

Epson Group

Green Purchasing Standard for Production Materials

Rev. 3.8

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STANDARDS

1. Purpose

This Green Purchasing Standard sets forth the approach to, specific criteria for, and use of a system of assurance against chemical substance inclusion in products. The purpose is to prevent problems from arising at Epson and Epson's customers.

* For the scope of application of the Green Purchasing Standard within the Epson Group, see Appendix 3, "List of Epson Group Companies."

2. Basic rules for assuring that banned substances are not contained in products

- Comply with applicable laws and regulations.
- Procure materials from vendors that can comply with conditions specified in this standard regarding banned substances (e.g., thresholds, areas where substances are present, uses).
- Procure materials from vendors who can guarantee that banned substances are not present in their products.
- Procure materials from vendors who can provide data on substances included in their products.
- Accept goods that have been guaranteed by the vendor.

3. Scope

This Green Purchasing Standard applies to all finished products, semi-finished products, units, parts, raw materials, accessories, options, packaging materials* and other goods comprising Epson products. These are collectively referred to herein as "production materials."

* Examples of packaging materials that fall within the scope of this standard: individual boxes, outer boxes (carton boxes), carrying cases, cushioning material, internal and external partitions, fixtures, adhesives, coating materials, staples, OPP tape, ink, and transport pallets (SEG specification).

4. Vendor Agreements

Epson will ask vendors to provide Epson with a Vendor Agreement in which the vendor pledges to engage in actions to prevent the inclusion of certain chemical substances in products. The main items in the agreement are as follows:

- (1) The vendor agrees to build and maintain a system of assurance against chemical substance inclusion in products
- (2) The vendor agrees to provide information relating to the inclusion of chemical substances in its products.
- (3) The vendor agrees to cooperate in efforts to check the state of control over its assurance system.
- (4) The vendor agrees to promptly address nonconformance issues and institute preventive action.

If it becomes necessary to amend the content of a Vendor Agreement, the agreements may be amended and enacted on a case-by-case basis pursuant to discussions between the parties.

5. Approach to part approval relating to chemical substance inclusion in products

The requirements for part approval are (1) submission of a Vendor Agreement, and (2) submission of survey information.

(1) Submission of a Vendor Agreement

In order to provide reliable assurance against chemical substance inclusion in products, each vendor must build and maintain a system for doing so. Epson asks all vendors to submit a Vendor Agreement wherein the vendor agrees to implement a system of assurance against chemical substance inclusion in products pursuant to this Green Purchasing Standard. One Vendor Agreement is required per vendor.

(2) Submission of survey information

Information on chemical substances contained in products must be accurately communicated to provide assurance against chemical substance inclusion in products across the entire supply chain. Please provide Epson with the following information about production materials delivered to Epson.

Content and elimination information for controlled substances in products

Submit survey information for production material delivered to Epson. The substances for which survey information is required and the survey methods are described in Guidelines for Surveying Controlled Substances in Products

<Guidelines for Surveying Controlled Chemical Substance Content in Products>

URL: http://global.epson.com/SR/procurement/green_purchasing/green_survey.html

NOTE:

- Where necessary, Epson may survey parts and materials whose manufacturer or product number are specified by Epson.
- Where necessary to meet Epson customer requirements or other needs, Epson may ask vendors to meet certain other requirements (e.g., provide information or analysis results). Please provide the information using the method specified by Epson.

Examples:

- Report on the results of analyses or tests of substances specified by Epson (Use the method of analysis, testing, or measurement specified by Epson, if any.)
- Survey data on the amount of non-controlled substances included in products or a certificate declaring that a product does not contain banned substances

Standards and items for submission required by each division

URL: http://global.epson.com/SR/procurement/green_purchasing/green_standards.html

A list of documents associated with this Green Purchasing Standard that Epson asks vendors to submit is shown in Table 1.

