Panasonic Group

Chemical Substances Management Rank Guidelines

Version 12.1 (For Products)

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Quality & Environment Division

Panasonic Corporation

Contents

1. Objective of These Guidelines

The purpose of the "Chemical Substances Management Rank Guidelines (For Products)" is to ensure compliance with legislation and to reduce the environmental impact by clarifying the chemical substances that are prohibited and require special management if contained as environmentally impacting substances in products shipped by the Panasonic Group, or components, devices, materials, etc. delivered to the Panasonic Group, by thoroughly advising the Group's internal operations and suppliers of products, components, devices, and materials.

2. Application

2.1. Application to Products (Products shipped by the Panasonic Group)

(1) Products designed, manufactured, and sold by the Panasonic Group

(2) Products sold by the Panasonic Group with its trademark (including products outsourced to a third party by the Panasonic Group for design and manufacturing)

(3) Products purchased by the Panasonic Group from another company and sold as system[1] products after assembly

(4) Products contracted to the Panasonic Group from a third party for design and manufacturing (provided, however, that components, devices, materials, etc. specified by the third party are exempted from application of these Guidelines)

(5) Products used for sales promotion (Products provided to parties outside Panasonic (not limited to general consumers): giveaways, etc.)

(6) Packaging materials and packaging materials for transportation (pallets, shrink packs etc.).

2.2. Application to Components, Devices, Materials, etc. (Components, devices, materials, etc. delivered to the Panasonic Group)

This rule applies to the components, materials, and other items used for the products mentioned in Section 2.1 Application above.

(1) Components/materials (including electrical components, mechanical components, electro-mechanical components, semiconductors, printed circuit boards, exterior components, and packaging materials/components for shipping products by the Panasonic Group)

(2) Assembled components such as functional unit/module/board assemblies

(3) Accessories (for using products such as remote controllers, and AC adaptors.)

(4) Constituent materials such as auxiliary materials (e.g. tape, solder material, and adhesive.)

(5) Operating instructions, warranty certificates, and other printed matters enclosed in products

(6) Spare parts for repair (Requirements for the parts differ depending on the law or regulation.)

(7) Components and materials for sales promotion (e.g. labels)

(8) Packaging materials used for transport/protection by suppliers of components, devices, materials which directly contact the components, devices, and/or materials, and the target substance is highly likely to migrate and/or include in (Note that items do not directly contact the components, devices, and/or materials are not applicable).

3. Operations and Exemptions

(1) Although these Guidelines have been developed in accordance with relevant main laws and regulations, they do not always cover all relevant regulations. Hence, all products shall fully comply with the treaties, laws, ordinances, industry guidelines, and other requirements effective at the time of sales and in the region of sales in addition to these Guidelines.

(2) When Company/Business Division of the Panasonic Group sets out own contents of these guidelines more stringent than the Regulations by the Panasonic Group in accordance with the Company/Business Division circumstances (e.g. in the case of adding a certain prohibited substance to the guidelines by the Company or Business Division), the company/BD shall inform

[1] Aggregated products that are comprised of multiple types of products that perform a unified function

the contents to relevant parties (e.g. suppliers).

(3) With respect to these Guidelines, items where application of these Guidelines may be exempted/postponed, items that require management separate from these Guidelines, and items that can be deemed out of scope of these Guidelines are separately prescribed in "Detailed Rules for Internal Operation of the Panasonic Group Chemical Substances Management Rank Guidelines (For Products)" (internal document). In the event such items are present, communicate to relevant parties (e.g. suppliers) as necessary.

4. Establishment, Revision, and Abolition

(1) All items related to these Guidelines are examined by a Working Group consisting of representatives of experts from respective divisions of Companies under the Product Chemical Substance Management Committee, approved by the Product Chemical Substance Management Subcommittee, and finally approved by the Director of Quality & Environment Division.

(2) In case a requirement arises for revision or abolishment of these Guidelines, a request shall be submitted to the Product Chemical Substance Management Subcommittee or the secretariat of the Product Chemical Substance Management Committee.

(3) These Guidelines shall be discussed and reviewed periodically (once a year) by the Working Group. In the following cases, however, the secretariat will review and obtain approval from the Product Chemical Substance Management Subcommittee for revisions.

1) When the need arises for reflecting a change in social trends such as law amendments
2) When the need arises for reflecting a progress in technological trends (alternative technologies, assessment technologies), chemical hazard data, exposure data, and risk assessment data, etc.

5. Definition of Terms

The terms used in these Guidelines are defined as follows.

5.1. Panasonic Group

Refers to Panasonic Corporation and companies where Panasonic Corporation directly or indirectly owns more than its respective half of the voting rights.

5.2. Specified managed substance

Refers to Prohibited substances from Level 1 through 3 and managed substances that have been selected/approved based on the Selection Criteria of Prohibited Substances in the Chemical Substance Management Rank Guidelines.

5.3. Level 1 Prohibited Substances

The substances listed below and those that may be contained in products, components, devices, materials etc. specified in the scope of application are in this rank. Such substances must guarantee the Regulations by the Panasonic Group, and some must be discontinued immediately depending on the substance.

(1) A substance contained in products that is prohibited by existing laws and regulations; or a substance where the upper limit of concentration is specified.

(2) A substance that will be prohibited in products by laws and regulations or where the upper limit of concentration will be specified within one year of the enforcement of these Guidelines. Note that there is a case that a substance is set and restricted as a Level 1 Prohibited Substance more than 1 year ahead of the effective date of the law or regulation, because of the time lag between the effective date of the law or regulation, and that of this guidelines.

5.4. Level 2 Prohibited Substances

Any substance other than those specified as a Level 1 Prohibited Substance and shown below falls into this rank.

(1) Substances that will be prohibited in products after a certain period by a treaty, law, or regulation.

(2) Substances that are prohibited in products by the Panasonic Group prior to the effective period specified by a treaty, law, or regulation.

(3) Substances whose use is voluntarily restricted by the Panasonic Group.

Any confirmed content of such substances in products must be remedied by means of an alternative based on the period or restricted condition specified by these Guidelines.

5.5. Level 3 Prohibited Substances

Any substance other than those specified as a Level 1 or Level 2 Prohibited Substance that is reviewed for prohibition by convention, legislation, etc., and the clarification of substitution-related issues as well as the timing for prohibition is reviewed by the Panasonic Group in light of future legislation trends. The timing of prohibition of content in products is not set by the Panasonic Group at present.

5.6. Managed Substances

This rank refers to substances whose consumption needs to be monitored and for which consideration needs to be given to human health, safety and hygiene, adequate treatment, etc. The intentional use of these substances is not restricted, but their use and contained concentration must be monitored. Of the applicable managed substances, when they are used "intentionally" or "inclusion is known," such substances need to be identified.

5.7. Inclusion is known

This refers to "information that has been received from the material manufacturer indicating that the raw material contains the managed substance" or "data indicating that content of the managed substances has been confirmed by some other means."

5.8. Contained in Products

Refers to all cases where the substances are contained in products, components, devices, materials, etc. For example, the following conditions are included.

- Condition in which the subject substance is intentionally used
- Condition in which the subject substance is contained as an impurity
- Condition in which the subject substance is used in the manufacturing process and remains in or adheres to the finished product, or migrated to its components or materials. (It is necessary to pay due attention to the substance’s remaining or adhesion in the product, or migration to the product. e.g. a mold, jig and tool, or machine equipment that directly contacts the product during the manufacturing process, or a container or hose that contacts paint, etc.)

5.9. Intentional Use

Refers to intentionally using a certain substance during the process of manufacturing a product, component, device, material, etc. when continuous content is desirable for obtaining certain characteristics, appearance, or quality. Cases where the substance is ultimately not contained in the product, component, device, material, are excluded.

5.10. Impurity

A substance contained in natural materials which cannot be fully removed during the refining process, or is generated in a reaction process but cannot be removed technically.

5.11. Regulations by the Panasonic Group

Refers to contents that should be guaranteed by a business division in the Panasonic Group regarding the content of prohibited substances in products shipped from the Panasonic Group, and/or contents that should be guaranteed by the supplier of components, devices, materials, etc. delivered to the Panasonic Group.

5.12. Regulated Value

Concentration that should be guaranteed by a business division in the Panasonic Group regarding the content of prohibited substances in products shipped from the Panasonic Group, and/or contents that should be guaranteed by the supplier of components, devices, materials, etc. delivered to the Panasonic Group. Concentration includes impurity concentration.

5.13. Controlled Value

This refers to contained concentration for management by the Panasonic Group, which is deemed to not exceed the limit when the non-use control of Level 1 Prohibited Substances/Substance Groups is properly managed. If the contained concentration of the Prohibited substance exceeds the controlled value, request the supplier for clarification of the reason of content, and request the supplier to reduce the contained concentration to below the controlled value as necessary. (Warranty for controlled value is not to be requested to suppliers).

5.14. Contained Concentration

Contained concentration refers to the concentration of the substance expressed by the mass of homogeneous material placed in the denominator position. Homogeneous material refers to the material that cannot be mechanically disassembled into different materials. Examples of homogeneous materials are as follows.

- Chemical compound, polymer alloy, metal alloy, etc.
- For raw materials such as paint, adhesive, ink, paste, resin polymer, glass powder, ceramic powder, etc., the final form of each presumed application (e.g., the dried or cured state for paints and adhesives, the molded state for resin polymers, and the fired state for glass and ceramic materials)
- Single layer of painted, printed, or plated surface. In the case of multiple layers, the condition of each single layer must be homogeneous material.

As for packaging material, however, the mass of the part/material comprising the packaging (the part that can be easily separated (e.g. "corrugated board" used for packing the product, "adhesive tape" used for assembly in a corrugated box package, and “label” used for indication are to be considered as separate materials) is to be the denominator, and the total concentration (by weight) of the four metals of lead, cadmium, mercury, and hexavalent chromium is to be the contained concentration.

5.15. Date of Delivery Prohibition

Refers to the date from which delivery of components, devices, materials, etc. from suppliers (including Panasonic Business Divisions) to the Panasonic Group is to be prohibited.

6. Specified Managed Substances

6.1. Level 1 Prohibited Substances

Level 1 Prohibited Substances have been determined in accordance with the following Japanese and foreign legislation (Table 1). Products shipped from the Panasonic Group, and components, devices, materials, etc. delivered to the Panasonic Group must guarantee the Regulations by the Panasonic Group shown in Table 1.

In addition, if the contained concentration exceeds the controlled value (the concentration deemed to not exceed the limit when the non-use control of Level 1 Prohibited Substances/Substance Groups is properly managed) specified in Appendix 3 "Controlled Values for Prohibited Substances," request the supplier to clarify the reason of content, and request reduction of the contained concentration to below the controlled value as necessary.

The content of Level 1 Prohibited Substances must guarantee the Regulations by the Panasonic Group, and must be in a state controlled to be less than the controlled value.

6.1.1 Legislation in Japan and items subject to the requirements

- Class I Specified Chemical Substances (Substances prohibited from manufacturing and importing) determined by the "Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Chemical Substances Control Law)" (hereinafter **"CSCL"**)
- Specified Substances determined by the "Act on the Protection of the Ozone Layer through the Control and Other Measures on Specified Substances and Other Substances “(hereinafter “Ozone Layer Protection Act”).Substances subject to the obligation to control contained

substances and submit information as determined by the "Act on the Promotion of Effective Utilization of Resources" (hereinafter **"3R Law"**)

6.1.2 Legislation outside Japan, international treaties, and items subject to the requirements

- EU RoHS Directive (Directive 2011/65/EU): Directive 2011/65/EU of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment (hereinafter **"EU RoHS"**)
- EU REACH (Regulation (EC) No. 1907/2006): Annex XVII (Restrictions) of the Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (hereinafter **"EU REACH Annex XVII"**)
- EU POPs Regulation (Regulation (EU) No. 2019/1021): Annex I of the Regulation (EU) No. 2019/1021) of the European Parliament and of the Council on persistent organic pollutants (hereinafter **"EU POPs Annex I"**)
- EU Packaging Directive (Directive 94/62/EC): European Parliament and Council Directive on packaging and packaging waste (hereinafter **"EU Packaging Directive"**)
- EU Ozone Depletion Substance (ODS) Regulation (Regulation (EC) No 1005/2009): Regulation (EC) No 1005/2009 of the European Parliament and of the Council of 16 September 2009 on substances that deplete the ozone layer (recast) (hereinafter **"EU ODS"**)
- "Germany Chemicals prohibition ordinance" (hereinafter **"DE ChemVerbotsV"**)
- "Denmark Formaldehyde Regulation (No. 289, 22 June 1983)" (hereinafter **"DK Formaldehyde Regulation"**)
- "Specified states in the US: Toxics in Packaging Regulation)" (hereinafter **"US Specified States TIP"**)
- "The Montreal Protocol on Substances that Deplete the Ozone Layer" (hereinafter **"Montreal Protocol"**)
- "Environmental Taxes on Ozone-depleting chemicals (ODCs); 26 CFR 52.4682-1-3)" (hereinafter **"US CFC tax"**)
- "The Clean Air Act; Title VI - Stratospheric Ozone Protection" (hereinafter **"US CAA"**)
- "Stockholm Convention on Persistent Organic Pollutants" (hereinafter **"POPs Convention"**)
- “Canadian Environmental Protection Act”, 1999 (hereinafter **"CEPA 1999"**)
- “US Toxic Substances Control Act” (hereinafter **"TSCA"**)
- “Minamata Convention on Mercury” (hereinafter “Minamata Convention”)
- “EU End-of-life Vehicles (ELV) Directive (Directive 2000/53/EC) “of the European Parliament and of the Council (hereinafter “EU ELV”)

Table 1 List of Level 1 Prohibited Substances/Substance Groups

It is required to guarantee the Regulations by the Panasonic Group below.

