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The marking for presence of the specific chemical substances for electrical and electronic equipment

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Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal of establishing a Japanese Industrial Standard from Japan Electronics and Information Technology Industries Association (JIETA) with a draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law. This Standard is a literary work to which protection by Copyright Law is applied.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

The marking for presence of the specific chemical substances for electrical and electronic equipment

Introduction This Japanese Industrial Standard intends further spread of adequately controlled electrical and electronic equipment, by standardizing the marking for presence of the specific chemical substances included in electrical and electronic equipment, so that improvement of management of the specific chemical substances in each step of the supply chain and life cycle by the enterprise is promoted, together with well understanding of general consumers, consequently effective utilization of resources and reduction of environmental loading are achieved.

1 Scope This Standard specifies the marking for presence of the specific chemical substances for electrical and electronic equipment

NOTE : In this Standard, the electrical and electronic equipment means such an equipment that offer of information for presence of the specific chemical substances is determined based on the Law for Promotion of Effective Utilization of Resources (Law No. 48, 1991) (hereafter referred to as PEUR Law).

However, application of this Standard to other electrical and electronic equipment is not restricted.

2 Normative references The following standard contains provisions which, through reference in this text, constitutes provisions of this Standard. If the indication of the Christian Era is given to the referred standard, only the edition of the indicated year constitutes the provision of this Standard but the revision and amendment made thereafter do not apply.

JIS Z 8102 : 2001 *Names of non-luminous object colours*

3 Terms and definitions For the purpose of this Standard, the following principal terms and definitions apply :

3.1 content marking marking on equipment body, package of equipment and catalogs or the like, when the percentage content of the substance to be calculated exceeds the reference value of percentage content (hereafter abbreviated as “reference percentage content”)

NOTE : For calculation of percentage content there is a method to use investigation results based on each level of supply chain in the manufacturing management. The consideration for calculation of percentage content is specified in Annex A, together with the reference percentage content. On the other hand, the test method is stated in Annex C for information for the case where measurements are necessary for calculation of percentage content.

3.2 equipment body the basic part of an electrical or electronic equipment that is indispensable to exert its function

3.3 package container a box which has a function to protect the equipment when electrical and electronic equipment is transported and stored

In general, it means an external box.

3.4 catalogue or the like such printed matters as catalogue and instruction manual, and electronic information on website

3.5 homogeneous substance of homogeneous material substance under such state that mechanical separation is impossible or material under such state that mechanical separation is impossible

(Mechanical separation is impossible means that the separation can not be done by such mechanical operations as unscrewing, cutting, crushing, shattering, grinding, etc.)

3.6 substance to be calculated substances which are subjected to percent content calculation form among substances included in homogeneous substance or homogeneous material (specified in table A.1)

3.7 unit a component which constitutes an equipment body

Gathering of plural units constitutes a product (equipment body).

3.8 URL (Uniform Resource Locator) the indication which specifies the website on the computer connected to the internet

3.9 website a place where the information in which letter, voice, image, etc. are mixed is offered to the user of internet

This is stored on the computer connected to the internet and specified by URL.

4 Marking for presence of the specific chemical substances for electrical and electronic equipment

4.1 Content mark and chemical substance symbol Marking for presence of the specific chemical substances by using content mark shall be as follows :

- a) In the marking by using the content mark, there are two ways i.e. the marking by using the content marks only and such marking that the content mark and the chemical substance symbols are placed together. If the specific chemical substance falls into the exception of content marking specified in Annex B, the marking by using the content mark is not performed.

NOTE : The green mark (see Annex D) may be used in the following cases :

- 1) When all the percentage content of the substances to be calculated is not exceeding the reference percentage content.
- 2) When some of the substances to be calculated falls into the said exception of content marking and the percent content of other substances to be calculated is not exceeding the reference percentage content.

- b) The content mark shall be as given in figure 1.

Further, the size and colour of content mark shall be as follows :

- 1) The size of content mark shall be a size firmly confirmed corresponding to the size of an object to be marked. Provided that the width shall be at least 15 mm.

- 2) The colour of content mark shall be yellow red specified in table 1 of **JIS Z 8102** (representative colour code is 2.5YR 5.5/13) and care shall be taken for distinction from the background colour. If it is impossible to use the specified colour due to limit on printing or the like, an easily distinguishable colour (complementary colour of background or the like) may be used, but use of a colour of green system shall be avoided.

