

ANNEX A

GUIDELINES FOR NOTATION TO BE USED IN CIE PUBLICATIONS

A.1 General

A.1.1

The default font for CIE publications shall be Arial 10 pt.

A.1.2

Quantity symbols shall be in italic Times New Roman font, or italic Word 'symbol' font in the case of Greek symbols.

A.1.3

Symbols for quantities and variables shall be in italics (see also A.1.2, A.2.5, A.2.14); symbols for units and for descriptive terms (e.g. *r* for relative) shall not be in italics.

A.1.4

Where spectral quantities are expressed in the form $X_{\lambda}(\lambda)$, the subscript λ indicates the quantity $dX/d\lambda$ and shall therefore be in italics.

A.1.5

Arabic numerals shall be used for all numbers, whether in equations or free flowing text.

A.1.6

Every instance of a numerical value of a quantity shall be accompanied by the relevant unit for the quantity, e.g. 380 nm to 780 nm, not 380 to 780 nm.

A.1.7

Where numerical values of a quantity are given, the unit shall be expressed in abbreviated form (see also A.3.3), e.g. 380 nm, not 380 nanometres.

A.1.8

The unit symbols for degree, minute and second (for plane angle) shall follow immediately the numerical value; all other unit symbols shall be preceded by a space (also '%').

A.1.9

Multiplication of numerical values shall be indicated by \times from the Word 'symbol' font, e.g. $3 \times 4 = 12$ or $1,8 \times 10^{-3}$ (not $1,8 . 10^{-3}$ or $1,8 \cdot 10^{-3}$).

A.1.10

If mathematical operators are used, it must be clear whether this applies to a quantity or a numerical value; e.g. 20×30 m is not the same as 20 m \times 30 m.

A.1.11

The decimal marker shall be a comma; for numbers less than 1 a zero shall be used before the decimal comma, e.g. 0,12.

A.1.12

Digits of numerical values either side of the decimal marker shall be split into groups of 3 using a fixed space e.g. 12 345,678 90; the exception is four digit numbers representing a year date, which should be written without a space, e.g. 2008.

A.1.13

Where used in the index and section headings of documents, symbols shall always be in square brackets, but abbreviations, units and additional text shall be in round brackets.

A.1.14

All country abbreviations shall use the ISO country code.

A.2 Symbols for Quantities and Functions**A.2.1**

Only SI quantities, or quantities defined by the CIE in the International Lighting Vocabulary, shall be used.

A.2.2

Where a quantity has a symbol that is recommended within the SI, then this symbol shall be used.

A.2.3

Quantity symbols shall be single letters or symbols; multiple letters shall not be used.

A.2.4

Subscripts shall be used to distinguish between related quantities; e.g. the subscript v is used for photometric quantities, such as illuminance, and the subscript e for radiometric quantities, such as irradiance.

A.2.5

All subscripts shall be in Times New Roman font but should not be italicised unless the subscript represents a variable; e.g. the symbol for illuminance is E_v (v not in italics).

A.2.6

Multiple subscripts shall be separated by commas, with the inclusion of a space after the comma if this is required to prevent italicised characters overlapping, and must maintain the convention for use of italics; e.g. spectral irradiance has the subscript e,λ with λ in italics.

A.2.7

Where a subscripted quantity is used with a bracket, with the bracketed quantity indicating a variable, the subscript shall be placed before the bracket, e.g. $L_c(\lambda)$.

A.2.8

Variables with both a superscript and a subscript shall be set using the equation editor so that the superscript is placed over the subscript, e.g. ΔE_{ab}^* .

A.2.9

Where symbols use a 'dash', this shall be represented by the Word 'symbol' font character ' instead of the single quote character ', e.g. u' , v' and not u',v' .

A.2.10

Symbols for mathematical functions, such as cos for cosine and log for logarithm, shall be in Arial font and should not be italicised.

A.2.11

Where several quantity symbols are multiplied together, these shall be separated by a space, e.g. $l = v t$.

A.2.12

Where a numerical value is multiplied with a quantity symbol, they shall be separated by a space, e.g. $l = 3 t$.

A.2.13

Where quantities are divided by one another, the use of negative exponents is preferred, although the fractional form or divisor symbol may be used in cases where this cannot lead to any ambiguity or confusion; e.g. the following are all acceptable:

$$v = d_0 \log 0,05 (\log T)^{-1}$$

$$D = 1/\Phi_m$$

$$q = \frac{L}{E}$$

A.2.14

Symbols for functions and function variables shall be in Arial font, or Word 'symbol' font in the case of Greek symbols.

A.2.15

Integrals shall include a space before the integrand symbol, the 'd' in the integrand shall not be italicised and all other rules for symbols shall be observed, as in the following examples:

$$H_v = \int_{\Delta t} E_v dt$$

$$\int \varphi(\lambda) \cos \varepsilon d\lambda .$$

A.3 Units

A.3.1

Only SI units or units recognised for use with SI shall be used.

A.3.2

Only accepted abbreviations of units shall be used.

A.3.3

Abbreviations for units shall only be used in association with numerical values or quantity symbols; e.g. 'the resistance is 10 Ω ', 'resistance measured in ohms' or a graph axis labelled ' R/Ω ' are all acceptable but 'resistance measured in Ω ' is not.

A.3.4

Names of units shall always be lowercase, e.g. watt.