Note 1: For the analysis of the major substances, follow IEC 62321 (excluding the older version IEC 62321:2008)[*1]

Note 2: Any substances not included in this list must also be fully compliant if applicable regions or products are individually designated by a treaty, law, ordinance, industry guidelines, etc.

Note 3: It is necessary to pay due attention to the prohibited substances containing in products, except those restricted under the EU RoHS Directive, because even spare parts of products for repair are often covered by a regulation that restricts use of the prohibited substances.[*2]

No.	Substance/Substance Group Name	Regulations by the Panasonic Group	Major Referenced Laws/ Regulations
1	Polychlorinated biphenyls (PCBs) (see Table 2- 1)	Intentional use prohibited and concentration must be less than 50ppm[*3]	CSCL[*4], POPs Convention EU POPs Annex I
	Polychlorinated terphenyls (PCTs) (see Table 2- 2)	Must be less than 50ppm[*3]	EU REACH Annex XVII
2	Asbestos (see Table 2- 3)	Intentional use prohibited Content of this substance, including unintentional contamination/adhesion from concurrent production or from manufacturing equipment, is prohibited	EU REACH Annex XVII
3	Specific organic tin compounds (1) Bis (tributyltin) oxide Tri-substituted organostannic compounds (see Table 2- 4)	Tin concentration[*5] must be less than 1000ppm[*3]	CSCL, EU REACH Annex XVII
4	Specific organic tin compounds (2) Dibutyltin compounds (see Table 2- 5)	Tin concentration[*5] must be less than 1000ppm[*3*6]	EU REACH Annex XVII
5	Specific organic tin compounds (3) Dioctyltin compounds (see Table 2- 6)	Tin concentration[*5] must be less than 1000ppm[*3] (The regulation scope is limited)	EU REACH Annex XVII
6	Short-chain chlorinated paraffin (SCCPs, C10–13) (see Table 2- 7)	Intentional use prohibited and concentration must be less than 1500ppm if contained as an impurity of medium-chain chlorinated paraffin (MCCP, C14-17)[*3]	EU POPs Annex I POPs Convention CSCL

7	Specified brominated flame-retardants (PBBs, PBDEs) (see Table 2- 8)	-Equipment covered under the EU RoHS Directive Concentration must be less than 1000ppm[*7]	CSCL, EU RoHS, EU REACH Annex XVII,
		-Products except those covered under the EU RoHS Directive concentration of PBDE must be less than 500ppm[*8]	EU POPs Annex I
8	Azo dye and pigment forming specified amines (see Table 2- 9)	Concentration must be less than 30mg/kg (30ppm) (as specified amine)[*3] (The regulation scope is limited)	EU REACH Annex XVII
9	Polychlorinated naphthalene (1 or more chlorine atoms) (see Table 2- 10)	Intentional use prohibited[*3]	EU POPs Annex I, CSCL, POPs Convention
10	Cadmium and its compounds (see Table 2- 11)	Concentration must be less than 100ppm (Exemptions are provided.)	3R Law, EU RoHS, EU ELV, EU REACH Annex XVII
11	Lead and its compounds (see Table 2- 12)	Concentration must be less than 1000ppm (Exemptions are provided.)	3R Law, EU RoHS, EU ELV, EU REACH Annex XVII
12	Hexavalent chromium compounds (see Table 2- 13)	- Concentration of leather products and leather components must be less than 3ppm[*9] - Concentration of items other than the above must be less than 1000ppm (Exemptions are provided.)	3R Law, EU RoHS, EU ELV, EU REACH Annex XVII
13	Mercury and its compounds (see Table 2- 14)	Concentration must be less than 1000ppm (Exemptions are provided.)	3R Law, EU RoHS EU ELV, Minamata Convention
-	* No. 10 – 13 Four heavy metals (Cadmium, Lead, Hexavalent chromium, and Mercury) (see Table 2- 15)	Intentional use prohibited and concentration must be less than 100ppm[*10] in total with the mass of the materials constituting the packaging as the denominator (Regulated scope is packaging)	EU Packaging Directive, US Specified States TIP
14	Ozone-depleting substances (excluding HCFC) (see Table 2- 16)	Intentional use prohibited[*11]	Ozone Layer Protection Act, Montreal Protocol, US CFC tax

15	Hydrochlorofluorocarbons (HCFC) (see Table 2- 17)	Intentional use prohibited[*3]	EU ODS, US CAA Ozone Layer Protection Act
16	Formaldehyde (see Table 2- 18)	Aerial concentration must be less than 0.1ppm (DE ChemVerbotsV)[*12] Aerial concentration must be less 0.15mg/m^3 (DK Formaldehyde Regulation)[*12] (The regulation scope is limited)	DE ChemVerbotsV, DK Formaldehyde Regulation US TSCA
17	Perfluorooctane sulfonate (PFOS) and its salts (see Table 2- 19)	Intentional use prohibited and must be - less than 1000ppm for semi finished goods, articles, and parts[*3] - less than 1μg/m^2 for surface treatment[*3] (Exemptions are provided.)	EU POPs Annex I CSCL, POPs Convention
18	Specified benzotriazole 2-(2H-1,2,3-benzotriazole-2-yl)-4,6-di-tert-butylphenol (see Table 2- 20)	Intentional use prohibited[*3]	CSCL
19	Dimethylfumarate (see Table 2- 21)	Concentration must be less than 0.1ppm[*3]	EU REACH Annex XVII
20	Polycyclic aromatic hydrocarbons (PAH) (see Table 2- 22)	Concentration must be less than 1ppm[*3] (The regulation scope is limited)	EU REACH Annex XVII
21	Hexabromocyclododecane (HBCD) (see Table 2- 23)	Intentional use prohibited and must be less than 100ppm[*3]	EU POPs Annex I, CSCL, POPs Convention
22	Four phthalates - Bis(2-ethylhexyl) phthalate (DEHP) - Benzyl butyl phthalate (BBP) - Dibutyl phthalate (DBP) - Diisobutyl phthalate (DIBP) (see Table 2- 24)	-Equipment covered under the EU RoHS Directive Concentration of one of the phthalates must be less than 1000ppm	EU RoHS
		Products except those covered under the EU RoHS Directive Concentration of the four phthalates must be less than 1000ppm in total of the four phthalates	EU REACH Annex XVII

23	Three chlorinated phosphate ester flame retardants - Tris(1,3-dichloro-2-propyl) phosphate (TDCPP) - Tris(2-chloroethyl) phosphate (TCEP) - Tris (chloroisopropyl) phosphate (TCPP) (see Table 2- 25)	Concentration must be less than 1000ppm*3 (There are exemptions.)	US national law (including local government law)
24	Hydrofluorocarbon (HFC) (see Table 2- 26)	Ban on intentional use *3 (The regulation scope is limited)	Canadian Environmental Protection Act
25	Perfluorooctanoic acid (PFOA), its salts and PFOA-related substances (see Table 2- 27)	Intentional use prohibited and -In the case of PFOA (including individual salts), concentration must be less than 25ppb (0.025ppm) *3 -In the case of combination of one or multiple PFOA-related substances, concentration must be less than 1000ppb (1ppm) in total of the PFOA, its salts and PFOA-related substances. *3 (There are exemptions.)	EU POPs Annex I

*1: The original text for IEC 62321 (Determination of certain substances in electrotechnical products) is available from, for example, the IEC Web Store (https://webstore.iec.ch/)

*2: Under the EU REACH Regulation, EU POPs Regulation, and the like, even spare parts of products for repair whose products were placed on the market before the effective date of an applicable regulation, must not contain the prohibited substances, which is different from the restriction under EU RoHS Directive. On the other hand, under EU RoHS Directive, the spare parts of products for repair whose products were placed on the market before the effective date of the Directive or the expiration date of the exemption, are exempted from the restriction on containing the prohibited substances. However, under the EU RoHS Directive, the spare parts of products for repair whose products are placed on the market after the effective date of the regulation or the expiration date of the exemption, they must not contain the prohibited substances. Therefore, it is necessary to pay due attention to the law or regulation, as the requirements differ depending on the law or regulation.

*3: If compliance with the Regulations by the Panasonic Group is verified by tracing back the supply chain, the analysis for checking non-use of the subject substance is not required.

*4: It is also necessary to consider how to handle Chemical Substances Containing By-Product Class I Specified Chemical Substances.

*5: Tin concentration = (The specific organic tin compound concentration in a homogeneous material) x (Tin conversion coefficient)

$$\text{Tin conversion coefficient} = \frac{118.7^{*A} \times N^{*B}}{[\text{Molecular weight of a specified organic tin compound}]}$$

*A: Tin atomic weight, *B: Number of tin atoms in tin compounds

*6: If a dibutyltin compound is intentionally used with a concentration of less than 1000ppm, we may request the supplier for the submission of evidence (e.g. analysis data) required for guaranteeing that the concentration is less than the regulated value of 1000ppm.

*7: The regulated value 1000ppm indicates the concentration of each substance group of PBB and PBDE.

*8: The restricted value of 500ppm indicates concentration of the PBDE substance group.

*9: Hexavalent chromium with the total dry weight of leather products or leather components must be less than 3ppm by weight. For chrome tanned (including trivalent chromium tanned) leather products and leather components, conduct analysis and confirm that the content rate of hexavalent chromium is less than 3ppm. On the other hand, for leather products and leather components not processed with chrome tanning, trace back the supply chain and confirm that the content rate of hexavalent chromium is less than 3ppm; if confirmed, analysis of this substance is unnecessary.

*10: Content of four heavy metals (lead, cadmium, mercury, and hexavalent chromium) in total with the mass of materials constructing the packaging must be less than 100ppm by weight. Materials constructing the packaging are parts which can be easily separated (e.g. "corrugated board" in a corrugated board package and "adhesive tape" used for assembly, and “label” for displaying are to be considered as different materials.)

*11: In the latest Green Procurement Standards, use of ozone-depleting substances in production processes (which refers to the use of the relevant substances, even if they are not contained in products or components, including the intentional use of such substances during manufacturing products or components (e.g. in the washing process)) is prohibited.

*12: Test methods shall comply with individual laws.

