
Table of Content

	Page
Foreword	iii
Committee Members.....	v
Past Chairmen of the Committee	vi
Table of Acronyms	vii
2017 Amendments	xix
2017 Editorial Changes.....	xx
Introduction.....	1
A. Source.....	1
B. Purpose.....	1
C. Amendments	1
D. Revisions to the Handbook	2
E. Annotation	2
F. Effective Enforcement Dates of Regulations.....	2
G. Section References.....	2
H. The International System of Units	2
I. “Mass” and “Weight.”	3
J. Use of the Terms “Mass” and “Weight.”	3
Chapter 1. General Information	5
1.1. Scope	5
1.1.1. When and Where to Use Package Checking Procedures	5
a. Point-of Pack.....	5
b. Wholesale.....	5
c. Retail	5
1.1.2. Selecting a Product for Testing	6
1.2. Package Requirements	6
1.2.1. Inspection Lot.....	6
1.2.2. Average Requirement.....	7
1.2.3. Individual Package Requirement	7
1.2.4. Maximum Allowable Variation	7
1.2.5. Exceptions to the Average and Individual Package Requirements	7
1.2.6. Deviations Caused by Moisture Loss or Gain.....	7
1.2.6.1. Applying a Moisture Allowance.....	8
1.3. Sampling Plans.....	8

1.3.1.	Audit Tests	9
1.4.	Other Regulatory Agencies Responsible for Package Regulations and Applicable Requirements	9
1.5.	Assistance in Testing Operations	10
1.6.	Health and Safety	10
1.7.	Good Measurement Practices	10
1.7.1.	Traceability Requirements for Measurement Standards and Test Equipment	10
1.7.2.	Certification Requirements for Standards and Test Equipment	10
Chapter 2.	Test Procedures for Packages Labeled by Weight - Gravimetric Testing.....	11
2.1.	Scope	11
2.2.	Measurement Standards and Test Equipment	11
2.2.1.	Scale Requirements	11
2.2.2.	Scale Accuracy	11
2.2.3.	Scale Tolerance	12
2.2.4.	Scale Verification	13
2.2.4.1.	Increasing-Load Test	14
2.2.4.2.	Decreasing-Load Test	14
2.2.4.3.	Shift Test	14
2.2.4.4.	Return to Zero	14
2.2.5.	Other Test Equipment Requirements	15
2.3.	Basic Test Procedure for Gravimetric Testing of Net Weight	15
2.3.1.	Define the Inspection Lot	16
2.3.2.	Select Sampling Plans	16
2.3.3.	Record Inspection Data	16
2.3.3.1.	Procedure for Recording Data	17
2.3.4.	Random Sample Selection	18
2.3.5.	Procedures for Determining Tare	18
a.	Used Dry Tare	19
b.	Unused Dry Tare	19
c.	Wet Tare	19
2.3.5.1.	Determination of Tare Sample and Average Tare Weight	19
2.3.5.1.1.	Unused Dry Tare	21
2.3.5.2.	Special Procedures for Determining Tare	21
a.	Aerosols and Other Pre-Pressurized Containers	21
b.	Vacuum Packed Coffee	21
2.3.6.	Determine Nominal Gross Weight and Package Error	22