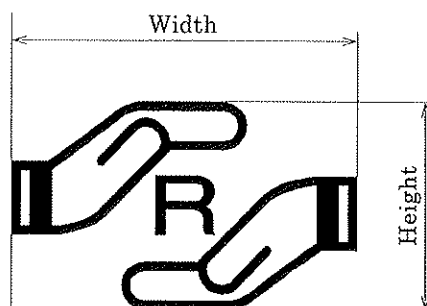


Figure 1 Content mark

- c) In such a marking that the content mark and chemical substance symbol(s) are written together, the marking shall be made in block by arranging the content mark above the chemical substance symbol as shown in the following figure 2. If the chemical substance symbol can not be arranged below the content mark, the content mark may be arranged on the left and the chemical substance symbol(s) may be arranged on the right.



Figure 2 When content mark and chemical substance symbol(s) are written together

The chemical substance symbol(s) is (are) marked as follows :

- 1) The chemical substance symbols to be used for content marking are given in table A.1.
- 2) It is preferable to use Gothic style for letters. The height of chemical substance symbol shall be not less than one sixth of the height of content mark, and the symbol(s) be easily identified.

The colour of chemical substance symbol shall be the same colour with that of content mark.

- 3) When plural percentage contents of chemical substances to be calculated exceed the respective reference percentage content, respective chemical substance symbols are described together. In this lined description, “,” is used between respective symbols for identification.

Examples : When one chemical substance is subjected to content marking : XX
When plural chemical substances are subjected to content marking : XX, YY

NOTE : “XX” and “YY” are the chemical substance symbols specified in table A.1.

4.2 Marking on equipment body In the content markings, the marking on equipment body shall be made as follows :

- a) The content mark only is marked on equipment body, in accordance with 4.1.
- b) The marking method shall be stamping, attachment of seal, etc. which will not easily disappear until disposal of equipment.
- c) The marking shall be located on a position when description of equipment type or the like can be confirmed at the same time.

4.3 Marking on package container of equipment In the content markings, the marking on package container of equipment shall be made as follows :

- a) Only the content mark is marked on package container of equipment in accordance with 4.1.
- b) The marking method shall be printing or the like which will not easily disappear until taking out of equipment from package container.
- c) The marking shall be located on a position where description of equipment type or the like can be confirmed at the same time.
- d) In such a case that the equipment consists of plural units and contained in separate containers, the content marking shall be made on each container of unit including the specific chemical substances.

4.4 Marking on catalog or the like

4.4.1 Marking on printed matters for equipment In the content markings, the marking on such printed matters as catalog, instruction manual, etc. shall be made as follows :

- a) The content mark and the chemical substance symbol(s) are marked together on such printed matters as catalog, instruction manual, etc., in accordance with 4.1.
- b) In this marking such a method shall be used that the marking will not easily disappear during the period of service of equipment.
- c) The marking shall be located on a position where description of equipment type or the like can be confirmed at the same time.
- d) the URL for the website where the information relating with content marking is entered shall be described.

4.4.2 Marking on website for equipment In the content markings, the marking on website shall be made as follows :

- a) The marking language shall be Japanese.
- b) The description of content conditions for each location shall be as follows :
- 1) The content conditions in coarse classification by unit (cabinet, mounting substrate, etc.) or the like shall be described, for each chemical substance symbol.
 - 2) The description of content conditions of substances to be calculated based on the reference percentage content specified in table A.1 shall be as follows :
 - 2.1) When the content exceeds the reference percentage content “numerical value of percentage content (wt%)”, “exceeding 0.1 wt%” or “exceeding 0.01 wt%” shall be described.
 - 2.2) When the situation corresponds to the exemption specified in Annex B, “exemption” shall be entered.
 - 2.3) In the case where the reference percentage content is not exceeded, the symbol “○” shall be entered.
 The words “not exceeding the reference percentage content” may be used.
 - 2.4) When some of the substances to be calculated corresponds to the exemption of content mark, and the percent contents of other substances to be calculated do not exceed the reference percentage content, the mark “○” and the words “not exceeding the reference percentage content” may be omitted.
 - 3) The standard number of this Standard **JIS C 0950** shall be entered.
- c) For the marking of content conditions at the location, the examples of markings are shown in Examples 1, 2, and 3.

Notice : Below examples are translated into English, although actual marking shall be open to the public in Japanese correspond to original **JIS C 0950**.