Table 2　Regulated Items of Level 1 Prohibited Substances

Table 2- 1

Substance/Substance Group Name: Polychlorinated biphenyls (PCBs)
Regulated items
All applications [Applications and use examples] Insulation oil, lubricant oil, electric insulator, solvent, electrolyte, plasticizer, fire-retardant, flame retardant, coating agent for electric wires and cables, dielectric sealant

Table 2- 2

Substance/Substance Group Name: Polychlorinated terphenyls (PCTs)
Regulated items
All applications [Applications and use examples] Insulation oil, lubricant oil, electric insulator, solvent, electrolyte, plasticizer, fire-retardant, flame retardant, coating agent for electric wires and cables, dielectric sealant

Table 2- 3

Substance/Substance Group Name: Asbestos
Regulated items
All applications [Applications and use examples] Brake lining pad, gasket (sealing material), insulator, filler, abrasive, pigment, paint, talc, thermal insulator

Table 2- 4

Substance/Substance Group Name: Specific organic tin compounds (1) Bis (tributyltin) oxide, tri-substituted organostannic compounds
Regulated items
All applications [Applications and use examples] Bis (tributyltin) oxide: Paint, pigment, preservative Tri-substituted organostannic compounds: Paint, pigment, stabilizer

Table 2- 5

Substance/Substance Group Name: Specific organic tin compounds (2) Dibutyltin (DBT) compounds
Regulated items
All applications [Applications and use examples] Resin stabilizers, hardening catalysts for polyurethane or silicone, coating agents for glass, , rubber modifier agents

Table 2- 6

Substance/Substance Group Name: Specific organic tin compounds (3) Dioctyltin (DOT) compounds
Regulated items
The following applications: – Textile articles intended to come into contact with the skin – Wall and floor coverings – Two-component room temperature vulcanisation moulding kits (RTV-2 moulding kits)

Table 2- 7

Substance/Substance Group Name: Short- chain chlorinated paraffins (SCCPs)
Regulated items
All applications [Applications and use examples] Plasticizer for polyvinyl chloride (PVC), flame retardant

Table 2- 8

Substance/Substance Group Name: Specified Brominated Flame-retardant (PBB, PBDE) (All PBBs and PBDEs including Deca BDE (deca-bromo-diphenyl-ether))
Regulated items
All applications Products, components, and devices covered under the EU RoHS Directive, must not contain the above substances exceeding 1000ppm in total. As for PBDE, articles (e.g. materials for batteries*[1, 2], packaging materials, toys, and nursery items.) must not contain PBDE exceeding 500ppm in total.

*1: Batteries: primary batteries, accumulators (secondary batteries), and battery packs
*2: For batteries, refer to individual law and regulation, and take actions if necessary.

Table 2- 9

Substance/Substance Group Name: Azo dye and pigment forming specified amines

Regulated items

Textiles and leather products that may have direct contact with human skin and/or oral cavities for an extended period of time

Examples: Clothing, bedding, towels, hairpieces, wigs, caps, and other hygiene items, sleeping bags, footwear, gloves, wristwatch bands, earphones, headphones, straps, shoulder belts, etc.

The specified amines that must not be generated by reductive decomposition of Azo dye and pigment are listed below.
(EU REACH Regulation Annex XVII Ref. Appendix 8 Entry 43 - Azocolourants - List of aromatic amines)

Specified amines that must not be generated

	CAS RN®	Substances
1	92-67-1	biphenyl-4-ylamine 4-aminodiphenyl xenylamine
2	92-87-5	Benzidine
3	95-69-2	4-chloro-o-toluidine
4	91-59-8	2-naphthylamine
5	97-56-3	o-aminoazotoluene 4-amino-2',3-dimethylazobenzene 4-o-tolylazo-o-toluidine
6	99-55-8	5-nitro-o-toluidine
7	106-47-8	4-chloroaniline
8	615-05-4	4-methoxy-m-phenylenediamine
9	101-77-9	4,4'-methylenedianiline 4,4'-diaminodiphenylmethane
10	91-94-1	3,3'-dichlorobenzidine 3,3'-dichlorobiphenyl-4,4'-ylenediamine
11	119-90-4	3,3'-dimethoxybenzidine o-dianisidine
12	119-93-7	3,3'-dimethylbenzidine 4,4'-bi-o-toluidine
13	838-88-0	4,4'-methylenedi-o-toluidine
14	120-71-8	6-methoxy-m-toluidine p-cresidine
15	101-14-4	4,4'-methylene-bis-(2-chloro-aniline) 2,2'-dichloro-4,4'-methylene-dianiline
16	101-80-4	4,4'-oxydianiline
17	139-65-1	4,4'-thiodianiline
18	95-53-4	o-toluidine 2-aminotoluene
19	95-80-7	4-methyl-m-phenylenediamine (2,4-toluenediamine)
20	137-17-7	2,4,5-trimethylaniline
21	90-04-0	o-anisidine 2-methoxyaniline
22	60-09-3	4-amino azobenzene

Table 2- 10

Substance/Substance Group Name: Polychlorinated naphthalene (1 or more chlorine atoms)	
Regulated items	
All applications [Applications and use examples] Lubricant, paint, stabilizer (electric property, flame-proof property, water-proof property) insulator, flame retardant	

Table 2- 11

Substance/Substance Group Name: Cadmium and its compounds	
Regulated items	
All applications except those in the exemptions shown below. (See Table 2- 15 for packaging material.) [Applications and use examples] Stabilizer/pigment/dye/paint/ink used for plastics (including rubber, film), phosphor, alloy, packaging materials, etc.	
Exemptions	– Items listed in Appendix 1 and 2 "Exempted Items List" – Uses in batteries as materials for batteries *1*2 (under the EU Battery Directive)

*1: Batteries: primary batteries, accumulators (secondary batteries), and battery packs
*2: Check the individual law or regulation, and take actions if necessary.

Table 2- 12

Substance/Substance Group Name: Lead and its compounds	
Regulated items*1	
All applications except those in the exemptions shown below. (See Table 2- 15 for packaging.) [Applications and use examples] Paint, pigment, dye, ink, stabilizer in plastic (including rubber) material Solder coating on and packaging material of component external electrode, lead terminal, etc.	
Exemptions	– Items listed in Appendix 1 and 2 "Exempted Items List" – Uses in batteries*2*3 (under the EU Battery Directive)

*1: For products destined for in North America subject to the California Proposition 65 Settlement Agreement dated September 3, 2002, if lead is intentionally added to the surface material covering the cord, or its lead content exceeds 300ppm (0.03%), a warning label is required.
*2: Batteries: primary batteries, accumulators (secondary batteries), and battery packs
*3: Check the individual law or regulation, and take actions if necessary.

Table 2- 13

Substance/Substance Group Name: Hexavalent chromium compounds	
Regulated items	
(1) Leather products and leather components that have contact with the skin (2) Other than the above: All applications except those in the exemptions shown below. (See Table 2- 15 for packaging materials.) [Applications and use examples] Rust-proof treatment, plastics, paint, pigment, ink, packaging materials, leather (e.g. exterior parts of products, leather parts of carrying cases) etc.	
Exemptions	– Items listed Appendix 1 and 2 "Exempted Items List" – Uses in batteries[*1*2] (under the EU Battery Directive)

*1: Batteries: primary batteries, accumulators (secondary batteries), and battery packs
*2: Check the individual law or regulation, and take actions if necessary.

Table 2- 14

Substance/Substance Group Name: Mercury and its compounds	
Regulated items	
All applications except those shown in the exemptions. (See Table 2- 15 for packaging.) [Applications and use examples] Pigment, dye, paint, ink, indicator such as hour meter, relay, switch, sensor where mercury is used for electrical contact, harmonizer in plastics, packaging material, etc.	
Exemptions	– Items listed Appendix 1 and 2 "Exempted Items List" – Uses in batteries[*1*2] excluding mercury batteries (under the EU Battery Directive)

*1: Batteries: primary batteries, accumulators (secondary batteries), and battery packs
*2: Check the individual law or regulation, and take actions if necessary.

Table 2- 15

Substance/Substance Group Name: Four heavy metals (Cadmium, Lead, Hexavalent chromium, Mercury)	
Regulated items	
All uses in packaging other than listed in the exempted items [Applications and use examples] Pigment, dye, paint, ink, packing material, adhesive agent, staple, label	
Exemptions	Case that reuse of the substance in a closed loop such as palettes is clearly stated.[*1]

*1: When a packaging material with a total content of four heavy metals exceeding 100ppm is reused in a closed loop, confirm and handle each case individually since notification obligation etc. may be posed by the US Specified States Toxics in Packaging Regulation.

Table 2- 16

Substance/Substance Group Name: Ozone-depleting substances (excluding HCFC)
Regulated items
All applications [Applications and use examples] Refrigerant, foaming agent, mounted substrate cleaner, etc.

Table 2- 17

Substance/Substance Group Name: Hydrochlorofluorocarbons (HCFC)
Regulated items
All applications*1 [Applications and use examples] Refrigerant, foaming agent, mounted substrate cleaner, etc.

*1: Developing countries to which Article 5 of The Montreal Protocol “Special situation of developing countries” apply shall be handled taking into account technical and economic feasibility.

Table 2- 18

Substance/Substance Group Name: Formaldehyde
Regulated items*1*2
Wood products and parts using materials such as particle boards and MDF (medium density fiberboard). The products and parts above shall satisfy the following conditions (E.g. Speaker box, rack). – Less than the regulated values of Table 1 shall be met, not banning intentional use. However, for products destined for regions other than those regulated by law, the application of less than 0.5 mg/L (JIS: desiccator method) may also be possible. The regulated values in building products and housing equipment shall be determined by the applicable Company or Business Division.

*1: Products sold in North America subject to the California Composite Wood Products ATCM for Formaldehyde must comply with this regulation.

*2: For formaldehyde content in fiber, products sold in Europe subject to the Austria regulates (Austria - BGB I 1990/194: Formaldehydverordnung, regulated amount = 75ppm) must comply with this regulation.

Table 2- 19

Substance/Substance Group Name: Perfluorooctane sulfonate (PFOS) and its salts Molecular formula $C_8F_{17}SO_2X$ (X = other derivatives including OH, metallic salts, halogen compounds, amides, or polymers)	
Regulated items	
All applications	
	–

Table 2- 20

Substance/Substance Group Name: Specified benzotriazole (2- (2H-1,2,3-benzotriazole-2-il) -4, 6-di-tert-butylphenol)
Regulated items
All applications [Applications and use examples] UV absorption agent for plastic resin, plastic building materials, coating resin for photos with sublimation transfer printing

Table 2- 21

Substance/Substance Group Name: Dimethylfumarate (DMF)
Regulated items
All applications [Applications and use examples] Moisture-proof agent, mold-proof agent

Table 2- 22

Substance/Substance Group Name: Polycyclic aromatic hydrocarbons (PAH)
Regulated Items
Rubber or plastic components that come into direct as well as prolonged or short-term repetitive contact with the human skin or the oral cavity. Examples: Sport equipment such as bicycles, golf clubs, racquets, household utensils, trolleys, walking frames, tools for domestic use, clothing, footwear, gloves and sportswear, watch-straps, wrist-bands, masks, head-bands etc.

Covered substances

	CAS RN®	Substances
1	50-32-8	Benzo[a]pyrene (BaP)
2	192-97-2	Benzo[e]pyrene (BeP)
3	56-55-3	Benzo[a]anthracene (BaA)
4	218-01-9	Chrysen (CHR)
5	205-99-2	Benzo[b]fluoranthene (BbFA)
6	205-82-3	Benzo[j]fluoranthene (BjFA)
7	207-08-9	Benzo[k]fluoranthene (BkFA)
8	53-70-3	Dibenzo [a, h] anthracene (DBAhA)

Table 2- 23

Substance/Substance Group Name: Hexabromocyclododecane (HBCD)
Regulated items
All applications [Applications and use examples] Flame retardant

Table 2- 24

Substance/Substance Group Name: Four phthalates Bis(2-ethylhexyl) phthalate (DEHP[*1]) Benzyl butyl phthalate (BBP) Dibutyl phthalate (DBP) Diisobutyl phthalate (DIBP)
Regulated items
Products, components, and devices covered under the EU RoHS Directives must not include 1,000ppm or more per one phthalate. Products covered under the EU REACH Annex XVII Restriction on phthalates (e.g. Materials for batteries[*2], Packaging materials[*3], and Toys & childcare articles) must not include the phthalates 1,000ppm or more in total of the four phthalates. [Applications and use examples] Plasticizer for rubber, elastomer, and resin (particularly polyvinyl chloride) Additive for paint, ink, and adhesives

*1: DEHP is often called as DOP, particularly by material manufacturers; therefore, particular attention must be paid to the indication of 'DOP'.
*2: Batteries: primary batteries, accumulators (secondary batteries), and battery packs
*3: Note that the four phthalates in the packaging materials are restricted in total concentration under EU REACH.

Table 2- 25

Substance/Substance Group Name: Three chlorinated phosphate ester flame retardants Tris(1,3-dichloro-2-propyl)phosphate (TDCPP) Tris(2-chloroethyl)phosphate (TCEP) Tris (chloroisopropyl) phosphate (TCPP)	
Regulated items	
All applications other than those shown in the Exemptions below [Applications and use examples] Flame retardant	
Exemptions	– Motor vehicles or replacement parts or replacement equipment for motor vehicles; – Commercial or residential building insulation or wiring that otherwise complies with the Construction Codes Supplement, set forth in Title 12 of the District of Columbia Municipal Regulations; – Desktop and laptop computers, audio and video equipment, calculators, wireless telephones, game consoles, handheld devices incorporating a screen that are used to access interactive software and their associated peripherals, and cables, adaptors, and other similar connecting devices; or – Storage media, such as compact discs, for interactive software, such as computer games.