2.3.6.1. Determine Nominal Gross Weight.....	22
2.3.6.2. Determine Package Error	22
2.3.6.3. Compute Total Package Error.....	23
2.3.7. Evaluate for Compliance.....	23
2.3.7.1. Maximum Allowable Variation (MAV) Requirement.....	23
2.3.7.2. Average Requirement	23
2.3.8. Moisture Allowances	24
2.3.8.1. Applying Moisture Loss before Determining Package Errors.....	24
2.3.8.2. Applying Moisture Allowance after Determining Package Errors	27
2.3.8.3. Moisture Allowance Gray Area	28
2.4. Borax	29
2.4.1. Test Equipment	29
2.4.2. Test Procedure.....	29
2.5. Determination of Drained Weight.....	31
2.5.1. Test Equipment	31
2.5.2. Test Procedure.....	31
2.6. Net Weight of Encased-in-Ice and Ice Glazed Products	32
2.6.1. Net Weight of Encased-in-Ice and Frozen Block Product	32
2.6.1.1. Test Equipment	32
2.6.1.2. Test Procedure for Encased-in-Ice Product Only.....	33
2.6.2. Net Weight of Ice Glazed Seafood, Meat, Poultry or Similar Products.....	34
2.6.2.1. Test Equipment	34
2.6.2.2. Test Procedures for Ice Glazed Product Only.....	34
2.6.3. Evaluation of Results	35
2.7. Determining the Net Weight and Percentage of Purge in Packages or Fresh and Frozen Chitterlings	35
2.7.1. Test Equipment	35
2.7.2. Test Procedure for Net Weight and Purge Determination for Fresh and Frozen Chitterlings.....	36
2.7.2.1. Net Weight and Purge Determinations	37
2.7.2.1.1. Test Procedure for Determining the Net Weight and Purge from Fresh and Frozen Chitterlings	37
2.7.3. Evaluations of Results – Compliance Determinations.....	39
a. Individual Package Requirement	39
b. Average Error Requirement	40
Chapter 3. Test Procedures – For Packages Labeled by Volume	43
3.1. Scope	43

3.1.1.	Test Methods.....	43
3.2.	Gravimetric Test Procedure for Non-Viscous Liquids.....	44
3.2.1.	Test Equipment	44
3.2.2.	Test Procedure.....	45
3.2.3.	Evaluation of Results	47
3.3.	Volumetric Test Procedure for Non-Viscous Liquids.....	47
3.3.1.	Test Equipment	47
3.3.2.	Test Procedure.....	48
3.3.3.	Evaluation of Results	48
3.4.	Volumetric Test Procedures for Viscous Fluids – Headspace	48
3.4.1.	Test Equipment	48
3.4.2.	Test Procedures.....	49
a.	Test Procedure for Testing Oils, Syrups, and other Viscous Liquids with a Smooth and Level Surface	49
b.	Test Procedure for Testing Mayonnaise, Salad Dressing, and Water Immiscible Products with no Smooth and Level Surface	50
3.4.3.	Evaluation of Results	51
3.5.	Goods Labeled by Capacity – Volumetric Test Procedure	51
3.5.1.	Test Equipment	51
3.5.2.	Test Procedure.....	51
3.5.3.	Evaluation of Results	51
3.6.	Pressed and Blown Glass Tumblers and Stemware	52
3.6.1.	Test Equipment	52
3.6.2.	Test Procedure.....	52
3.6.3.	Evaluation of Results	52
3.7.	Volumetric Test Procedure for Paint, Varnish, and Lacquers – Non-Aerosol	53
3.7.1.	Test Equipment	53
3.7.2.	Test Procedures.....	53
a.	Field (Retail) Auditing Procedure	53
b.	Plant Audit Test Procedure	56
c.	Violation Procedure	57
3.7.3.	Evaluation of Results	59
3.8.	Testing Viscous Materials – Such As Caulking Compounds and Pastes	59
3.8.1.	Test Equipment	59
3.8.2.	Test Procedure.....	59