A.3.5

Abbreviations for units shall be lowercase unless the unit is named after an individual; e.g. the abbreviation for the metre is m whereas the abbreviation for the watt is W.

A.3.6

Prefix symbols for mega and larger shall be capitalised, e.g. MHz for megahertz.

A.3.7

Prefix symbols for kilo and smaller shall be lower case, e.g. mm for millimetre.

A.3.8

Names, symbols, abbreviations and prefixes for units shall all be in Arial font, non-italic.

A.3.9

Where several units are combined for a given quantity, the units shall be separated by a mid-centred dot, e.g. A·s.

A.3.10

Negative exponents shall be used in cases where units are divided by one another, e.g. $\text{cd}\cdot\text{m}^{-2}$, $\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$.

A.4 Checklist

| Guideline | Guideline reference(s) | Y/N? |
|--|--|-------------|
| All general text Arial 10 pt with all numbers in Arabic numerals? | A.1.1, A.1.5 | |
| Symbols in correct font and correctly aligned? <ul style="list-style-type: none"> Quantities and variables: Italic Times New Roman font or italic Word 'symbol' font for Greek symbols, and Word 'symbol' font for 'dash' symbol Units, descriptive terms and mathematical functions: Arial, non-italics Symbol 'dash' represented by ' not ' All subscripts in Times New Roman, with comma separators if appropriate, and only in italics if they represent a variable? Subscripts before brackets, if used Superscripts placed over subscripts, if both used | A.1.2, A.1.3, A.1.4, A.2.4, A.2.5, A.2.6, A.2.7, A.2.8, A.2.9, A.2.13, A.2.14, A.3.8 | |
| Units, in abbreviated form, given for all numerical values of quantities? | A.1.6, A.1.7 | |
| Space between numerical value and units? | A.1.8 | |
| Multiplication of numerical values indicated by \times ? | A.1.9 | |
| Clear whether mathematical operator applies to a quantity or a numerical value? | A.1.10 | |
| Comma used as decimal marker? | A.1.11 | |
| Digits split into groups of three either side of decimal marker (except for year dates)? | A.1.12 | |
| Correct use of brackets in index and section headings? | A.1.13 | |
| Country abbreviations use the ISO country code | A.1.14 | |
| SI quantities and units used? | A.2.1, A.3.1 | |
| SI symbols used for quantities where available? | A.2.2 | |
| Quantity symbols all single letter or symbols? | A.2.3 | |
| Space between multiplied quantities? | A.2.11, A.2.12 | |
| Negative exponents used; fraction form or divisor symbol for simple cases only? | A.2.13 | |
| Integrals have space before integrand symbol, with d not italicised | A.2.15 | |
| Correct SI symbols used for units (including correct case for unit abbreviations and prefixes) and all in Arial font? | A.3.2, A.3.5, A.3.6, A.3.7, A.3.8 | |
| Abbreviations for units only used with numerical values or quantity symbols | A.3.3 | |
| Unit names all lowercase? | A.3.4 | |
| Units separated by mid centred dot with negative exponents used for divided units? | A.3.9, A.3.10 | |

A.5 Recommended Equation Editor Settings

(adopted from ISO *eServices Guide*, ISO 2005)

a) Setting 1: Format / Spacing...

| | |
|------------------------------------|---------|
| Line spacing | 150 % |
| Matrix row spacing | 120 % |
| Matrix column spacing | 100 % |
| Superscript height | 45 % |
| Subscript depth | 25 % |
| Sub/superscript gap | 15 % |
| Limit height | 25 % |
| Limit depth | 100 % |
| Limit line spacing | 100 % |
| Numerator height | 35 % |
| Denominator depth | 100 % |
| Fraction bar overhang | 1 pt |
| Fraction bar thickness | 0,5 pt |
| Sub-fraction bar thickness | 0,25 pt |
| Slash/diagonal fraction gap | 8 % |
| Fence overhang | 1 pt |
| Horizontal fence gap | 10 % |
| Operator spacing (% of normal) | 100 % |
| Non-operator spacing (% of normal) | 100 % |
| Character width adjustment | 0 % |
| Minimum gap | 8 % |
| Radical gap (vertical) | 17 % |
| Radical gap (horizontal) | 8 % |
| Radical width (% of normal) | 100 % |
| Embellishment gap | 1,5 pt |
| Prime height | 45 % |
| Box stroke thickness | 5 % |
| Strike-through thickness | 5 % |
| Matrix partition line thickness | 5 % |
| Radical stroke thickness | 5 % |

b) Setting 2: Style / Define...

| Style | Font | | Character format | |
|---------------|----------------|-----------------|-------------------------------------|-------------------------------------|
| | Type 1 Base 13 | True Type | Bold | Italic |
| Text | Helvetica | Arial | | |
| Function | Helvetica | Arial | | |
| Variable | Times | Times New Roman | | <input checked="" type="checkbox"/> |
| L.C. Greek | Symbol | Symbol | | <input checked="" type="checkbox"/> |
| U.C. Greek | Symbol | Symbol | | <input checked="" type="checkbox"/> |
| Symbol | Symbol | Symbol | | |
| Matrix-Vector | Times | Times New Roman | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Number | Helvetica | Arial | | |

c) Setting 3: Size / Define...

| | |
|----------------------------|-------|
| Full | 10 pt |
| Subscript/Superscript | 80 % |
| Sub- Subscript/Superscript | 70 % |
| Symbol | 170 % |
| Sub-Symbol | 120 % |