Table 2- 26

Substance/Substance Group Name: Hydrofluorocarbon (HFC)
Regulated items
Products include HFC indicated in Attached table 1, 6.1.3 (Exemption: Household air conditioner and Household heat pump) Each product is restricted by HFC global warming potential (GWP) per use. [Applications and use examples] – Stand-alone refrigerator and Centralized refrigeration equipment, – Chiller, Mobile refrigeration equipment, and household refrigerator – Extruded polystyrene form, Rigid polystyrene form, Polystyrene high pressure form spray, and pressure form spray, and Polystyrene low pressure form spray which were manufactured using HFC, – Automobile air conditioner – Aerosol

Table 2- 27

Substance/Substance Group Name: Perfluorooctanoic acid (PFOA), its salts and PFOA-related substances	
Regulated items	
All applications other than those shown in the Exemptions below [Applications and use examples] Fluororesin/Fluor rubber, Fluororesin coating, and antireflection agent in semiconductor exposure process	
Exemptions	– Impurity at concentration less than 1ppm in polytetrafluoroethylene (PTFE) micropowders produced by ionising irradiation of up to 400 kilograys or by thermal degradation.

Attached table

Attached table 1. Hydrofluorocarbon (HFC) *1

	CAS RN®	Substance Name	Another name
1	75-46-7	Trifluoromethane	HFC-23
2	75-10-5	Difluoromethane	HFC-32
3	593-53-3	Methyl fluoride	HFC-41
4	354-33-6	Ethane, 1,1,1,2,2-pentafluoro-	HFC-125
5	359-35-3	1,1,2,2-Tetrafluoroethane	HFC-134
6	811-97-2	1,1,1,2-Tetrafluoroethane	HFC-134a
7	430-66-0	1,1,2-Trifluoroethane	HFC-143
8	420-46-2	Ethane, 1,1,1-trifluoro-	HFC-143a
9	624-72-6	1,2-Difluoroethane	HFC-152
10	75-37-6	1,1-Difluoroethane	HFC-152a
11	431-89-0	Propane, 1,1,1,2,3,3,3-heptafluoro-	HFC-227ea
12	677-56-5	1,1,1,2,2,3-Hexafluoro-propane	HFC-236cb
13	431-63-0	1,1,1,2,3,3-Hexafluoropropane	HFC-236ea
14	690-39-1	Propane, 1,1,1,3,3,3-hexafluoro-	HFC-236fa
15	679-86-7	1,1,2,2,3-Pentafluoropropane	HFC-245ca
16	460-73-1	1,1,1,3,3-Pentafluoropropane	HFC-245fa
17	406-58-6	1,1,1,3,3-Pentafluorobutane	HFC-365mfc
18	138495-42-8	Pentane, 1,1,1,2,3,4,4,5,5,5-decafluoro-	HFC-43-10mee

*1：HFC which is covered under the Canadian Environmental Protection Act, 1999

6.2. Level 2 Prohibited Substances

Level 2 Prohibited Substances are classified into Level 2A and Level 2B, according to the purpose of promoting substitution.

Level 2A Prohibited Substances refer to substances whose use will be phased out after a certain period by a treaty, law, or regulation, or substances whose prohibition to be used in products is promoted by the Panasonic Group prior to a period specified by a treaty, law, or regulation. As of now, there is no list of Level 2A Prohibited Substance/Substance Groups.

Level 2B Prohibited Substances refer to substances restricted for use on a voluntary basis by the Panasonic Group.

Table 3 List of Level 2B Prohibited Substances/Substance Groups

No	Substance/Substance Group	Major Laws Referenced	Date of Delivery Prohibition of components, materials, etc. to the Panasonic Group[*1]
1	Polyvinyl chloride (PVC) and its mixtures **(**see Table 4-1**)**	Panasonic Group's voluntary restriction	-
2	Perfluorohexane-1-sulphonic acid (PFHxS), its salts, and PFHxS-related substances **(**see Table 4-2**)**	Persistent Organic Pollutants (POPs) review committee (POPRC) recommended to consider including PFHxS to the list of POPs in Oct., 2019.	Details will be set according to regulatory trends hereafter.

*1: When a Company/Business Division of the Panasonic Group sets its own timing earlier than these Guidelines in accordance with its circumstances (e.g. requests by a customer), information to that extent shall be communicated to relevant parties (e.g. suppliers).

Table 4 Regulated Items of Level 2B Prohibited Substances

Table 4-1

Substance/Group Name: Polyvinylchloride (PVC) and its mixtures	
Regulated Items	
Use in the following applications other than those specified in the exemptions: (a) Internal wiring in equipment[*1] of new electrical and electronic equipment. (b) Packaging materials used for products and accessories, etc. to be included in the product package Note that the restricted individual components and materials shall be handled upon request by each Company/Business Division of the Panasonic Group. The substitute polyvinyl chloride material shall be halogen-free (excluding fluorine) in principle. When using red phosphorus as a flame retardant, ensure compliance with product safety standards.	
Exemptions	Decision by relevant Companies and BDs: In cases where: quality such as safety cannot be maintained; procurement is difficult; materials are specified by law or regulation; materials are specified by the customer, etc.

*1: Cables considered as equipment under the EU RoHS Directive are excluded.

Table 4-2

Substance/Group Name: Perfluorohexane-1-sulphonic acid and its salts (PFHxS)	
Regulated Items	
All applications except those for exempted items. [Applications and use examples] Fluororesin/fluororubber, fluorine coating, and anti-reflective agent used in semiconductor exposure process	
Exemptions	(Exemptions will be defined, once descriptions on EU POPs regulation Annex I, or EU REACH regulation Annex XVII are determined and published on the gazette.)

6.3. Level 3 Prohibited Substances

A list is provided in Table 5.

Table 5 List of Level 3 Prohibited Substances/Substance Groups

Substance/Substance Group	Major law referenced
Phthalates other than DEHP, BBP, DBP, DIBP[*1]	EU REACH Annex XVII (Covered toys) California Proposition 65
Diarsenic trioxide, Diarsenic pentaoxide	EU REACH Annex XIV (Substances subject to authorization)
Cobalt dichloride	EU REACH Annex XIV (Substances subject to authorization) Draft proposal
Refractory Ceramic Fibers	EU REACH (Substances subject to authorization) Draft proposal
Beryllium oxide	Substance subject to reporting of information to WEEE recyclers

*1: E.g. Diisononyl phthalate (DINP), Di-n-pentyl phthalate, Diisopentyl phthalate (DIPP), Di-n-octyl phthalate, Bis(2-methoxyethyl) phthalate, Di-"isodecyl" phthalate (DIDP), etc.

6.4. Managed Substances

This rank refers to substances whose consumption needs to be monitored and for which consideration needs to be given to human health, safety and hygiene, adequate treatment, etc. Although the use of these substances is not restricted, their use and contained concentration must be monitored. Of the applicable managed substances, when they are used "intentionally" or "inclusion is known," such substances need to be identified[*1].

*1: Reporting of contents of "managed substances" in the packaging used by component supplier for transportation/protection is not required if legal compliance etc. is unnecessary (e.g. when components subject to REACH regulations are exported to the EU along with packaging materials, it is required to report the content of candidate substances for authorization to its authority under the EU REACH Regulation (substances of very high concern; SVHC).)

The managed substances in these Guidelines are subject to the substances listed in the legal regulations, industry standards etc. shown in Table 6. These substances are equivalent to the applicable substances in the "chemSHERPA Declarable Substance Ver. (latest Version)" specified by the Joint Article Management Promotion Consortium (JAMP), excluding the prohibited substances specified by these guidelines.

Substances subject to management must fully be compliant if applicable regions or products are individually designated by a treaty, law, ordinance, industry guidelines, etc.

Table 6 Legal Regulations, Industry Standards etc. relating to the Managed Substances

Target regulations	Remarks
Japan Chemical Substances Control Law (Class 1 specified substances)	Excluding the prohibited substances specified in these Guidelines
US Toxic Substances Control Act (TSCA) Prohibition of use or restriction of substances (Section 6)	Excluding the prohibited substances specified in these Guidelines
EU REACH Annex XVII (Restrictions)	Excluding the prohibited substances specified in these Guidelines
EU REACH Regulation Candidate substances for authorization (Substances of Very High Concern (SVHC)) and ANNEX XIV (substances for authorization)	Excluding the prohibited substances specified in these Guidelines
EU POPs Regulation Annex I	Excluding the prohibited substances specified in these Guidelines
GADSL (Automotive industry) Global Automobile Declarable Substances List	Excluding the prohibited substances specified in these Guidelines
IEC 62474 (Electrical and electronic) Material Declaration for Products of and for the Electrotechnical Industry	Excluding the prohibited substances specified in these Guidelines

6.5. Substances List Specified by These Guidelines

Refer to the following document and list for legal regulations with "prohibited substances" and "managed substances" as specified in these guidelines and the subject substances covered per industry standards.

– "Explanation of chemSHERPA Declarable Substances"*

* Reference addresses of the materials and list:

The manual is included in the chemSHERPA data entry support tool package (latest)

Japanese	https://chemsherpa.net/tool
English, Chinese	https://chemsherpa.net/english/tool

6.6. Reference

In order to check the applicability of the "managed substances," the chemSHERPA data entry support tool obtained from the link provided in 6.5 may be used. However, the tool is only considered an auxiliary means of checking the applicability of the substance. Even if the data entry support tool does not indicate a substance as declarable, the substance still needs to be reported if it is known to be subject to legal regulations.

7. Main Change Points from Version 12 to Version 12.1

(1) Level 1 Prohibited Substances

- Added the EU ELV Directive for the laws referenced for cadmium, lead, hexavalent chromium.
- Added 'Note 3' to draw attention to the case that even spare parts for repair can be subject to the law or regulation.
- Added '*4' for the CSCL that is a main law referenced for PCBs.
- Specified brominated flame-retardants (PBBs, PBDEs) are divided into 2 parts: equipment covered under the EU RoHS, and others; and the respective requirements set by the regulation for Panasonic group are separately stated.
- Deleted the descriptions for Perfluorooctane sulfonate (PFOS) and its salts and added descriptions for 4 phthalates in the Substance/Substance Group box.
- Modified the descriptions for the four phthalates in the Substance/Substance Group box.
- Added three chlorinated phosphate ester flame retardants to the Panasonic regulation 'with exemptions'.
- Added PFOA, its salts and PFOA-related substances to the Panasonic group regulation as 'Intentional use prohibited and' and 'with exemptions', changed the EU REACH regulation Annex XVII to 'EU POPs regulation Annex I' for major referenced law. Deleted the table 2.

(2) Other revisions

Amended part	Amended Contents
3. Operations and Exemptions	Added descriptions to (2)
5.3 Level 1 Prohibited Substances	Added descriptions to (2)
6.1.2. Legislation outside Japan, international treaties, and items subject to the requirements	-Updated the regulation number for the EU POPS. -Added the EU ELV Directive.
Table 5 List of Level 2B Prohibited Substances/Substance Groups	Added Perfluorohexane-1-sulphonic acid (PFHxS), its salts, and PFHxS-related substances

<< Panasonic Group Chemical Substances Management Rank Guidelines List of Exempted Items >>

Revised: April 17, 2020

A part of expired exempted substances are not included on this list.
For the latest information on exempted substances, make sure to check details with the following European Commission RoHS web site:
http://ec.europa.eu/environment/waste/rohs_eee/adaptation_en.htm
To those who have an ID for the Panasonic Chemical Substance Management (PCSM) system,
refer to the latest information on exempted substances on the notice of the PCSM system.
Note that on the table below, the following abbreviations are respectively used for the categories.
Cat. 8 in vitro : for category 8 in vitro diagnostic medical devices
Cat. 9 industrial : for category 8 in vitro diagnostic medical devices
Cat. 8, 9 others : for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments
Categories of EEE are as follows:
1. Large household appliances.
2. Small household appliances.
3. IT and telecommunications equipment.
4. Consumer equipment.
5. Lighting equipment.
6. Electrical and electronic tools.
7. Toys, leisure and sports equipment.
8. Medical devices.
9. Monitoring and control instruments including industrial monitoring and control instruments.
10. Automatic dispensers.
11. Other EEE not covered by any of the categories above.