Table 1. Documents to Be Submitted

Submitted by/for	Document
Each vendor	<p>“Actions Relating to Assurance Against Chemical Substance Inclusion in Products” (Vendor Agreement)</p> <p>URL:http://global.epson.com/SR/procurement/green_purchasing/green_agreement.html</p>
Each production material	<p>Substance content information^{*1} / Elimination information^{*2} for controlled chemical substances in products</p> <p>URL:http://global.epson.com/SR/procurement/green_purchasing/green_survey.html</p> <p>*1 Refers generally to basic parts information and chemical substance information.</p> <p>*2 Refers generally to basic parts information, information about chemical substances that are subject to survey requests, and information concerning conditions conforming to eliminate.</p>
	<p>Compliance documents for California Formaldehyde Regulation for Composite Wood Products</p> <p>Limited to the delivery of applicable production materials. See the following link for details.</p> <p>URL:http://global.epson.com/SR/procurement/green_purchasing/green_california.html</p> <ul style="list-style-type: none"> • Response to the California Formaldehyde Regulation for Composite Wood Products

6. Requests regarding assurance against chemical substance inclusion in products

Epson requests that you (the vendor) take certain steps with regard to assurance against chemical substance inclusion in products. These steps are shown below. Epson asks that you build and maintain your own system on the basis of these steps. Epson will check whether you have taken the requested steps.

6.1 Establishment of policies and plans

6.1.1 Preparation of policies

Establish and maintain policies that incorporate actions relating to the control of substances contained in products.

6.1.2 Identification of requirements

(1) Identification of legal, regulatory, and customer requirements

Control documents describing laws, regulations, and customer requirements relating to products. Keep this information up-to-date. Communicate information relating to the control of substances contained in products to other internal departments that need it.

Key points

- Exercise close internal management of substance groups specified by laws, regulations, and Epson. Make information about these substance groups readily available for viewing by all departments that need access to such information.

(2) Definition of the scope of control

Specify the processes and substances to which the control of substances contained in products applies.

6.1.3 Drafting of targets and plans

Define the scope of control, and set clear internal targets and plans in line with the scope of control.

Key points

- Prepare plans to achieve elimination targets for groups of level 2 substances to be eliminated from products, and monitor progress. This should result in meeting the legal, regulatory, and Epson requirements.

6.1.4 Definition of the system, roles, authority

Establish a system (responsible person and organization) for controlling substances contained in products.

Key points

- Establish a shipping assurance system, and clearly identify the responsible departments and persons [when launching new products, in mass production, when there is a 4M change (a change in man, machine, material, and manufacturing method), in vendor management, etc.]

- For substance elimination programs, decide what departments are to be responsible for selecting alternative goods and for performing evaluations, and ensure that quality, as well as legal, regulatory, and Epson requirements are met.

6.1.5 Document control

Prepare documents (including records) relating to the control of substances contained in products and have in place a system for maintaining and controlling the documents.

Key points

- Document the specific procedures based on the shipping assurance system described above in item 6.1.4. Control all forms that are used.

6.1.6 Training

Identify your training needs and establish a curriculum that suits those needs and that is useful in enabling people to acquire sufficient knowledge about chemicals and other substances themselves and about their control. Provide systematic training to all employees who need it.

Key points

Prepare and implement a plan that follows a training curriculum so that legal, regulatory and Epson requirements are understood and so that operations are carried out by people who have the required knowledge and skills.

6.2 Implementation and operation

6.2.1 Design & development

Identify and implement the things that should be done in the product design and development process (design and verification) in order to avoid using substances banned from inclusion in products.

Key points

- Specify materials in specifications, drawings, and other documentation, and clearly note requirements regarding the avoidance of banned substances.
- Communicate legal, regulatory, and Epson requirements to your vendors.
- Check that the production materials used conform to all legal, regulatory, and Epson requirements.

6.2.2 Obtaining and checking substance content information

Check that all information about substances contained in products obtained from your vendors is complete and proper. Carefully check the information against the requirements.

Key points

- Establish a form that allows you to check that all legal, regulatory and Epson requirements are met. Check whether the production materials procured with this form conform to all legal, regulatory, and Epson requirements.

