path: site_building <=
property_definition

5.1.16.2.1 building_id

AIM element: representation

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Source: 43

Reference path: site_building <=
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
{representation
[representation.name = 'building number']
[representation.items[i] ->
representation_item =>
descriptive_representation_item]}

5.1.16.2.2 location_and_orientation

AIM element: [(axis2_placement_2d)
(axis2_placement_3d)]
[cartesian_point]

Source: 42

Reference path: site_building <=
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
{representation_item
representation_item.name = 'building orientation'}
representation_item =>
geometric_representation_item =>
[placement =>
(axis2_placement_2d)
(axis2_placement_3d)]
[placement
placement.location ->
cartesian_point
{cartesian_point <=
point <=
geometric_representation_item <=
representation_item
representation_item.name = 'building location'}]

5.1.16.2.3 name

AIM element: property_definition.name

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Source: 41

Reference path: site_building <=
property_definition
property_definition.name

5.1.16.2.4 shape

AIM element: shape_representation

Source: 41

Rules: subtype_mandatory_shape_representation

Reference path: site_building <=
{property_definition =>
product_definition_shape}
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
{property_definition_representation =>
shape_definition_representation}
property_definition_representation
property_definition_representation.used_representation ->
representation =>
shape_representation

5.1.16.2.5 building to location_in_building

AIM element: PATH

Reference path: site_building <=
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
representation_item =>
geometric_representation_item =>
placement =>
(axis2_placement_2d)
(axis2_placement_3d)

5.1.16.2.6 building to reference_geometry

AIM element: PATH

Reference path: site_building <=
property_definition =>

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product_definition_shape <-
shape_aspect.of_shape
shape_aspect =>
derived_shape_aspect =>
reference_geometry

5.1.16.3 Facet_trigon

AIM element: poly_loop

Source: 42

5.1.16.3.1 facet_trigon to survey_point

AIM element: PATH

Reference path: poly_loop
poly_loop.polygon[i] ->
cartesian_point
{cartesian_point <=
point <=
geometric_representation_item <=
representation_item
representation_item.name = 'survey point'}

5.1.16.4 Faceted_surface_representation

AIM element: site_representation

Source: 227

Rules: subtype_mandatory_shape_representation

Reference path: site_representation <=
shape_representation
{shape_representation <=
representation
representation.items[i] ->
representation_item =>
topological_representation_item =>
connected_face_set}

5.1.16.4.1 faceted_surface_representation to facet_trigon

AIM element: PATH

Rules: subtype_mandatory_shape_representation

Reference path: site_representation <=
shape_representation <=
representation
representation.items[i] ->

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representation_item =>
topological_representation_item =>
connected_face_set
connected_face_set.cfs_faces[i] ->
{face =>
face_surface}
face
face.bounds[i] ->
face_bound
face_bound.bound ->
loop =>
poly_loop

5.1.16.5 Gis_position

AIM element: representation

Source: 43

Reference path: {representation
representation.name = 'gis position'}

5.1.16.5.1 height

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: representation
representation.items[i] ->
{representation_item
representation_item.name = 'height'}
representation_item =>
measure_representation_item <=
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.16.5.2 scale

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: representation
representation.items[i] ->
{representation_item
representation_item.name = 'scale'}
representation_item =>
measure_representation_item <=
measure_with_unit

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[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.16.5.3 system

AIM element: representation_context.context_type

Source: 43

Reference path: representation
representation.context_of_items ->
representation_context
representation_context.context_type

5.1.16.5.4 x_axis_delta_x

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: representation
representation.items[i] ->
{representation_item
representation_item.name = 'x-axis delta x'}
representation_item =>
measure_representation_item <=
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.16.5.5 x_axis_delta_y

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: representation
representation.items[i] ->
{representation_item
representation_item.name = 'x-axis delta y'}
representation_item =>
measure_representation_item <=
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.16.5.6 x_coordinate

AIM element: [measure_with_unit.value_component]

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[measure_with_unit.unit_component]

Source: 41

Reference path: representation
representation.items[i] ->
{representation_item
representation_item.name = 'x coordinate'}
representation_item =>
measure_representation_item <=
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.16.5.7 y_coordinate

AIM element: [measure_with_unit.value_component]
[measure_with_unit.unit_component]

Source: 41

Reference path: representation
representation.items[i] ->
{representation_item
representation_item.name = 'y coordinate'}
representation_item =>
measure_representation_item <=
measure_with_unit
[measure_with_unit.value_component]
[measure_with_unit.unit_component]