◆ Referenced legislation: EU RoHS Directive ANNEX III

* Revised the dates for No. 31 and 32 in Annex III (January 7, 2021)

No.	Exemption	Scope and dates of applicability	Date from which delivery of components, materials, etc. to the Panasonic Group will be prohibited (Six months before the dates of applicability)
1 (a)	Mercury in single capped (compact) fluorescent lamps for general lighting purposes < 30 W:not exceeding (per burner) 2.5 mg	Currently under review in EU	To be set based on EU review results
1 (b)	Mercury in single capped (compact) fluorescent lamps for general lighting purposes≥ 30 W and < 50 W:not exceeding (per burner) 3.5 mg	Currently under review in EU	To be set based on EU review results
1 (c)	Mercury in single capped (compact) fluorescent lamps for general lighting purposes≥ 50 W and < 150 W:not exceeding (per burner) 5 mg	Currently under review in EU	To be set based on EU review results
1 (d)	Mercury in single capped (compact) fluorescent lamps for general lighting purposes≥ 150 W:not exceeding (per burner) 15 mg	Currently under review in EU	To be set based on EU review results
1 (e)	Mercury in single capped (compact) fluorescent lamps for general lighting purposes with circular or square structural shape and tube diameter≤ 17 mm:not exceeding (per burner) 7 mg	Currently under review in EU	To be set based on EU review results
1 (f)	Mercury in single capped (compact) fluorescent lamps for special purposes: not exceeding (per burner) 5 mg	Currently under review in EU	To be set based on EU review results
1 (g)	Mercury in single capped (compact) fluorescent lamps for general lighting purposes < 30 W with a lifetime equal or above 20 000 h:not exceeding (per burner) 3.5 mg	Currently under review in EU	To be set based on EU review results
2 (a) (1)	Mercury in double-capped linear fluorescent lamps Tri-band phosphor with normal lifetime and a tube diameter < 9 mm (e.g. T2) for general lighting purposes not exceeding (per lamp): 4 mg	Currently under review in EU	To be set based on EU review results
2 (a) (2)	Mercury in double-capped linear fluorescent lamps Tri-band phosphor with normal lifetime and a tube diameter ≥ 9 mm and ≤ 17 mm (e.g. T5) for general lighting purposes not exceeding (per lamp): 3 mg	Currently under review in EU	To be set based on EU review results
2 (a) (3)	Mercury in double-capped linear fluorescent lamps Tri-band phosphor with normal lifetime and a tube diameter > 17 mm and ≤ 28 mm (e.g. T8) for general lighting purposes not exceeding (per lamp): 3.5 mg	Currently under review in EU	To be set based on EU review results
2 (a) (4)	Mercury in double-capped linear fluorescent lamps Tri-band phosphor with normal lifetime and a tube diameter > 28 mm (e.g. T12) for general lighting purposes not exceeding (per lamp): 3.5 mg	Currently under review in EU	To be set based on EU review results
2 (a) (5)	Mercury in double-capped linear fluorescent lamps Tri-band phosphor with long lifetime (≥ 25000h) for general lighting purposes not exceeding (per lamp): 5 mg	Currently under review in EU	To be set based on EU review results
2 (b) (1)	Mercury in other fluorescent lamps Linear halophosphate lamps with tube > 28 mm (e.g. T10 and T12) not exceeding (per lamp):10 mg	13 April 2012	Already prohibited
2 (b) (2)	Mercury in other fluorescent lamps Non-linear halophosphate lamps (all diameters) not exceeding (per lamp):15 mg	13 April 2016	Already prohibited
2 (b) (3)	Mercury in other fluorescent lamps Non-linear tri-band phosphor lamps with tube diameter > 17 mm (e.g. T9) not exceeding (per lamp): 15 mg	Currently under review in EU	To be set based on EU review results
2 (b) (4)	Mercury in other fluorescent lamps for other general lighting and special purposes (e.g. induction lamps)not exceeding (per lamp): 15 mg	Currently under review in EU	To be set based on EU review results
3 (a)	Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes Short length (≤ 500 mm) not exceeding (per lamp): 3.5 mg	Currently under review in EU	To be set based on EU review results
3 (b)	Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes Medium length (> 500 mm and≤ 1 500 mm) not exceeding (per lamp):5 mg	Currently under review in EU	To be set based on EU review results
3 (c)	Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes Long length (> 1 500 mm) not exceeding (per lamp):13 mg	Currently under review in EU	To be set based on EU review results
4 (a)	Mercury in other low pressure discharge lamps not exceeding (per lamp):15 mg	Currently under review in EU	To be set based on EU review results

No.	Exemption	Scope and dates of applicability	Date from which delivery of components, materials, etc. to the Panasonic Group will be prohibited (Six months before the dates of applicability)
4 (b)-I	Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index Ra > 60, P≦ 155 W: 30 mg	Currently under review in EU	To be set based on EU review results
4 (b)-II	Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes with improved colour rendering index Ra > 60, 155 W < P≦ 405 W: 40 mg	Currently under review in EU	To be set based on EU review results
4 (b)-III	Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes with improved colour rendering index Ra > 60, P > 405 W: 40 mg	Currently under review in EU	To be set based on EU review results
4 (c)-I	Mercury in other High Pressure Sodium (vapour) lamps for general lighting purposes P≦ 155 W not exceeding (per burner):25 mg	Currently under review in EU	To be set based on EU review results
4 (c)-II	Mercury in other High Pressure Sodium (vapour) lamps for general lighting purposes 155 W < P≦ 405 W not exceeding (per burner):30 mg	Currently under review in EU	To be set based on EU review results
4 (c)-III	Mercury in other High Pressure Sodium (vapour) lamps for general lighting purposes P > 405 W not exceeding (per burner):40 mg	Currently under review in EU	To be set based on EU review results
4 (d)	Mercury in High Pressure Mercury (vapour) lamps (HPMV). Expires on 13 April 2015	13 April 2015	Already prohibited
4 (e)	Mercury in metal halide lamps (MH)	Currently under review in EU	To be set based on EU review results
4 (f)	Mercury in other discharge lamps for special purposes not specifically mentioned in this Annex	Currently under review in EU	To be set based on EU review results
4 (g)	Mercury in hand crafted luminous discharge tubes used for signs, decorative or architectural and specialis lighting and light-artwork, where the mercury content shall be limited as follows: (a) 20 mg per electrode pair + 0.3 mg per tube length in cm, but not more than 80 mg, for outdoor applications and indoor applications exposed to temperatures below 20℃; (b) 15 mg per electrode pair + 0.24 mg per tube length in cm, but not more than 80 mg, for all other indoor applications.	31 December 2018	Already prohibited
5 (a)	Lead in glass of cathode ray tubes	21 July 2016 (Cat.1–7, 10) 21 July 2021 (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial and Cat.11)	Already prohibited (Cat.1–7, 10) 21 January 2021 (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial and Cat.11)
5(b)	Lead in glass of fluorescent tubes not exceeding 0.2% by weight	Currently under review in EU	To be set based on EU review results
6(a)	Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0,35 % lead by weight	Currently under review in EU (Cat.8,9) 21 July 2024 (Cat.11)	To be set based on EU review results (Cat.8,9) 21 Jan 2024 (Cat.11)
6(a)-I	Lead as an alloying element in steel for machining purposes containing up to 0,35 % lead by weight and in batch hot dip galvanised steel components containing up to 0,2 % lead by weight	Currently under review in EU (1-7, 10)	To be set based on EU review results (1-7, 10)
6(b)	Lead as an alloying element in aluminium containing up to 0.4% lead by weight	Currently under review in EU (Cat.8,9) 21 July 2024 (Cat.11)	To be set based on EU review results (Cat.8,9) 21 January 2024 (Cat.11)
6(b)-I	Lead as an alloying element in aluminium containing up to 0,4 % lead by weight, provided it stems from lead-bearing aluminium scrap recycling	Currently under review in EU (1-7, 10)	To be set based on EU review results (1-7, 10)
6(b)-II	Lead as an alloying element in aluminium for machining purposes with a lead content up to 0,4 % by weight	Currently under review in EU (1-7, 10)	To be set based on EU review results (1-7, 10)
6(c)	Copper alloy containing up to 4% lead by weight	Currently under review in EU (Cat.1-10) 21 July 2024 (Cat.11)	To be set based on EU review results (Cat.1-10) 21 January 2024 (Cat.11)
7(a)	Lead in high melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead) (except applications covered by point 24 of this Annex)	Currently under review in EU (Cat.1-10) 21 July 2024 (Cat.11)	To be set based on EU review results (Cat.1-10) 21 January 2024 (Cat.11)
7(b)	Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission, and network management for tele-communications	21 July 2016 (Cat.1–7, 10) 21 July 2021 (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial and Cat.11)	Already prohibited (Cat.1–7, 10) 21 January 2021 (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial and Cat.11)
7(c)-I	Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound (except applications covered under point 34)	Currently under review in EU (Cat.1-10) 21 July 2024 (Cat.11)	To be set based on EU review results (Cat.1-10) 21 January 2024 (Cat.11)
7(c)-II	Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher (Does not apply to applications covered by point 7(c)-I and 7(c)-IV of this Annex)	Currently under review in EU (Cat.1-10) 21 July 2024 (Cat.11)	To be set based on EU review results (Cat.1-10) 21 January 2024 (Cat.11)

No.	Exemption	Scope and dates of applicability	Date from which delivery of components, materials, etc. to the Panasonic Group will be prohibited (Six months before the dates of applicability)
7(c)-III	Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC	1 January 2013	Already prohibited
	Lead in dielectric ceramics in a capacitor with a rated voltage of AC 125 V or DC less than 250 V, which is a spare part of an electrical and electronic equipment placed on the market before January 1, 2013.	No deadline	No deadline
7(c)-IV	Lead in PZT based dielectric ceramic materials for capacitors being part of integrated circuits or discrete semiconductors	21 July 2021 (Cat.1–7, 10) 21 July 2021 (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial and Cat.11)	21 January 2021 (Cat.1–7, 10) 21 January 2021 (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial and Cat.11)
8(a)	Cadmium and its compounds in one shot pellet type thermal cut-offs	1 January 2012	Already prohibited
	Cadmium and its compounds in thermal cut-offs formed with batch loading kneading of compound pellets that are spare parts of electrical and electronic equipment placed on the market before January 1, 2012.	No deadline	No deadline
8(b)	Cadmium and its compounds in electrical contacts	Currently under review in EU (Cat.8,9) 21 July 2024 (Cat.11)	To be set based on EU review results (Cat.8,9) 21 January 2024 (Cat.11)
8(b)-I	Cadmium and its compounds in electrical contacts used in: — circuit breakers, — thermal sensing controls, — thermal motor protectors (excluding hermetic thermal motor protectors), — AC switches rated at: — 6 A and more at 250 V AC and more, or — 12 A and more at 125 V AC and more, — DC switches rated at 20 A and more at 18 V DC and more, and — switches for use at voltage supply frequency≥ 200 Hz	Currently under review in EU (1-7, 10)	To be set based on EU review results (1-7, 10)
9	Hexavalent chromium as an anticorrosion agent of the carbon steel cooling system in absorption refrigerators up to 0.75% by weight in the cooling solution	21 July 2021 (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial and Cat.11)	21 January 2021 (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial and Cat.11)
9(a)-I	Up to 0,75 % hexavalent chromium by weight, used as an anticorrosion agent in the cooling solution of carbon steel cooling systems of absorption refrigerators (including minibars) designed to operate fully or partly with elec- trical heater, having an average utilised power input < 75 W at constant running conditions	5 March 2021 (Cat.1–7, 10)	5 September 2020 (Cat.1–7, 10)
9(a)-II	Up to 0,75 % hexavalent chromium by weight, used as an anticorrosion agent in the cooling solution of carbon steel cooling systems of ab- sorption refrigerators: — designed to operate fully or partly with electrical heater, having an average utilised power input≥ 75 W at constant running conditions, — designed to fully operate with non-electrical heater.	21 July 2021 (Cat.1–7, 10)	21 January 2021 (Cat.1–7, 10)
9(b)	Lead in bearing shells and bushes for refrigerantcontaining compressors for heating, ventilation, air conditioning and refrigeration (HVACR) applications	5 July 2018 (Cat.1–7, 10) 21 July 2021 (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial and Cat.11)	Already prohibited (Cat.1–7, 10) 21 January 2021 (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial and Cat.11)
9(b)-(I)	Lead in bearing shells and bushes for refrigerantcontaining hermetic scroll compressors with a stated electrical power input equal or below 9 kW for heating, ventilation, air conditioning and refrigeration (HVACR) applications	21 July 2019 (Category 1)	Prohibited (*Already determined by in-house discussion)
11(a)	Lead used in C-press compliant pin connector systems	25 September 2010	Already prohibited
	Lead used in C-press compliant pin connector system as a spare part of electrical and electronic equipment placed on the market before September 24, 2010.	No deadline	No deadline
11(b)	Lead used in other than C-press compliant pin connector systems	1 January 2013	Already prohibited
	Lead used in connector systems other than C-press compliant pin as a spare part of electrical and electronic equipment placed on the market before January 1, 2013.	No deadline	No deadline
12	Lead as a coating material for heat transer module-type C ring	25 September 2010	Already prohibited
	Lead as a coating material for heat transer module-type C ring used as a spare part of electrical and electronic equipment placed on the market before September 24, 2010.	No deadline	No deadline
13(a)	Lead in white glasses used for optical applications	Currently under review in EU	To be set based on EU review results
13(b)	Cadmium and lead in filter glasses and glasses used for reflectance standards	Currently under review in EU (Cat.8,9,11)	To be set based on EU review results (Cat.8,9,11)
13(b)-(I)	Lead in ion coloured optical filter glass types	Currently under review in EU (1-7, 10)	To be set based on EU review results (1-7, 10)
13(b)-(II)	Cadmium in striking optical filter glass types; excluding applications falling under point 39 of the Annex III	Currently under review in EU (1-7, 10)	To be set based on EU review results (1-7, 10)