3.8.3.	Evaluation of Results	60
3.9.	Peat Moss	61
3.9.1.	Dimensional Test Procedure for Compressed Quantity	61
3.9.1.1.	Test Equipment	61
3.9.1.2.	Test Procedure.....	62
3.9.2.	Uncompressed Volume Packages	67
3.9.2.1.	Test Equipment	67
3.9.2.2.	Test Procedure.....	67
3.9.3.	Evaluation of Results	68
3.10.	Mulch and Soils Labeled by Volume	68
3.10.1.	Test Equipment	68
3.10.2.	Test Procedure.....	70
3.10.3.	Evaluation of Results	70
3.11.	Ice Cream Novelties	71
3.11.1.	Test Equipment	71
3.11.2.	Test Procedure.....	72
3.11.3.	Evaluation of Results	74
3.12.	Fresh Oysters Labeled by Volume	75
3.12.1.	Test Equipment	75
3.12.2.	Test Procedure.....	75
3.12.3.	Evaluation of Results	76
3.13.	Determining the Net Contents of Compressed Gas in Cylinders	77
3.13.1.	Test Equipment	78
3.13.2.	Test Procedures	79
a.	Test Procedure for Cylinders Labeled by Weight	79
b.	Test Procedure for Cylinders Labeled by Volume	79
3.13.3.	Evaluation of Results	80
3.14.	Firewood – Volumetric Test Procedure for Packaged Firewood with a Labeled Volume of 113 L [4 ft ³] or Less and Stacked Firewood Sold by the Cord or Fractions of a Cord.....	80
3.14.1.	Test Equipment	80
3.14.2.	Test Procedure.....	81
a.	Boxed Firewood.....	85
b.	Stacked Firewood.....	88
c.	Bundles and Bags.....	92
3.14.3.	Evaluation of Results	96

3.15.	Test Procedure for Verifying the Useable Volume Declaration on Packages of Animal Bedding	98
3.15.1.	Test Equipment	98
3.15.2.	Test Procedure.....	103
Chapter 4.	Test Procedures – Packages Labeled by Count, Linear Measure, Area, Thickness, and Combinations of Quantities.....	115
4.1.	Scope	115
4.2.	Packages Labeled by Count	115
4.2.1.	Packages Labeled with 50 Items or Fewer.....	115
4.2.1.1.	Test Equipment	115
4.2.1.2.	Test Procedure.....	115
4.2.1.3.	Evaluation of Results	115
4.2.2.	Packages Labeled by Count of More than 50 Items.....	116
4.2.2.1.	Test Equipment	116
4.2.2.2.	Test Procedures	117
a.	Audit Procedure	117
b.	Violation Procedure	118
4.2.2.3.	Evaluation of Results	120
4.3.	Paper Plates and Sanitary Paper Products	120
4.3.1.	Test Equipment	120
4.3.2.	Test Procedure.....	121
4.3.3.	Evaluation of Results	121
4.4.	Special Test Requirements for Packages Labeled by Linear or Square Measure (Area).....	122
4.5.	Polyethylene Sheeting, Bags, and Liners	122
4.5.1.	Test Equipment	122
4.5.2.	Test Procedure.....	123
a.	Test Procedure for Polyethylene Sheeting	123
b.	Test Procedure for Polyethylene Bags and Liners	126
4.5.3.	Evaluation of Results	128
a.	Individual Thickness	128
b.	Average Thickness	128
4.6.	Packages Labeled by Linear or Square (Area) Measure	129
4.6.1.	Test Equipment	129
4.6.2.	Test Procedure.....	129
4.6.3.	Evaluation of Results	131
4.7.	Baler Twine – Test Procedure for Length.....	131