5.1.16.5.8 zone

AIM element: descriptive_representation_item.description

Source: 45

Reference path: representation
representation.items[i] ->
{representation_item
representation_item.name = 'zone'}
representation_item =>
descriptive_representation_item
descriptive_representation_item.description

5.1.16.6 Location_in_building

AIM element: (axis2_placement_2d)
(axis2_placement_3d)

Source: 42

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Reference path: {(axis2_placement_2d <=)
(axis2_placement_3d <=)
placement <=
geometric_representation_item <=
representation_item <-
representation.items[i]
representation <-
property_definition_representation.used_representation
property_definition_representation
property_definition_representation.definition ->
represented_definition
represented_definition = property_definition
property_definition =>
site_building}

5.1.16.7 Location_in_site

AIM element: (axis2_placement_2d)
(axis2_placement_3d)

Source: 42

Reference path: {(axis2_placement_2d <=)
(axis2_placement_3d <=)
placement <=
geometric_representation_item <=
representation_item <-
representation.items[i]
representation <-
property_definition_representation.used_representation
{property_definition_representation =>
shape_definition_representation}
property_definition_representation
property_definition_representation.definition ->
represented_definition
represented_definition = property_definition
{property_definition =>
product_definition_shape}
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_object
characterized_object =>
site}

5.1.16.8 Point_and_line_representation

AIM element: site_representation

Source: 227

Reference path: site_representation <=
shape_representation

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{shape_representation <=
representation
representation.items[i] ->
representation_item =>
geometric_representation_item =>
geometric_set =>
geometric_curve_set}

5.1.16.8.1 point_and_line_representation to survey_point

AIM element: PATH

Rules: subtype_mandatory_shape_representation

Reference path: site_representation <=
shape_representation <=
representation
representation.items[i] ->
representation_item =>
geometric_representation_item =>
{geometric_set =>
geometric_curve_set}
geometric_set
geometric_set.elements[i] ->
geometric_set_select
geometric_set_select = point
point =>
cartesian_point
{cartesian_point <=
point <=
geometric_representation_item <=
representation_item
representation_item.name = 'survey point'}

5.1.16.9 Site

AIM element: site

Source: 227

Reference path: site <=
[characterized_object]
[property_definition]

5.1.16.9.1 address

AIM element: representation

Source: 43

Rules: subtype_exclusive_characterized_object

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Reference path: site <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
{representation
representation.name = 'site address'}

5.1.16.9.2 coordinates

AIM element: representation

Source: 43

Rules: subtype_exclusive_characterized_object

Reference path: site <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
{representation
representation.name = 'site coordinates'}

5.1.16.9.3 elevation

AIM element: representation

Source: 43

Rules: subtype_exclusive_characterized_object

Reference path: site <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition

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represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
{representation
representation.name = 'site elevation'}

5.1.16.9.4 environmental_references

AIM element: document.id

Source: 41

Reference path: site
document_item = site
document_item <-
applied_document_reference.items[i]
applied_document_reference <=
document_reference
document_reference.assigned_document ->
document
document.id

5.1.16.9.5 locality

AIM element: representation

Source: 43

Rules: subtype_exclusive_characterized_object

Reference path: site <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
{representation
representation.name = 'site locality'}

5.1.16.9.6 name

AIM element: characterized_object.description

Source: 41

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Rules: subtype_exclusive_characterized_object

Reference path: site <=
characterized_object
characterized_object.description

5.1.16.9.7 orientation

AIM element: (axis2_placement_2d)
(axis2_placement_3d)

Source: 42

Rules: subtype_exclusive_characterized_object

Reference path: site <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
{representation_item
representation_item.name = 'site orientation'}
representation_item =>
geometric_representation_item =>
{placement
placement.location ->
cartesian_point <=
point <=
geometric_representation_item <=
representation_item
representation_item.name = 'site location'}
placement =>
(axis2_placement_2d)
(axis2_placement_3d)

5.1.16.9.8 owners

AIM element: (person)
(organization)
(person_and_organization)