No.	Exemption	Scope and dates of applicability	Date from which delivery of components, materials, etc. to the Panasonic Group will be prohibited (Six months before the dates of applicability)
13(b)-(III)	Cadmium and lead in glazes used for reflectance standards	Currently under review in EU (1-7, 10)	To be set based on EU review results (1-7, 10)
14	Lead in solders consisting of more than two elements for the connection between the pins and the package of microprocessors with a lead content of more than 80% and less than 85% by weight	1 January 2011	Already prohibited
	Lead in solder comprised of 2 or more elements at a content of 80 wt% or more but less than 85 wt%, used to connect the microprocessor pin and the package as a spare part of electrical and electronic equipment placed on the market before January 1, 2011.	No deadline	No deadline
15	Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages	Currently under review in EU (Cat.8,9) 21 July 2024 (Cat.11)	To be set based on EU review results (Cat.8,9) 21 January 2024 (Cat.11)
15(a)	Lead in solders to complete a viable electrical connection between the semiconductor die and carrier within integrated circuit flip chip packages where at least one of the following criteria applies: — a semiconductor technology node of 90 nm or larger; —a single die of 300 mm2 or larger in any semiconductor technology node; —stacked die packages with die of 300 mm2 or larger, or silicon interposers of 300 mm2 or larger.	Currently under review in EU (1-7, 10)	To be set based on EU review results (1-7, 10)
16	Lead in linear incandescent lamps with silicate coated tubes	1 September 2013 (Cat.1–7, 10)	Already prohibited (Cat.1–7, 10)
17	Lead halide as radiant agent in high intensity discharge (HID) lamps used for professional reprography applications	21 July 2016 (Cat.1–7, 10) 21 July 2021 (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial and Cat.11)	Already prohibited (Cat.1–7, 10) 21 January 2021 (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial and Cat.11)
18(a)	Lead as activator in the fluorescent powder (1% lead by weight or less) of discharge lamps when used as speciality lamps for diazoprinting reprography, lithography, insect traps, photochemical and curing processes containing phosphors such as SMS ($(Sr,Ba)_2MgSi_2O_7$:Pb)	1 January 2011 (Cat.1–7, 10)	Already prohibited (Cat.1–7, 10)
18(b)	Lead as activator in the fluorescent powder (1% lead by weight or less) of discharge lamps when used as sun tanning lamps containing phosphors such as BSP ($BaSi_2O_5$:Pb)	Currently under review in EU (Cat.1–7, 10) Currently under review in EU (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial and Cat.11)	To be set based on EU review results (Cat.1–7, 10) To be set based on EU review results (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial and Cat.11)
18(b)-I	Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps containing phosphors such as BSP ($BaSi_2O_5$:Pb) when used in medical phototherapy equipment	Currently under review in EU (Categories 5 and 8)	To be set based on EU review results (Categories 5 and 8)
19	Lead with PbBiSn-Hg and PbInSn-Hg in specific compositions as main amalgam and with PbSn-Hg as auxiliary amalgam in very compact energy saving lamps (ESL)	1 June 2011 (Cat.1–7, 10)	Already prohibited (Cat.1–7, 10)
20	Lead oxide in glass used for bonding front and rear substrates of flat fluorescent lamps used for Liquid Crystal Displays (LCDs)	1 June 2011 (Cat.1–7, 10)	Already prohibited (Cat.1–7, 10)
21	Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses	29 February 2020 (Cat.1–7, 10 (excluding applications covered by entry 21 (a)21 (c) of this Annex)) 21 July 2021 (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial and Cat.11)	29 August 2019 (Cat.1–7, 10 (excluding applications covered by entry 21 (a)21 (c) of this Annex)) 21 January 2021 (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial and Cat.11)
21(a)	Cadmium when used in colour printed glass to provide filtering functions, used as a component in lighting applications installed in displays and control panels of EEE (except applications covered by entry 21(b) or entry 39)	21 July 2021 (Cat.1–7, 10)	21 January 2021 (Cat.1–7, 10)
21(b)	Cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses (except applications covered by entry 21(a) or 39)	21 July 2021 (Cat.1–7, 10)	21 January 2021 (Cat.1–7, 10)
21(c)	Lead in printing inks for the application of enamels on other than borosilicate glasses	21 July 2021 (Cat.1–7, 10)	21 January 2021 (Cat.1–7, 10)
23	Lead in parts treated with fine component finish where the pitch used as a spare part is 0.65 mm or less, and the spare part is of electrical and electronic equipment placed on the market before September 24, 2010.	–	Immediately prohibited (This item is not allowed even in spare parts since it had been prohibited in the Rank Guidelines.)
24	Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors	Currently under review in EU (Cat.1-10) 21 July 2024 (Cat.11)	To be set based on EU review results (Cat.1-10) 21 January 2024 (Cat.11)
25	Lead oxide in surface conduction electron emitter displays (SED) used in structural elements, notably in the seal frit and frit ring	21 July 2016 (Cat.1–7, 10) 21 July 2021 (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial and Cat.11)	Already prohibited (Cat.1–7, 10) 21 January 2021 (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial and Cat.11)

No.	Exemption	Scope and dates of applicability	Date from which delivery of components, materials, etc. to the Panasonic Group will be prohibited (Six months before the dates of applicability)
26	Lead oxide in the glass envelope of black light blue lamps	1 June 2011 (Cat.1–7, 10)	Already prohibited (Cat.1–7, 10)
29	Lead bound in crystal glass as defined in Annex I (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC	Currently under review in EU (Cat.1–7, 10, 11) 21 July 2021 (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial)	To be set based on EU review results (Cat.1–7, 10, 11) 21 January 2021 (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial)
30	Cadmium alloys as electrical/mechanical solder joints to electrical conductors located directly on the voice coil in transducers used in high-powered loudspeakers with sound pressure levels of 100 dB (A) and more	21 July 2016 (Cat.1–7, 10) 21 July 2021 (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial and Cat.11)	Already prohibited (Cat.1–7, 10) 21 January 2021 (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial and Cat.11)
31	Lead in soldering materials in mercury free flat fluorescent lamps (which, e.g. are used for liquid crystal displays, design or industrial lighting)	21 July 2016 (Cat.1–7, 10) 21 July 2021 (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial and Cat.11)	Already prohibited (Cat.1–7, 10) 21 January 2021 (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial and Cat.11)
32	Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes	Currently under review in EU (Cat.1-10) 21 July 2024 (Cat.11)	To be set based on EU review results (Cat.1-10) 21 January 2024 (Cat.11)
33	Lead in solders for the soldering of thin copper wires of 100 µm diameter and less in power transformers	21 July 2016 (Cat.1–7, 10) 21 July 2021 (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial and Cat.11)	Already prohibited (Cat.1–7, 10) 21 January 2021 (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial and Cat.11)
34	Lead in cermet-based trimmer potentiometer elements	Currently under review in EU (Cat.1-10) 21 July 2024 (Cat.11)	To be set based on EU review results (Cat.1-10) 21 January 2024 (Cat.11)
37	Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body	21 July 2021 (Cat.1–7, 10) 21 July 2021 (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial and Cat.11)	21 January 2021 (Cat.1–7, 10) 21 January 2021 (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial and Cat.11)
38	Cadmium and cadmium oxide in thick film pastes used on aluminium bonded beryllium oxide	21 July 2016 (Cat.1–7, 10) 21 July 2021 (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial and Cat.11)	Already prohibited (Cat.1–7, 10) 21 January 2021 (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial and Cat.11)
39	Cadmium in colour converting II-VI LEDs (< 10 µg Cd per mm^2 of light-emitting area) for use in solid state illumination or display systems	20 November 2018	Already prohibited
39(a)	Cadmium selenide in downshifting cadmium-based semiconductor nanocrystal quantum dots for use in display lighting applications (< 0,2 µg Cd per mm^2 of display screen area)	Currently under review in EU	To be set based on EU review results
40	Cadmium in photoresistors for analogue optocouplers applied in professional audio equipment	31 December 2013	Already prohibited
41	Lead in solders and termination finishes of electrical and electronic components and finishes of printed circuit boards used in ignition modules and other electrical and electronic engine control systems, which for technical reasons must be mounted directly on or in the crankcase or cylinder of hand-held combustion engines (classes SH:1, SH:2, SH:3 of Directive 97/68/EC of the European Parliament and of the Council	31 March 2022 (Cat.1–7, 10, 11) 21 July 2021 (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial)	30 September (Cat.1–7, 10, 11) 21 January 2021 (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial and Cat.11)
42	Lead in bearings and bushes of diesel or gaseous fuel powered internal combustion engines applied in non-road professional use equipment: — with engine total displacement≥ 15 litres; or — with engine total displacement < 15 litres and the engine is designed to operate in applications where the time between signal to start and full load is required to be less than 10 seconds; or regular maintenance is typically performed in a harsh and dirty outdoor environment, such as mining, construction, and agriculture applications. (excluding applications covered by entry 6(c) of this Annex)	21 July 2024 (Cat.11)	21 January 2024 (Cat.11)
43	Bis(2-ethylhexyl) phthalate in rubber components in engine systems, designed for use in equipment that is not intended solely for consumer use and provided that no plasticised material comes into contact with human mucous membranes or into prolonged contact with human skin and the concentration value of bis(2-ethylhexyl) phthalate does not exceed: (a) 30 % by weight of the rubber for (i) gasket coatings; (ii) solid-rubber gaskets; or (iii) rubber components included in assemblies of at least three components using electrical, mechanical or hydraulic energy to do work, and attached to the engine. (b) 10 % by weight of the rubber for rubber-containing components not referred to in point (a). For the purposes of this entry, “prolonged contact with human skin” means continuous contact of more than 10 minutes duration or intermittent contact over a period of 30 minutes, per day.	21 July 2024 (Cat.11)	21 January 2024 (Cat.11)

Appendix 1. Exempted Item List under the EU RoHS Directive

No.	Exemption	Scope and dates of applicability	Date from which delivery of components, materials, etc. to the Panasonic Group will be prohibited (Six months before the dates of applicability)
44	Lead in solder of sensors, actuators, and engine control units of combustion engines within the scope of Regulation (EU) 2016/1628 of the European Parliament and of the Council, installed in equipment used at fixed positions while in operation which is designed for professionals, but also used by non-professional users	21 July 2024 (Cat.11)	21 January 2024 (Cat.11)