4.7.1.	Test Equipment	131
4.7.2.	Test Procedure.....	132
4.7.3.	Evaluation of Results	133
4.8.	Procedure for Checking the Area Measurement of Chamois.....	133
4.8.1.	Template Test Method (for field audits)	133
4.8.1.1.	Test Equipment	133
4.8.1.2.	Test Procedure.....	134
4.8.2.	Gravimetric Procedure for Area Measurement	134
4.8.2.1.	Test Equipment	134
4.8.2.2.	Test Procedure.....	135
4.8.3.	Evaluation of Results	136
4.9.	Procedure for Checking the Contents of Specific Agriculture Seed Packages Labeled by Count	136
4.9.1.	Test Equipment	136
4.9.2.	Test Procedure.....	136
4.9.3.	Evaluation of Results	138
Appendix A.	Tables	139
	Table 1-1. Agencies Responsible for Package Regulations and Applicable Requirements	139
	Table 2-1. Sampling Plans for Category A	142
	Table 2-2. Sampling Plans for Category B.....	142
	Table 2-3. Category A	143
	Table 2-4. Category B	146
	Table 2-5. Maximum Allowable Variations (MAVs) for Packages Labeled by Weight	147
	Table 2-6. Maximum Allowable Variations (MAVs) for Packages Labeled by Liquid and Dry Volume.....	149
	Table 2-7. Maximum Allowable Variations (MAVs) for Packages Labeled by Count	152
	Table 2-8. Maximum Allowable Variations (MAVs) for Packages Labeled by Length, Width, or Area.....	153
	Table 2-9. U.S. Department of Agriculture, Meat and Poultry Groups and Lower Limits for Individual Packages (Maximum Allowable Variations [MAVs])	154
	Table 2-10. Exceptions to the Maximum Allowable Variations (MAVs) for Textiles, Polyethylene Sheeting and Film, Mulch and Soil Labeled by Volume, Packaged Firewood Labeled in Terms of Volume, and Packages Labeled by Count with 50 Items or Fewer, and Specific Agricultural Seeds Labeled by Count.....	155
	Table 2-11. Sampling Plans and Accuracy Requirements for Packages Labeled by Low Count (50 or Fewer) and Packages Given Tolerances (Glass and Stemware)	156
Appendix B.	Random Number Tables.....	157
Appendix C.	Model Inspection Report Forms	167

Random Package Report	169
Random Package Report – Example	170
Standard Package Report.....	171
Standard Package Report – Example	172
Standard Package Report – Animal Bedding	173
Measurement Grid and Package Error Worksheet for Cylindrical and Square or Rectangular Test Measures	174
Ice Glazed Package Worksheet	175
Ice Glazed Package Worksheet – Example	176
Ice Glazed Package Report.....	177
Ice Glazed Package Report – Example	178
Determining the Free Liquid and Net Volume of Oysters Worksheet	179
Determining the Free Liquid and Net Volume of Oysters Worksheet – Example	180
Chitterlings Worksheet – Category A	181
Chitterlings Worksheet – Category A – Example	182
Chitterlings Worksheet – Category B.....	183
Chitterlings Worksheet – Category B – Example	184
Peat Moss Labeled by Volume Package Worksheet – Dimensional Procedure	185
Borax Audit Worksheet.....	186
Appendix D. AOSA Rules for Testing Seeds	187
AOSA Rules for Testing Seeds – Section 2: Preparation of Working Samples.....	187
AOSA Rules for Testing Seeds – Section 12: Mechanical Seed Count.....	191
Volume 1. Principles and Procedures	191
Appendix E. General Tables of Units of Measurement	193
Section 1. Tables of Metric Units of Measurement.....	193
Units of Length.....	193
Units of Area	194
Units of Liquid Volume	194
Units of Volume	194
Units of Mass	195
Section 2. Tables of U.S. Units of Measurement	195
Units of Length.....	195
Units of Area	195
Units of Volume	196
Gunter's or Surveyors Chain Units of Measurement	196
Units of Liquid Volume	196
Apothecaries Units of Liquid Volume	196

Units of Dry Volume.....	197
Avoirdupois Units of Mass	197
Troy Units of Mass.....	198
Apothecaries Units of Mass	198
Section 3. Notes on British Units of Measurement	199
Section 4. Tables of Units of Measurement	200
Units of Length – International Measure	200
Units of Length – Thickness Measurement.....	201
Units of Length – Survey Measure.....	201
Units of Area – International Measure	202
Units of Area – Survey Measure	203
Units of Volume	204
Units of Capacity or Volume – Liquid Volume Measure	206
Units of Mass Not Less Than Avoirdupois Ounces.....	207
Units of Mass Not Greater Than Pounds and Kilograms	208
Units of Pressure	210
Conversion Equations for Units of Temperature.....	210
Section 5. Tables of Equivalents	211
Units of Length.....	211
Units of Area	212
Units of Capacity or Volume.....	213
Units of Mass	215
Appendix F. Glossary	217
Index	225
References.....	231

THIS PAGE INTENTIONALLY LEFT BLANK