Example 1 Example of marking of content conditions when the substances to be calculated have a value exceeding the respective reference percentage contents

Equipment name : Television receiver Type designation : ○○-AAA

Coarse classification	Chemical substance symbol					
	Pb	Hg	Cd	Cr(VI)	PBB	PBDE
Mounting substrate	Exceeding 0.1 wt%	○	○	○	○	○
Cabinet	○	○	Exceeding 0.01 wt%	○	○	Exceeding 0.1 wt%
Cathode-ray tube	Exemption	○	○	○	○	○
Speaker	○	○	○	Exceeding 0.1 wt%	○	○

NOTE 1 The “exceeding 0.1 wt%” and “exceeding 0.01 wt%” indicate that the percentage content of the substance to be calculated is exceeding the reference percentage content.

NOTE 2 The “○” indicates that the percentage content of the substance to be calculated is not exceeding the reference percentage content.

NOTE 3 The “exemption” indicates that the substance to be calculated corresponds the exemption from content marks.

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Example 2 Example of marking on table for such case that some substances to be calculated correspond to exemption from content mark and percent contents of other substances to be calculated are not exceeding the respective reference percentage contents.

Equipment name : Television receiver Type designation : ○○-BBB

Coarse classification	Chemical substance symbol					
	Pb	Hg	Cd	Cr(VI)	PBB	PBDE
Mounting substrate	○	○	○	○	○	○
Cabinet	○	○	○	○	○	○
Cathode-ray tube	Exemption	○	○	○	○	○
Speaker	○	○	○	○	○	○
NOTE 1 The "○" indicates that the percentage content of the substance to be calculated is not exceeding the reference percentage content.						
NOTE 2 The "exemption" indicates that the substance to be calculated corresponds the exemption from content marks.						
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Example 3 Example of such case that some of substances to be calculated correspond to exemption from content mark and that percentage contents of other substances to be calculated are not exceeding the relevant reference percentage contents; is marked by writings

Equipment name : Television receiver Type designation : ○○-BBB

Only Pb included in cathode-ray tube corresponds to exemption from content mark (**JIS C 0950**)

- d) When use of website is impossible, the offering of information is done other media such as FAX, CD-ROM, etc.

Bibliography Law for Promotion of Effective Utilization of Resources (Law No. 48, 1991)

111/24/CD (2005-6-24), IEC 62321 *Procedures for the Determination of Levels of Regulated Substances in Electrotechnical Products*

Annex A (normative)

Conception on the specific chemical substances and calculation of their percentage content

Introduction This Annex specifies conception on the specific chemical substances and calculation of their percentage contents.

A.1 The specific chemical substance “The specific chemical substances” as the object of this Standard and “chemical substance symbols”, “substances to be calculated” and “reference percentage content” used in the content marking shall be as given in table A.1.

Table A.1 Specific chemical substance, chemical substance symbol, substance to be calculated and reference percentage content

Specific chemical substance	Chemical substance symbol	Reference percentage content wt%
Lead	Pb	0.1
Mercury	Hg	0.1
Cadmium	Cd	0.01
Hexavalent chromium	Cr(VI)	0.1
Polybrominated biphenyl	PBB	0.1
Polybrominated diphenyl ether	PBDE	0.1

Notice : In the original Japanese version of this standard, the table A.1 is composed of four columns, however to avoid misunderstanding when described in English the standard drafting organization have modified it into three columns instead.

A.2 Conception on calculation of percentage content The conception on calculation of percentage content is as follows :

- a) In the calculation of percentage content, the denominator is the mass of homogeneous substance or homogeneous material. However, in the case of complex substance or material, the following is considered as the homogeneous substance or homogeneous material:
- 1) Composed, polymer alloy, metallic alloy, etc.
 - 2) Regarding to such raw materials as paints, adhesive, ink, paste, resin polymer, glass powder, ceramic powder, etc, the thing formed last according to respective assumed usage.

Examples : For paint and adhesive : state after hardening by drying

For resin polymer : state after forming

State after formed to glass and ceramic

- 3) Single layer of painting, printing, plating, etc. In the case of plural layers, the state of respective single layer. However, when it is difficult to obtain the numerical value (of content) of each single layer by separating the plural layers, the separable minimum unit is considered as a homogeneous single layer.
- b) The numerator in calculation of percentage content, is the mass of the substances to be calculated.