◆ Referenced legislation: EU RoHS Directive ANNEX IV

No.	Exemption	Scope and dates of applicability	Date from which delivery of components, materials, etc. to the Panasonic Group will be prohibited (Six months before the dates of applicability)
1	Lead, cadmium and mercury in detectors for ionising radiation.	Currently under review in EU (Cat.8,9)	To be set based on EU review results (Cat.8,9)
2	Lead bearings in X-ray tubes.	Currently under review in EU (Cat.8,9)	To be set based on EU review results (Cat.8,9)
3	Lead in electromagnetic radiation amplification devices: micro-channel plate and capillary plate.	Currently under review in EU (Cat.8,9)	To be set based on EU review results (Cat.8,9)
4	Lead in glass frit of X-ray tubes and image intensifiers and lead in glass frit binder for assembly of gas lasers and for vacuum tubes that convert electromagnetic radiation into electrons.	21 July 2021 (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial)	21 January 2021 (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial)
5	Lead in shielding for ionising radiation.	Currently under review in EU (Cat.8,9)	To be set based on EU review results (Cat.8,9)
6	Lead in X-ray test objects.	21 July 2021 (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial)	21 January 2021 (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial)
7	Lead stearate X-ray diffraction crystals.	21 July 2021 (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial)	21 January 2021 (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial)
8	Radioactive cadmium isotope source for portable X-ray fluorescence spectrometers.	21 July 2021 (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial)	21 January 2021 (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial)
1a	Lead and cadmium in ion selective electrodes including glass of pH electrodes.	Currently under review in EU (Cat.8,9)	To be set based on EU review results (Cat.8,9)
1b	Lead anodes in electrochemical oxygen sensors.	Currently under review in EU (Cat.8,9)	To be set based on EU review results (Cat.8,9)
1c	Lead, cadmium and mercury in infra-red light detectors.	Currently under review in EU (Cat.8,9)	To be set based on EU review results (Cat.8,9)
1d	Mercury in reference electrodes: low chloride mercury chloride, mercury sulphate and mercury oxide.	21 July 2021 (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial)	21 January 2021 (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial)
9	Cadmium in helium-cadmium lasers.	21 July 2021 (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial)	21 January 2021 (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial)
10	Lead and cadmium in atomic absorption spectroscopy lamps.	21 July 2021 (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial)	21 January 2021 (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial)
11	Lead in alloys as a superconductor and thermal conductor in MRI.	Currently under review in EU (Cat.8,9)	To be set based on EU review results (Cat.8,9)
12	Lead and cadmium in metallic bonds creating superconducting magnetic circuits in MRI, SQUID, NMR (Nuclear Magnetic Resonance) or FTMS (Fourier Transform Mass Spectrometer) detectors.	Currently under review in EU (Cat.8,9)	To be set based on EU review results (Cat.8,9)
13	Lead in counterweights.	Currently under review in EU (Cat.8,9)	To be set based on EU review results (Cat.8,9)
14	Lead in single crystal piezoelectric materials for ultrasonic transducers.	Currently under review in EU (Cat.8,9)	To be set based on EU review results (Cat.8,9)
15	Lead in solders for bonding to ultrasonic transducers.	Currently under review in EU (Cat.8,9)	To be set based on EU review results (Cat.8,9)
16	Mercury in very high accuracy capacitance and loss measurement bridges and in high frequency RF switches and relays in monitoring and control instruments not exceeding 20 mg of mercury per switch or relay.	21 July 2021 (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial)	21 January 2021 (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial)
17	Lead in solders in portable emergency defibrillators.	Currently under review in EU (Cat.8,9)	To be set based on EU review results (Cat.8,9)
18	Lead in solders of high performance infrared imaging modules to detect in the range 8-14 μm.	Currently under review in EU (Cat.8,9)	To be set based on EU review results (Cat.8,9)
19	Lead in Liquid crystal on silicon (LCoS) displays.	21 July 2021 (Cat. 8, 9 others) 21 July 2023 (Cat. 8 in vitro) 21 July 2024 (Cat. 9 industrial)	21 January 2021 (Cat. 8, 9 others) 21 January 2023 (Cat. 8 in vitro) 21 January 2024 (Cat. 9 industrial)
20	Cadmium in X-ray measurement filters.	Currently under review in EU (Cat.8,9)	To be set based on EU review results (Cat.8,9)

No.	Exemption	Scope and dates of applicability	Date from which delivery of components, materials, etc. to the Panasonic Group will be prohibited (Six months before the dates of applicability)
21	Cadmium in phosphor coatings in image intensifiers for X-ray images.	31 December 2019	30 June 2019
	Cadmium in phosphor coatings in spare parts for X-ray systems placed on the EU market before 1 January 2020.	No deadline	No deadline
22	Lead acetate marker for use in stereotactic head frames for use with CT and MRI and in positioning systems for gamma beam and particle therapy equipment.	30 June 2021	30 December 2020
23	Lead as an alloying element for bearings and wear surfaces in medical equipment exposed to ionising radiation.	30 June 2021	30 December 2020
24	Lead enabling vacuum tight connections between aluminium and steel in X-ray image intensifiers.	31 December 2019	30 June 2019
25	Lead in the surface coatings of pin connector systems requiring nonmagnetic connectors which are used durably at a temperature below – 20 °C under normal operating and storage conditions.	30 June 2021	30 December 2020
26	Lead in the following ap6plications that are used durably at a temperature below - 20 °C under normal operating and storage conditions: (a)solders on printed circuit boards; (b)termination coatings of electrical and electronic components and coatings of printed circuit boards; (c)solders for connecting wires and cables; (d)solders connecting transducers and sensors. Lead in solders of electrical connections to temperature measurement sensors in devices which are designed to be used periodically at temperatures below - 150 °C.	Currently under review in EU (Cat.8,9)	To be set based on EU review results (Cat.8,9)
27	Lead in — solders, — termination coatings of electrical and electronic components and printed circuit boards, — connections of electrical wires, shields and enclosed connectors, which are used in (a) magnetic fields within the sphere of 1 m radius around the isocentre of the magnet in medical magnetic resonance imaging equipment, including patient monitors designed to be used within this sphere, or (b) magnetic fields within 1 m distance from the external surfaces of cyclotron magnets, magnets for beam transport and beam direction control applied for particle therapy.	Currently under review in EU	To be set based on EU review results
28	Lead in solders for mounting cadmium telluride and cadmium zinc telluride digital array detectors to printed circuit boards.	2017/12/31	Already prohibited
29	Lead in alloys, as a superconductor or thermal conductor, used in cryo-cooler cold heads and/or in cryo-cooled cold probes and/or in cryo-cooled equipotential bonding systems, in medical devices (category 8) and/or in industrial monitoring and control instruments.	Currently under review in EU (Cat.8,9)	To be set based on EU review results (Cat.8,9)
30	Hexavalent chromium in alkali dispensers used to create photocathodes in X-ray image intensifiers.	31 December 2019	30 June 2019
	Hexavalent chromium in alkali dispensers used to create photocathodes in spare parts for X-ray systems placed on the EU market before 1 January 2020.	No deadline	No deadline
31a	Lead, cadmium, hexavalent chromium, and polybrominated diphenyl ethers (PBDE) in spare parts recovered from and used for the repair or refurbishment of medical devices, including in vitro diagnostic medical devices,	Currently under review in EU (Cat.8,9)	To be set based on EU review results (Cat.8,9)
32	Lead in solders on printed circuit boards of detectors and data acquisition units for Positron Emission Tomographs which are integrated into Magnetic Resonance Imaging equipment.	31 December 2019	30 June 2019
33	Lead in solders on populated printed circuit boards used in Directive 93/42/EEC class IIa and IIb mobile medical devices other than portable emergency defibrillators.		
	— class IIa	30 June 2016	Already prohibited
	— class IIb	31 December 2020	Already prohibited
34	Lead as an activator in the fluorescent powder of discharge lamps when used for extracorporeal photopheresis lamps containing BSP ($BaSi_2O_5$:Pb) phosphors.	22 July 2021	22 January 2021
35	Mercury in cold cathode fluorescent lamps for back-lighting liquid crystal displays, not exceeding 5 mg per lamp, used in industrial monitoring and control instruments placed on the market before 22 July 2017	21 July 2024	21 January 2024
36	Lead used in other than C-press compliant pin connector systems for industrial monitoring and control instruments.	31 December 2020	30 June 2020
	Lead used in other than C-press compliant pin connector systems in spare parts for industrial monitoring and control instruments placed on the market before 1 January 2021.	No deadline	No deadline
37	Lead in platinized platinum electrodes used for conductivity measurements where at least one of the following conditions applies: (a) wide-range measurements with a conductivity range covering more than 1 order of magnitude (e.g. range between 0.1 mS/m and 5 mS/m) in laboratory applications for unknown concentrations; (b) measurements of solutions where an accuracy of +/– 1% of the sample range and where high corrosion resistance of the electrode are required for any of the following: (i) solutions with an acidity < pH 1; (ii) solutions with an alkalinity > pH 13; (iii) corrosive solutions containing halogen gas; (c) measurements of conductivities above 100 mS/m that must be performed with portable instruments.	31 December 2025	30 June 2025

No.	Exemption	Scope and dates of applicability	Date from which delivery of components, materials, etc. to the Panasonic Group will be prohibited (Six months before the dates of applicability)
38	Lead in solder in one interface of large area stacked die elements with more than 500 interconnects per interface which are used in X-ray detectors of CT (computed tomography) and X-ray systems.	31 December 2019	30 June 2019
	Lead in solder in one interface of large area stacked die elements with more than 500 interconnects per interface which are used in spare parts for CT and X-ray systems placed on the market before 1 January 2020.	No deadline	No deadline
39	Lead in micro-channel plates (MCPs) used in equipment where at least one of the following properties is present: (a) a compact size of the detector for electrons or ions, where the space for the detector is limited to a maximum of 3 mm/MCP (detector thickness + space for installation of the MCP), a maximum of 6 mm in total, and an alternative design yielding more space for the detector is scientifically and technically impracticable; (b) a two-dimensional spatial resolution for detecting electrons or ions, where at least one of the following applies: (i) a response time shorter than 25 ns; (ii) a sample detection area larger than 149 mm^2; (iii) a multiplication factor larger than $1,3 \times 10^3$. (c) a response time shorter than 5 ns for detecting electrons or ions; (d) a sample detection area larger than 314 mm^2 for detecting electrons or ions; (e) a multiplication factor larger than $4,0 \times 10^7$.	Currently under review in EU (Cat.8,9)	To be set based on EU review results (Cat.8,9)
40	Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC for industrial monitoring and control instruments.	31 December 2020	30 June 2020
	Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC in spare parts for industrial monitoring and control instruments placed on the market before 1 January 2021.	No deadline	No deadline
41	Lead as a thermal stabiliser in polyvinyl chloride (PVC) used as base material in amperometric, potentiometric and conductometric electrochemical sensors which are used in in-vitro diagnostic medical devices for the analysis of blood and other body fluids and body gases.	31 March 2022	30 September 2021
42	Mercury in electric rotating connectors used in intravascular ultrasound imaging systems capable of high operating frequency (> 50 MHz) modes of operation.	Currently under review in EU	To be set based on EU review results
43	Cadmium anodes in Hersch cells for oxygen sensors used in industrial monitoring and control instruments, where sensitivity below 10 ppm is required.	15 July 2023	15 January 2023
44	Cadmium in radiation tolerant video camera tubes designed for cameras with a centre resolution greater than 450 TV lines which are used in environments with ionising radiation exposure exceeding 100 Gy/hour and a total dose in excess of 100kGy.	31 March 2027 (Cat. 9)	30 September 2026 (Cat. 9)

<< Panasonic Group Chemical Substances Management Rank Guidelines List of Exempted Iter