6.2.3 Procurement management

Check whether the vendors of the parts and raw materials that comprise your products

are properly controlling substances contained in products. You should have a system for urging and implementing improvements.

Key points

- Require vendors to build and maintain a system for assurance against chemical substance inclusion in products based on this Green Purchasing Standard.
- Procure goods from vendors that conform to the requirements of this Green Purchasing Standard.
- Confirm and instruct vendors on the things they need to do based on this Green Purchasing Standard, and rectify any problems.
- Ask vendors to request that secondary vendors and other vendors all the way down the supply chain build and maintain a system for assurance against chemical substance inclusion in products.

6.2.4 Manufacturing process

(1) Incoming checks

Clearly specify and implement inspection methods and criteria for substances contained in products within your own incoming checks. Check physical goods by using the proper analytical measurement methods.

Key points

- Check the data for incoming parts and raw materials or conduct screening analysis to confirm that they conform to all legal, regulatory, and Epson requirements.
- If you cannot ascertain the state of control exercised over incoming parts and raw materials (because recycled materials were used, etc.), physically inspect the items to verify conformance to legal, regulatory and Epson requirements.

(2) Process control

Control processes in a way that prevents commingling and contamination in manufacturing processes and that prevents processes and goods from being affected by oxidation, vaporization, chemical reactions, changes in material concentrations, and so forth.

Key points

- Use separate production lines for products that have different legal, regulatory and customer requirements to prevent commingling and contamination. If lines cannot be separated, clearly specify and implement means to prevent the commingling of and contamination by substances banned from inclusion in products in mixed product processes.
- Identify and separate products according to legal, regulatory, and customer requirements.
- Separate products that do not meet substance elimination criteria from products that do meet substance elimination criteria by, for example, storing them in separate locations. Control the histories of products that do and do not meet substance elimination criteria.
- Do not use substances banned from use in manufacturing processes (Appendix 1:2.4) in manufacturing processes for production materials destined for Epson.

Require contract manufacturers to comply with the requirements for controlling substances contained in products. Prepare and use a system for periodically checking, giving instructions on, and auditing the state of control at contract manufacturer sites.

Key points

- Require contract manufacturers to build and maintain a system for assurance against chemical substance inclusion in products based on this Green Purchasing Standard.
- Confirm and instruct contract manufacturers on the things they need to do based on this Green Purchasing Standard. Rectify any problems.
- Request that contract manufacturers and others down the supply chain build and maintain a system for assurance against chemical substance inclusion in products.
- Ask contract manufacturers not to use substances banned from use in manufacturing processes (see item 2.4 in Appendix 1) in manufacturing processes for production materials destined for Epson.

6.2.5 Change control

Establish and strictly follow rules regarding change control involving the control of substances contained in products.

Key points

- Provide and follow clear procedures for 4M changes
 - Define as a 4M change any change that has the potential to affect substances contained in products specified by Epson. This includes things such as a change in manufacturer or a change in raw materials.
 - Verify that the 4M change will not lead to problems.
 - Epson needs to verify any changes that have the potential to affect the substances contained in products specified by Epson. Notify your point of contact at Epson before implementing changes.
 - Wait for Epson to check the situation before making a 4M change.
- Control changes in the same way for your own vendors.

6.2.6 Shipping verification

Perform shipping verification in all processes relating to the control of substances contained in products. Shipping decisions must be made on the basis of reliable data.

Key points

- Specify and implement a method for verifying that all legal, regulatory and Epson requirements have been met. Keep records of the results of verification.

6.2.7 Handling nonconformance

Nonconforming product must be disposed of appropriately (including to prevent commingling with conforming products). Put in place a system for promptly notifying and reporting nonconformances to all stakeholders (including the person with promotion responsibility, the person with management responsibility or the person with business responsibility, interested departments, vendors, customers, etc.) Investigate the causes of accidents and take action to prevent recurrence.

Key points

- Establish who is to be responsible for reporting to Epson in the event of a nonconformance (including at and after your site) and establish the reporting procedure.
- Establish and implement a method (lot tracing) that enables you to identify an object.
- Establish and implement clear corrective actions and preventive actions.