Annex B (normative)

Matters exempted from content marking

Introduction This Annex specifies matters exempted from content marking.

B.1 Matters exempted from content marking The item stated below are exempted from the content marking, and the content marking of the specific chemical substances using the content marks specified in 4.1 to 4.4.2 of the text is not carried out on the matters corresponding to this exception.

- 1) Mercury in compact fluorescent lamps not exceeding 5 mg per lamp
- 2) Mercury in straight fluorescent lamps for general purposes not exceeding :
 - halophosphate 10 mg
 - triphosphate with normal lifetime 5 mg
 - triphosphate with long lifetime 8 mg
- 3) Mercury in straight fluorescent lamps for special purposes
- 4) Mercury in other lamps not specifically mentioned in this Annex B
- 5) Lead in glass of cathode ray tubes, electronic components and fluorescent tubes
- 6) Lead as an alloying element in steel containing up to 0.35 wt% lead, aluminium containing up to 0.4 wt% lead and as a copper alloy containing up to 4 wt% lead
- 7) Lead stated below :
 - Lead in high melting temperature type solders (i.e. tin-lead solder alloys containing more than 85 % lead by weight)
 - Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission as well as network management for telecommunication
 - Lead in electronic ceramic parts (e.g. piezoelectronic devices)
- 8) Cadmium plating except for applications banned under Directive 91/338/EEC²⁾ amending Directive 76/769/EEC¹⁾ relating to restrictions on the marketing and use of certain dangerous substances and preparations

NOTE¹⁾ For 76/769/EEC, see OJ L186, 12.7.1991, P.59 (OJ, Official Journal). Council Directive 91/339/EEC of 18 June 1991 amending for the 11th time Directive 76/769/EEC on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations

NOTE²⁾ For 91/338/EEC, see OJ L262, 27.9.1976, P.201 (OJ, Official Journal). Council Directive 76/769/EEC of 27 July 1976 on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations

- 9) Hexavalent chromium as an anti-corrosion of the carbon steel cooling system in absorption refrigerators
- 10) Decabrominated diphenyl ether for the purpose of polymers
- 11) Lead as an alloying element of lead/bronze used for bearing-shells and bushes
- 12) Lead used for compliant-pin connector systems
- 13) Lead as a coating material for thermal conduction module C ring
- 14) Lead and cadmium in optical and filter glass
- 15) Lead in solders consisting of two or more elements for the connection between the pins and the package of microprocessors with a lead content of exceeding 80 wt% but less than 85 wt%
- 16) Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit package (Flip Chips)
- 17) Lead in tin whisker resistant coatings for the following applications :
 - lead included in plating of printed circuit board to be connected with a connector of a narrow pitch (not exceeding 1 mm)
 - Lead included in plating of electronic component having lead frame of a narrow pitch (not exceeding 1 mm)
 - Lead included in plating of lead-wire terminals of FPC, FFC and connector
- 18) Solder including lead or cadmium used for the following specific purposes :
 - Solder used for connection between alumina substrate and copper heat sink in high frequency power amplifier module of business radio system
 - Low-melting-point solder alloys used for thermal cut-off and thermal element of heat sensor
- 19) Hexavalent chromium passivation coatings for the following specific purpose :
 - Rust preventive treatment of non-electrolytic nickel plated components
 - Rust preventive treatment of black galvanized components
- 20) Lead included in lead-oxide glass for plasma display panel and SED flat panel
- 21) Lead included in rare earth magnetic garnet crystal used for such optical devices as optical isolator, optical circulator, optical switch
- 22) Lead included in sealing glass for moisture proof of sheathed heater
- 23) Cadmium included in sulphide photo cells
- 24) Lead and cadmium used for thermosensor of thermal fuses
- 25) Lead included in amalgam used for discharge lamps

Annex C (informative)

Measuring method of substances to be calculated

Induction This Annex shows examples for the methods of measurements for calculation of percentage contents, if necessary.

C.1 Measuring methods In the measuring methods of substances to be calculated, there are simple analysis method and detailed analysis method as shown in table C.1. The simple analysis method may be used for screening the samples.