Revised: September 1, 2020

◆ Referenced legislation: EU ELV Directive ANNEX II

	Materials and components	Scope and expiry date of the exemption
Lead as an alloying element		
1(a)	Steel for machining purposes and batch hot dip galvanised steel components containing up to 0.35 % lead by weight	
1(b)	Continuously galvanised steel sheet containing up to 0.35 % lead by weight	Vehicles type-approved before 1 January 2016 and spare parts for these vehicles
2(a)	Aluminium for machining purposes with a lead content up to 2 % by weight	As spare parts for vehicles put on the market before 1 July 2005
2(b)	Aluminium with a lead content up to 1.5 % by weight	As spare parts for vehicles put on the market before 1 July 2008
2(c)(i)	Aluminium alloys for machining purposes with a lead content up to 0.4 % by weight	
2(c)(ii)	Aluminium alloys not included in entry 2(c)(i) with a lead content up to 0.4 % by weight* *Applies to aluminium alloys where lead is not intentionally introduced but is present due to the use of recycled aluminium.	
3	Copper alloys containing up to 4 % lead by weight	
4(a)	Bearing shells and bushes	As spare parts for vehicles put on the market before 1 July 2008
4(b)	Bearing shells and bushes in engines, transmissions and air conditioning compressors	As spare parts for vehicles put on the market before 1 July 2011
Lead and lead compounds in components		
5(a)	Lead in batteries in high-voltage systems that are used only for propulsion in M1 and N1 vehicles	Vehicles type-approved before 1 January 2019 and spare parts for these vehicles
5(b)	Lead in batteries for battery applications not included in entry 5(a)	
6	Vibration dampers	Vehicles type-approved before 1 January 2016 and spare parts for these vehicles
7(a)	Vulcanising agents and stabilisers for elastomers in brake hoses, fuel hoses, air ventilation hoses, elastomer/metal parts in the chassis applications, and engine mountings	As spare parts for vehicles put on the market before 1 July 2005
7(b)	Vulcanising agents and stabilisers for elastomers in brake hoses, fuel hoses, air ventilation hoses, elastomer/metal parts in the chassis applications, and engine mountings containing up to 0.5 % lead by weight	As spare parts for vehicles put on the market before 1 July 2006
7(c)	Bonding agents for elastomers in powertrain applications containing up to 0,5 % lead by weight	As spare parts for vehicles put on the market before 1 July 2009
8(a)	Lead in solders to attach electrical and electronic components to electronic circuit boards and lead in finishes on terminations of components other than electrolyte aluminium capacitors, on component pins and on electronic circuit boards	Vehicles type-approved before 1 January 2016 and spare parts for these vehicles
8(b)	Lead in solders in electrical applications other than soldering on electronic circuit boards or on glass	Vehicles type-approved before 1 January 2011 and spare parts for these vehicles
8(c)	Lead in finishes on terminals of electrolyte aluminium capacitors	Vehicles type-approved before 1 January 2013 and spare parts for these vehicles
8(d)	Lead used in soldering on glass in mass airflow sensors	Vehicles type-approved before 1 January 2015 and spare parts of such vehicles
8(e)	Lead in high melting temperature type solders (i.e. lead- based alloys containing 85 % by weight or more lead)	
8(f)(a)	Lead in compliant pin connector systems	Vehicles type-approved before 1 January 2017 and spare parts for these vehicles
8(f)(b)	Lead in compliant pin connector systems other than the mating area of vehicle harness connectors	Vehicles type-approved before 1 Janu ary 2024 and spare parts for these ve-hicles

Appendix 2. Exempted Items List under the EU ELV Directive

	Materials and components	Scope and expiry date of the exemption
8(g)(i)	Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages	Vehicles type approved before 1 Octo ber 2022 and spare parts for these ve-hicles
8(g)(ii)	Lead in solders to complete a viable electrical connection between the semiconductor die and the carrier within integrated circuit flip chip packages where that electrical connection consists of any of the following: (i) a semiconductor technology node of 90 nm or larger; (ii) a single die of 300 mm2 or larger in any semiconductor technology node; (iii) stacked die packages with dies of 300 mm2 or larger, or silicon interposers of 300 mm2 or larger.	Valid for vehicles type-approved from 1 October 2022 and spare parts for these vehicles
8(h)	Lead in solder to attach heat spreaders to the heat sink in power semiconductor assemblies with a chip size of at least 1 cm 2 of projection area and a nominal current density of at least 1 A/mm 2 of silicon chip area	
8(i)	Lead in solders in electrical glazing applications on glass except for soldering in laminated glazing	Vehicles type-approved before 1 January 2016 and after that date as spare parts for these vehicles
8(j)	Lead in solders for soldering of laminated glazing	Vehicles type-approved before 1 January 2020 and after that date as spare parts for these vehicles
8(k)	Soldering of heating applications with 0,5 A or more of heat current per related solder joint to single panes of laminated glazings not exceeding wall thickness of 2,1 mm. This exemption does not cover soldering to contacts embedded in the intermediate polymer	Vehicles type approved before 1 Janu ary 2024 and spare parts for these ve-hicles
9	Valve seats	As spare parts for engine types developed before 1 July 2003
10(a)	Electrical and electronic components which contain lead in a glass or ceramic, in a glass or ceramic matrix compound, in a glass- ceramic material, or in a glass-ceramic matrix compound. This exemption does not cover the use of lead in: — glass in bulbs and glaze of spark plugs, — dielectric ceramic materials of components listed under 10(b), 10(c) and 10(d).	
10(b)	Lead in PZT-based dielectric ceramic materials of capacitors being part of integrated circuits or discrete semiconductors	
10(c)	Lead in dielectric ceramic materials of capacitors with a rated voltage of less than 125 V AC or 250 V DC	Vehicles type-approved before 1 January 2016 and spare parts for these vehicles
10(d)	Lead in the dielectric ceramic materials of capacitors compensating the temperature- related deviations of sensors in ultrasonic sonar systems	Vehicles type-approved before 1 January 2017 and after that date as spare parts for these vehicles
11	Pyrotechnic initiators	Vehicles type-approved before 1 July 2006 and spare parts for these vehicles
12	Lead-containing thermoelectric materials in automotive electrical applications to reduce CO 2 emissions by recuperation of exhaust heat	Vehicles type-approved before 1 January 2019 and spare parts for these vehicles
Hexavalent chromium		
13(a)	Corrosion preventive coatings	As spare parts for vehicles put on the market before 1 July 2007
13(b)	Corrosion preventive coatings related to bolt and nut assemblies for chassis applications	As spare parts for vehicles put on the market before 1 July 2008
14	Hexavalent chromium as an anti-corrosion agent of the carbon steel cooling system in absorption refrigerators up to 0,75 % by weight in the cooling solution: (i) designed to operate fully or partly with electrical heater, having an average utilised electrical power input < 75W at constant running conditions; (ii) designed to operate fully or partly with electrical heater, having an average utilised electrical power input≥ 75W at constant running conditions; (iii)designed to fully operate with non-electrical heater.	(i) Vehicles type approved before 1 January 2020 and spare parts for these vehicles (ii) Vehicles type approved before 1 January 2026 and spare parts for these vehicles
Mercury		
15(a)	Discharge lamps for headlight application	Vehicles type-approved before 1 July 2012 and spare parts for these vehicles
15(b)	Fluorescent tubes used in instrument panel displays	Vehicles type-approved before 1 July 2012 and spare parts for these vehicles
Cadmium		
16	Batteries for electrical vehicles	As spare parts for vehicles put on the market before 31 December 2008

Appendix 3. Controlled Values for Prohibited Substances

1. List of controlled values for prohibited substances

The following controlled values are content concentrations which are deemed “not exceeding” as long as non-use of the covered substance groups are properly managed, and must be managed by Panasonic Group. If the contained concentration of the Prohibited substance exceeds the controlled value, request the supplier for clarification of the reason of content, and request the supplier to reduce the contained concentration to below the controlled value as necessary. (Warranty for controlled value is not to be requested to suppliers).

Content concentrations are to be measured according to IEC 62321 (excluding the older version IEC 62321:2008).

Table A1- 1 List of controlled values for prohibited substances

<table>
<tr><th>Prohibited substance</th><th colspan="2">Applicable part/material</th><th>Controlled value
(Content concentration that is deemed to not exceed when the non-use control of Level 1 Prohibited Substances/Substance Groups is properly managed)</th></tr>
<tr><td rowspan="4">Cadmium</td><td colspan="2">Resin (including rubber/film)
Coatings, inks, pigments, dyes</td><td>Less than 20ppm[*1]
(in state with no volatile elements)</td></tr>
<tr><td rowspan="2">Lead-free solder</td><td>Bar solder,
Wire solder,
Resin flux cored solder,
Solder paste,
Solder ball</td><td rowspan="2">Less than 20ppm</td></tr>
<tr><td>Soldered sections of purchased PC boards,
Component solder</td></tr>
<tr><td colspan="2">Metal materials other than lead-free solder</td><td>Less than 75ppm</td></tr>
<tr><td rowspan="6">Lead</td><td colspan="2">Resin (including rubber/film)
Coatings, inks, pigments, dyes</td><td>Less than 100ppm[*1]
(with no volatile elements)</td></tr>
<tr><td rowspan="2">Lead-free solder</td><td>Bar solder,
Wire solder,
Resin flux cored solder,
Solder paste,
Solder ball</td><td>Less than 500ppm</td></tr>
<tr><td>Soldered sections of purchased PC boards,
Component solder</td><td>Less than 800ppm</td></tr>
<tr><td colspan="2">Electroless nickel plating</td><td>Less than 800ppm</td></tr>
<tr><td colspan="2">Metal materials other than lead-free solder or electroless nickel plating</td><td>Less than 500ppm[*1*3]</td></tr>
<tr><td colspan="2">Glass (limited to uses in lamps)</td><td>Less than 500ppm</td></tr>
</table>

Hexavalent Chromium	Chromate treated parts/materials (base-layer zinc plating)	Less than 100ppm[*1*3] (Simple analysis method by Panasonic[*4])
	Surface treated materials other than base-layer zinc plating chromate treated parts/materials, whose thickness cannot be specified (excluding resins and surface treatment such as applying resin, tanning of animal hides, is applied.)	Less than 0.1μg/cm^2 [*1*5] (Method according to IEC 62321-7-1) Or simple analysis method[*4] by Panasonic
	Surface treated materials other than base-layer zinc plating chromate treated parts/materials, whose thickness can be specified (excluding parts/materials where the surface treated materials such as leather)	Less than 100ppm[*1] (Simple analysis method by Panasonic[*4])
PBB PBDE	Resin (including rubber/film)	Less than 100ppm
Cadmium, Lead, cadmium, hexavalent chromium, mercury	Packaging material For each homogenous material comprising packaging (for example, resin, ink, paint)	Less than 100ppm of total four heavy metals
Four phthalates	Plasticizer for resin (particularly polyvinyl chloride), paints, inks, elastomers (including rubber), and adhesives	Less than 300ppm
With respect to the "Applicable part/material" or "Prohibited substance" not specifically listed in the table above, the lower limit concentration[*6] quantitatively measured by the corresponding high-precision analysis method is to be used as the interim controlled value.		

*1: Does not apply to packaging material.

*2: Because the lead (Ex. lead 0.35wt% or less as iron alloy), which is exempted from application by the RoHS Directive, is applicable as an alloy content, the Directive is not applied to the lead as an impurity.

*3: Hexavalent chromium concentration based on zinc plating mass in the denominator

*4: The simple analysis method by Panasonic refers to “Hot water-extracted diphenylcarbazide absorption method” (Panasonic internal document)

*5: When the surface treatment mass cannot be calculated (for example, chromate processing and metal chrome plating on aluminum materials)

*6: The value is determined by the sample quantity, analysis sensitivity of the analyzer (detection lower limit), etc. used by generally practiced high-precision analysis, or the detectable lower limit concentration of the target substance per unit sample quantity.

2. Controlled Value of Lead Concentration of Impurities in the Lead-free Solder Used in a Flow-solder Bath in Panasonic and at a Partner Company.

In a Panasonic or partner company production process, the lead concentration of lead-free solder used in a flow-solder bath should be kept below the controlled value in Table A1- 2.

Table A1- 2 Controlled value[*1] of lead concentration in lead-free solder in a flow-solder bath

Prohibited substance	Applicable part/material	Controlled value
Lead	Lead-free solder in a flow-solder bath	Less than 800ppm (Simple analysis method by Panasonic[*2])

*1: This controlled value applies to internal production processes and does not specify the controlled value in the production process at a supplier.

*2: The simple analysis method by Panasonic refers to "Simple Analysis Method of Lead-Free Solder in a Flow-solder Bath" (Panasonic internal document).

Revision History

Date(ymd)	Amended part	Amended Contents
2014.7.1	Table A1-1	-Added a control value of lead for “Electroless nickel plating”. -Changed the “Metal materials other than lead-free solder” to “Metal materials other than lead-free solder or electroless nickel plating.”
2014.12.1	Table A1- 1	- Added “excluding resins and surface treatment such as applying resin, tanning of animal hides, is applied"
2018.5.22	Chapter 1, Opening	Added “Content concentrations are to be measured according to IEC 62321 (excluding the older version IEC 62321:2008)”
2018.5.22	Table A2- 1 and Table A2-2	-Changed the table No. of A2 to A1. -Deleted the descriptions of “High precision analytical method”. -Updated the covered parts and materials of hexavalent chrome, and respective controlled values. -Added a line for the four phthalates. Changed the “Simple analytical method” to “Simple analysis method by Panasonic”.
2018.5.22	Chapter 2	- Changed the “Simple analytical method” to “Simple analysis method by Panasonic”.
2019.6.4	Chapter 1, Opening	- Changed the description for the control value to be consistent with the definition of the terms stated in 5.13.
2020.9.23	Table A1- 1 Notes	- Deleted the following:*6: With the method stated in IEC 62321-7-1, this substance is extracted with boiling water, however, with the simply analysis method by Panasonic, this substance is extracted with warm water at 80°C. Therefore, the measurement value is set at a lower value, taking into account the lack of extraction rate of hexavalent chromium.

Panasonic Group

Chemical Substances Management Rank Guidelines

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