Source: 41

Reference path: site
(plant_spatial_configuration_person_item = site

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plant_spatial_configuration_person_item <-
plant_spatial_configuration_person_assignment.items[i]
plant_spatial_configuration_person_assignment <=
{person_assignment
person_assignment.role ->
person_role
person_role.name = 'owner'}
person_assignment
person_assignment.assigned_person ->
person)
(plant_spatial_configuration_organization_item = site
plant_spatial_configuration_organization_item <-
plant_spatial_configuration_organization_assignment.items[i]
plant_spatial_configuration_organization_assignment <=
{organization_assignment
organization_assignment.role ->
organization_role
organization_role.name = 'owner'}
organization_assignment
organization_assignment.assigned_organization ->
organization)
(plant_spatial_configuration_person_and_organization_item = site
plant_spatial_configuration_person_and_organization_item <-
plant_spatial_configuration_person_and_organization_assignment.items[i]
plant_spatial_configuration_person_and_organization_assignment <=
{person_and_organization_assignment
person_and_organization_assignment.role ->
person_and_organization_role
person_and_organization_role.name = 'owner'}
person_and_organization_assignment
person_and_organization_assignment.assigned_person_and_organization ->
person_and_organization)

5.1.16.9.9 site_id

AIM element: characterized_object.name

Source: 41

Rules: subtype_exclusive_characterized_object

Reference path: site <=
characterized_object
characterized_object.name

5.1.16.9.10 site to building

AIM element: PATH

Rules: subtype_exclusive_characterized_object

Reference path: site <=
characterized_object

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characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition =>
site_building

5.1.16.9.11 site to changed_site

AIM element: IDENTICAL MAPPING

5.1.16.9.12 site to location_in_site

AIM element: PATH

Rules: subtype_exclusive_characterized_object

Reference path: site <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
representation_item =>
geometric_representation_item =>
placement =>
(axis2_placement_2d)
(axis2_placement_3d)

5.1.16.9.13 site to site_feature

AIM element: PATH

Rules: subtype_exclusive_characterized_object

Reference path: site <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
property_definition =>
site_feature

5.1.16.9.14 site to site_shape_representation

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AIM element: PATH

Rules: subtype_exclusive_characterized_object
subtype_mandatory_shape_representation

Reference path: site <=
characterized_object
characterized_definition = characterized_object
characterized_definition <-
property_definition.definition
{property_definition =>
product_definition_shape}
property_definition
property_definition.used_representation ->
representation =>
shape_representation =>
site_representation

5.1.16.9.15 site to sited_plant

AIM element: PATH

Reference path: site <=
property_definition <-
property_definition_relationship.relating_property_definition
{property_definition_relationship
property_definition_relationship.name = 'plant on site'}
property_definition_relationship
property_definition_relationship.related_property_definition ->
property_definition =>
sited_plant

5.1.16.10 Site_feature

AIM element: site_feature

Source: 227

Reference path: site_feature <=
property_definition

5.1.16.10.1 location_and_orientation

AIM element: [(axis2_placement_2d)
(axis2_placement_3d)]
[cartesian_point]

Source: 42

Reference path: site_feature <=
property_definition
represented_definition = property_definition
represented_definition <-

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property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
{representation_item
representation_item.name = 'feature orientation'}
representation_item =>
geometric_representation_item =>
[placement =>
(axis2_placement_2d)
(axis2_placement_3d)]
[placement
placement.location ->
cartesian_point
{cartesian_point <=
point <=
geometric_representation_item <=
representation_item
representation_item.name = 'feature location'}]

5.1.16.10.2 man_made_or_natural

AIM element: descriptive_representation_item.description

Source: 45

Reference path: site_feature <=
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
{representation_item
representation_item.name = 'origin type'}
representation_item =>
descriptive_representation_item
descriptive_representation_item.description
{(descriptive_representation_item.description = 'man made')
(descriptive_representation_item.description = 'natural')}

5.1.16.10.3 shape

AIM element: shape_representation

Source: 41

Rules: subtype_mandatory_shape_representation

Reference path: site_feature <=

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{property_definition =>
product_definition_shape}
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
{property_definition_representation =>
shape_definition_representation}
property_definition_representation
property_definition_representation.used_representation ->
representation =>
shape_representation

5.1.16.10.4 site_feature_id

AIM element: property_definition.name

Source: 41

Reference path: site_feature <=
property_definition
property_definition.name

5.1.16.10.5 type

AIM element: descriptive_representation_item.description

Source: 45

Reference path: site_feature <=
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation
representation.items[i] ->
{representation_item
representation_item.name = 'site feature type'}
representation_item =>
descriptive_representation_item
descriptive_representation_item.description

5.1.16.10.6 site_feature to changed_site_feature

AIM element: IDENTICAL MAPPING

5.1.16.11 Site_shape_representation

AIM element: site_representation

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Source: 227

Reference path: site_representation <=
shape_representation

5.1.16.11.1 site_shape_representation_id

AIM element: representation.name

Source: 43

Rules: subtype_mandatory_shape_representation

Reference path: site_representation <=
shape_representation <=
representation
representation.name

