Check List for Reviewing Manuscripts

The following check list is intended to help NIST authors review the conformity of their manuscripts with proper SI usage and the basic principles concerning quantities and units. (The chapter or section numbers in parentheses indicate where additional information may be found.)

(1) ☐ Only SI units and those units recognized for use with the SI are used to express the values of quantities. Equivalent values in other units are given in parentheses following values in acceptable units *only* when deemed necessary for the intended audience. (See Chapter 2.)

(2) ☐ Abbreviations such as sec (for either s or second), cc (for either cm^3 or cubic centimeter), or mps (for either m/s or meter per second), are avoided and only standard unit symbols, SI prefix symbols, unit names, and SI prefix names are used. (See Sec. 6.1.8.)

(3) ☐ The combinations of letters "ppm," "ppb," and "ppt," and the terms part per million, part per billion, and part per trillion, and the like, are not used to express the values of quantities. The following forms, for example, are used instead: 2.0 μL/L or $2.0 \times 10^{-6}\ V$, 4.3 nm/m or $4.3 \times 10^{-9}\ l$, 7 ps/s or $7 \times 10^{-12}\ t$, where V, l, and t are, respectively, the quantity symbols for volume, length, and time. (See Sec. 7.10.3.)

(4) ☐ Unit symbols (or names) are not modified by the addition of subscripts or other information. The following forms, for example, are used instead. (See Secs. 7.4 and 7.10.2.)

$V_{max} = 1000$ V	*but not*:	$V = 1000\ V_{max}$
a mass fraction of 10 %	*but not*:	10 % (m/m) or 10 % (by weight)

(5) ☐ Statements such as "the length l_1 exceeds the length l_2 by 0.2 %" are avoided because it is recognized that the symbol % represents simply the number 0.01. Instead, forms such as "$l_1 = l_2\ (1 + 0.2\ \%)$" or "$\Delta = 0.2\ \%$" are used, where Δ is defined by the relation $\Delta = (l_1 - l_2)/l_2$. (See Sec. 7.10.2.)

(6) ☐ Information is not mixed with unit symbols (or names). For example, the form "the water content is 20 mL/kg" is used and not "20 mL H_2O/kg" or "20 mL of water/kg." (See Sec. 7.5.)

(7) ☐ It is clear to which unit symbol a numerical value belongs and which mathematical operation applies to the value of a quantity because forms such as the following are used. (See Sec. 7.7.)

35 cm × 48 cm	*but not*:	35 × 48 cm
1MHz to 10 MHz or (1 to 10) MHz	*but not:*	1 MHz – 10 MHz or 1 to 10 MHz
20 ºC to 30 ºC or (20 to 30) ºC	*but not*:	20 ºC – 30 ºC or 20 to 30 ºC
123 g ± 2 g or (123 ± 2) g	*but not:*	123 ± 2 g
70 % ± 5 % or (70 ± 5) %	*but not*:	70 ± 5 %
240 × (1 ± 10 %) V	*but not*:	240 V ± 10 % (one cannot add 240 V and 10 %)

(8) ☐ Unit symbols and unit names are not mixed and mathematical operations are not applied to unit names. For example, only forms such as kg/m^3, $kg \cdot m^{-3}$, or kilogram per cubic meter are used and *not* forms such as kilogram/m^3, kg/cubic meter, kilogram/cubic meter, kg per m^3, or kilogram per meter^3. (See Secs. 6.1.7, 9.5, and 9.8.)

(9) ☐ Values of quantities are expressed in acceptable units using Arabic numerals and the symbols for the units. (See Sec. 7.6.)

m = 5 kg	*but not*:	m = five kilograms or m = five kg
the current was 15 A	*but not*:	the current was 15 amperes.

(10) ☐ There is a space between the numerical value and unit symbol, even when the value is used as an adjective, except in the case of superscript units for plane angle. (See Sec. 7.2.)

a 25 kg sphere	*but not*:	a 25-kg sphere
an angle of 2°3'4"	*but not:*	an angle of 2 °3 '4 "

If the spelled-out name of a unit is used, the normal rules of English are applied: "a roll of 35-millimeter film." (See Sec. 7.6, note 3.)

(11) ☐ The digits of numerical values having more than four digits on either side of the decimal marker are separated into groups of three using a thin, fixed space counting from both the left and right of the decimal marker. For example, 15 739.012 53 is highly preferred to 15739.01253. Commas are not used to separate digits into groups of three. (See Sec. 10.5.3.)

(12) ☐ Equations between quantities are used in preference to equations between numerical values, and symbols representing numerical values are different from symbols representing the corresponding quantities. When a numerical-value equation is used, it is properly written and the corresponding quantity equation is given where possible. (See Sec. 7.11.)

(13) ☐ Standardized quantity symbols such as those given in Refs. [4] and [5] are used, for example, R for resistance and A_r for relative atomic mass, and not words, acronyms, or ad hoc groups of letters. Similarly, standardized mathematical signs and symbols such as are given in Ref. [4: ISO 31-11] are used, for example, "tan x" and not "tg x." More specifically, the base of "log" in equations is specified when required by writing $\log_a x$ (meaning log to the base a of x), lb x (meaning $\log_2 x$), ln x (meaning $\log_e x$), or lg x (meaning $\log_{10} x$). (See Secs. 10.1.1 and 10.1.2.)

(14) ☐ Unit symbols are in roman type, and quantity symbols are in italic type with superscripts and subscripts in roman or italic type as appropriate. (See Sec. 10.2 and Secs. 10.2.1 to 10.2.4.)

(15) ☐ When the word "weight" is used, the intended meaning is clear. (In science and technology, weight is a force, for which the SI unit is the newton; in commerce and everyday use, weight is usually a synonym for mass, for which the SI unit is the kilogram.) (See Sec. 8.3.)

(16) ☐ A quotient quantity, for example, mass density, is written "mass divided by volume" rather than "mass per unit volume." (See Sec. 7.12.)

(17) ☐ An object and any quantity describing the object are distinguished. (Note the difference between "surface" and "area," "body" and "mass," "resistor" and "resistance," "coil" and "inductance.") (See Sec. 7.13.)

(18) ☐ The obsolete term normality and the symbol N, and the obsolete term molarity and the symbol M, are not used, but the quantity amount-of-substance concentration of B (more commonly called concentration of B), and its symbol c_B and SI unit mol/m^3 (or a related acceptable unit), are used instead. Similarly, the obsolete term molal and the symbol m are not used, but the quantity molality of solute B, and its symbol b_B or m_B and SI unit mol/kg (or a related SI unit), are used instead. (See Secs. 8.6.5 and 8.6.8.)

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SI

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