6.2.8 Providing information

Calculate data on specific substances contained in products so that you can provide accurate information to customers and third parties.

Key points

- Establish a route for providing information in response to inquiries from Epson.
- Submit a Vendor Agreement, survey information, and other requested information to Epson.

6.3 Inspection and issues needing correction

Conduct internal audits to assess the state of control over substances contained in products. Use these audits to check whether substances contained in products are being properly controlled.

Key points

- Check that procedures relating to assurance against chemical substance inclusion in products are being observed. Rectify any problems.
- Conduct checks at vendor and contract manufacturer sites in accordance with “6.2.3 Procurement management” and “6.2.4 (2) Process control.”

6.4 Management review

When an internal audit shows that a problem exists, create targets, action plans, and/or other means to resolve the problem.

Key points

- Continuously improve your assurance system based on the results of checks described in “6.3 Inspection and issues needing correction.”

7. Additional Clause

7.1 Revision and withdrawal

This Green Purchasing Standard shall be revised and withdrawn pursuant to the “Epson Standard for Controlling Substances Included in Products.”

7.2 Revision history

Rev.	Date of Revision	Revised Content
1	January 15, 2003	Rev. 1.0
2	August 15, 2003	Added information on things such as groups of controlled substances in products added by Epson
3	April 15, 2005	Added information regarding an assurance system relating to substances included in products, etc.
3.1	December 15, 2006	Added information to Appendix 1 Substance Handling Standards, including the addition of cobalt chloride to conditionally banned substances and exceptions to substances to be eliminated.
3.2	April 1, 2008	<p>Appendix 1: Substance Handling Standards</p> <ul style="list-style-type: none"> • Added 3 substances to unconditionally banned substances (subject to the Chemical Substance Control Law) • Added perfluorooctane sulfonate (PFOS) and its salts to conditionally banned substances <p>Updated Appendix 3: List of Epson Group Companies</p>
3.3	January 20, 2009	<p>Added “Compliance documents for California Formaldehyde Regulation for Composite Wood Products” to Documents to Be Submitted</p> <p>Appendix 1: Substance Handling Standards</p> <ul style="list-style-type: none"> • Added conditions to conditionally banned substances (formaldehyde) • Added conditions to conditionally banned substances (cadmium, mercury, lead) <p>Added transport pallets (SEG specifications) to examples of packing materials</p>
3.4	August 20, 2009	<p>Appendix 1: Substance Handling Standards</p> <ul style="list-style-type: none"> - Added dimethyl fumarate to unconditionally banned substances - Added examples of general use to unconditionally banned substances - Added conditions to conditionally banned substances (formaldehyde) - Added exempted applications to conditionally banned substances (cadmium and cadmium compounds) - Revised conditions for conditionally banned substances (lead and lead compounds) - Added exempted application to three substances to be eliminated from products (cadmium and cadmium compounds, mercury and mercury compounds, lead and lead compounds) - Revised analytical standards for four substances to be eliminated from products (cadmium and cadmium compounds, hexavalent chromium and its compounds, mercury and mercury compounds, lead and lead compounds) - Added phthalate to level 2 substances to be eliminated from products <p>Updated Appendix 3: List of Epson Group Companies</p>
3.5	May 21, 2010	<p>Appendix 1: Substance Handling Standards</p> <p>< Unconditionally banned substances ></p> <p>Added 6 substances to the “Group subject to the Law Concerning the Examination and Regulation of Manufacture etc. of Chemical Substances (Japan)”</p> <p>< Conditionally banned substances ></p> <ul style="list-style-type: none"> - Added tri-substituted organostannic compounds (tributyltin (TBT)/ triphenyltin (TPT) / other tri-substituted organostannic compounds) - Added dioctyltin (DOT) compounds - Revised condition of prohibitions for mercury and its compounds - Revised condition of prohibitions and exemptions for perfluorooctane sulfonates (PFOS) and its salts <p><Substances to be eliminated from products></p> <ul style="list-style-type: none"> - Added dibutyltin (DBT) compounds to level 2 substances <p style="text-align: right;"><i>(Continued on the next page...)</i></p>