Table C.1 Measuring method of substances to be calculated

Measuring method of substances	Method of analysis	
	Simple analysis method	Detailed analysis method
Cadmium (Cd)	<ul style="list-style-type: none"> ☛Energy dispersive X-ray fluorescence analysis ☛Wavelength dispersive X-ray fluorescence analysis 	<ul style="list-style-type: none"> ☛Inductively-coupled plasma emission spectrometry ☛Inductively-coupled plasma source mass spectrometry ☛Time-of-flight secondary ion mass spectrometry ☛Atomic absorption spectrometry
Lead (Pb)	<ul style="list-style-type: none"> ☛Energy dispersive X-ray fluorescence analysis ☛Wavelength dispersive X-ray fluorescence analysis 	<ul style="list-style-type: none"> ☛Inductively-coupled plasma emission spectrometry ☛Inductively-coupled plasma source mass spectrometry ☛Time-of-flight secondary ion mass spectrometry ☛Atomic absorption spectrometry
Mercury (Hg)	<ul style="list-style-type: none"> ☛Energy dispersive X-ray fluorescence analysis ☛Wavelength dispersive X-ray fluorescence analysis 	<ul style="list-style-type: none"> ☛Inductively-coupled plasma emission spectrometry ☛Inductively-coupled plasma source mass spectrometry ☛Time-of-flight secondary ion mass spectrometry ☛Graphite furnace atomic absorption spectrometry ☛Flame atomic absorption spectrometry
Hexavalent chromium [Cr (VI)]	<ul style="list-style-type: none"> ☛Energy dispersive X-ray fluorescence analysis (All chromium) ☛Wavelength dispersive X-ray fluorescence analysis (All chromium) 	<ul style="list-style-type: none"> ☛Diphenylcarbazide absorptiometrical analysis ☛Ion chromatography ☛Time-of-flight secondary ion mass spectrometry
Polybrominated biphenyl (PBB) Polybrominated diphenyle ether (PBDE)	<ul style="list-style-type: none"> ☛Energy dispersive X-ray fluorescence analysis (All bromine) ☛Wavelength dispersive X-ray fluorescence analysis (All bromine) 	<ul style="list-style-type: none"> ☛Fourier transform infrared spectrometry ☛Gas chromatograph-mass spectrographic analysis ☛Ultraviolet spectrophotometric high-performance liquid chromatography ☛Mass spectrographic high-performance liquid chromatography ☛Time-of-flight secondary ion mass spectrometry

Annex D (informative)

Marking of green mark

Induction This Annex specifies the marking of green mark stated in the note of 4.1 a) in this text.

As for this green mark, trademark application is submitted from Japanese Electronics and Information Technology Industries Association (Application No. 2005-081039).

D.1 Green mark in electrical and electronic equipment The green mark shall be as follows:

- a) The green mark shall be as given in figure D.1. The size of a green mark shall be each that the marking is accurately confirmed according to the size of the object of marking.

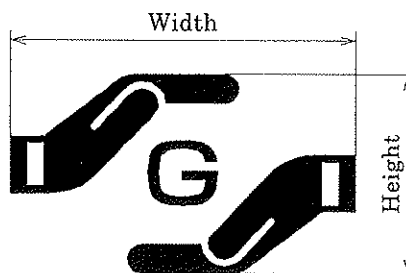


Figure D.1 Green mark

- b) The colour of green mark shall be green (representative colour code in 2.5G 6.5/10) specified in table 1 of **JIS Z 8102**, and care shall be taken so that it is distinguishable from the background colour. If it is impossible to use the specified colour due to limits from printing or the like, an easily distinguishable colour (complementary colour of background or the like) may be used other than yellow red system.
- c) In the marking of green mark, the situation of contents for each containing part shall be marked in accordance 4.4.2 of the text. An example of marking when such marking of green mark is possible is shown below.

Notice : Below example is translated into English, although actual marking shall be open to the public in Japanese correspond to original **JIS C 0950**.

Example Example of marking when marking of green mark is possible

Equipment name : Television receiver Type designation: ○○-CCC

Coarse classification	Chemical substance symbol					
	Pb	Hg	Cd	Cr(VI)	PBB	PBDE
Mounting substrate	○	○	○	○	○	○
Cabinet	○	○	○	○	○	○
Cathode-ray tube	Exemption	○	○	○	○	○
Speaker	○	○	○	○	○	○
<p>NOTE 1 The "○" indicates that the percentage content of the substance to be calculated is not exceeding the reference percentage content.</p> <p>NOTE 2 The "exempted item" means that the specific chemical substance corresponds to the items exempted from content marking.</p> <p style="text-align: right;">JIS C 0950</p>						

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