5.1.16.11.2 site_shape_representation to breakline

AIM element: PATH

Rules: subtype_mandatory_shape_representation

Reference path: site_representation <=
shape_representation <=
representation
representation.items[i] ->
representation_item =>
geometric_representation_item =>
{geometric_set =>
geometric_curve_set}
geometric_set
geometric_set.elements[i] ->
geometric_set_select
geometric_set_select = curve
curve =>
bounded_curve =>
polyline

5.1.16.11.3 site_shape_representation to gis_position

AIM element: PATH

Rules: subtype_mandatory_shape_representation

Reference path: site_representation <=
shape_representation <=
representation <-
representation_map.mapped_representation
representation_map <-
mapped_item.mapping_source
mapped_item <=

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representation_item <-
representation.items[i]
representation
{representation
representation.name = 'gis position'}

5.1.16.12 Sited_plant

AIM element: sited_plant

Source: 227

Reference path: sited_plant <=
property_definition
{property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_product_definition
characterized_product_definition
characterized_product_definition = product_definition
product_definition
[product_definition.formation ->
product_definition_formation
product_definition_formation.of_product ->
product =>
plant]
[product_definition.frame_of_reference ->
[product_definition_context <=
application_context_element
application_context_element.name = 'physical occurrence']
[product_definition_context
product_definition_context.life_cycle_stage = 'physical design']]}

5.1.16.12.1 plant_site_location

AIM element: cartesian_point

Source: 42

Rules: subtype_exclusive_characterized_object

Reference path: sited_plant <=
property_definition
property_definition.definition
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation <-
representation_map.mapped_representation
representation_map <-

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mapped_item.mapping_source
{mapped_item <=
representation_item <-
representation.items[i]
representation <-
property_definition_representation.used_representation
property_definition_representation
property_definition_representation.definition ->
represented_definition
represented_definition = property_definition
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_object
characterized_object =>
site}
mapped_item
mapped_item.mapping_target ->
{representation_item
representation_item.name = 'plant orientation'}
representation_item =>
geometric_representation_item =>
{placement =>
(axis2_placement_2d)
(axis2_placement_3d)}
placement
placement.location ->
cartesian_point
{cartesian_point <=
point <=
geometric_representation_item <=
representation_item
representation_item.name = 'plant location'}

5.1.16.12.2 plant_site_orientation

AIM element: (axis2_placement_2d)
(axis2_placement_3d)

Source: 42

Rules: subtype_exclusive_characterized_object

Reference path: sited_plant <=
property_definition
represented_definition = property_definition
represented_definition <-
property_definition_representation.definition
property_definition_representation
property_definition_representation.used_representation ->
representation <-
representation_map.mapped_representation
representation_map <-
mapped_item.mapping_source

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{mapped_item <=
representation_item <-
representation.items[i]
representation <-
property_definition_representation.used_representation
property_definition_representation
property_definition_representation.definition ->
represented_definition
represented_definition = property_definition
property_definition
property_definition.definition ->
characterized_definition
characterized_definition = characterized_object
characterized_object =>
site}
mapped_item
mapped_item.mapping_target ->
{representation_item
representation_item.name = 'plant orientation'}
representation_item =>
geometric_representation_item =>
placement =>
(axis2_placement_2d)
(axis2_placement_3d)

5.1.16.12.3 sited_plant to changed_sited_plant

AIM element: IDENTICAL MAPPING

5.1.16.13 Survey_point

AIM element: cartesian_point

Source: 42

Reference path: {cartesian_point <=
point <=
geometric_representation_item <=
representation_item
representation_item.name = 'survey point'}

5.1.17 Global rules referenced in the mapping specification

1. application_context_requires_ap_definition
2. approval_requires_approval_date_time
3. approval_requires_approval_person_organization
4. change_action_requires_date
5. change_item_requires_creation_date
6. change_item_requires_id
7. change_life_cycle_stage_usage_requires_approval
8. change_life_cycle_stage_usage_requires_stage
9. dependent_instantiable_application_context

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10. dependent_instantiable_product_context
11. dependent_instantiable_product_definition_context
12. product_context_discipline_type_constraint
13. product_definition_context_name_constraint
14. product_definition_usage_constraint
15. subtype_exclusive_characterized_object
16. subtype_mandatory_externally_defined_item
17. subtype_mandatory_pre_defined_item
18. subtype_mandatory_shape_representation
19. value_for_application_context
20. version2_p41_object_role_selection
21. version2_p41_uninstantiable_basic_attributes

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