Rev.	Date of Revision	Revised Content
3.5	May 21, 2010	<ul style="list-style-type: none"> - Added exempted application for cadmium and cadmium compounds, mercury and mercury compounds, lead and lead compounds - Limit the scope of Phthalate to DEHP, DBP, BBP - Deleted conditions of prohibitions already controlled in accordance with those of conditionally banned substances (e.g. batteries, packaging materials) - Updated Appendix 3 List of Epson Group Companies *1 dioctyltin (DOT)/ tributyltin (TBT)/ triphenyltin (TPT) / other Tri-substituted organostannic compounds
3.6	July 1, 2011	<p>Appendix 1: Substance Handling Standards</p> <p>< Unconditionally banned substances ></p> <ul style="list-style-type: none"> - Added two substances to the “Group subject to the Law Concerning the Examination and Regulation of Manufacture etc. of Chemical Substances (Japan)” <p>< Conditionally banned substances ></p> <ul style="list-style-type: none"> - Revised the conditions for prohibitions on cadmium and cadmium compounds, mercury and mercury compounds, lead and lead compounds - Added "Treatment of Substances Regulated by REACH Regulation No. 1907 / 2006" <p><Substances to be eliminated from products></p> <ul style="list-style-type: none"> - Revised exempted applications for cadmium and cadmium compounds, mercury and mercury compounds, lead and lead compounds - Added diisobutyl phthalate (DIBP) and hexabromocyclododecane (HBCDD) to level 2 substances to be eliminated from products
3.7	August 1, 2012	<p>Deleted “PREFACE”, “QUALITY PHILOSOPHY”</p> <p>Appendix 1: Substance Handling Standards</p> <p>< Conditionally banned substances ></p> <ul style="list-style-type: none"> - Deleted one of the exemptions from Formaldehyde. - Revised conditions for mercury and mercury compounds. - Revised conditions for Tri-substituted organostannic compounds and Dioctyltin (DOT) compounds. - Added (Di(2-ethylhexyl) phthalate(DEHP), Dibutyl phthalate(DBP), Benzyl butyl phthalate(BBP), Diisobutyl phthalate(DIBP), Dibutyltin (DBT) compounds, Hexabromocyclododecane (HBCDD) * moved from level 2 substances to be eliminated from products - Added “until December 31, 2014” to the exemption of Dioctyltin (DOT) compounds - Added URL of European Chemical Agency’s website to “Treatment of Substances Regulated by REACH Regulation No. 1907/2006” - Revised the organization names. - Added “for information on production materials used for products to which EU RoHS Directive (2011/65/EU) applies” to Note A. <p><Substances to be eliminated from products></p> <ul style="list-style-type: none"> - Deleted “(e.g. Projector lamp) from Hg-4 of Mercury And Mercury Compounds. - Regarding exempted application of Lead and Lead Compounds “Pb-7”, added “7(c)-IV” to the No. of application exempted from amended RoHS Directive and added “Lead in PZT based dielectric ceramic materials for capacitors being part of integrated circuits or discrete semiconductors” to the comment. - Deleted (Di(2-ethylhexyl) phthalate(DEHP), Dibutyl phthalate(DBP), Benzyl butyl phthalate(BBP), Diisobutyl phthalate(DIBP), Dibutyltin (DBT) compounds, Hexabromocyclododecane (HBCDD) from level 2 substances to be eliminated from products. * moved to conditionally banned substances. - Added Perfluorooctanoic acid (PFOA) and its salt, Musk xylene, 4,4’-Diaminodiphenylmethane (MDA), Diarsenic pentaoxide, Diarsenic trioxide, 2,4 - Dinitrotoluene (2,4-DNT), Tris(2-chloroethyl)phosphate (TCEP) to level2 Substances to be eliminated from products. - Updated Appendix 3 List of Epson Group Companies
3.7.1	April 1, 2013	Updated Appendix 3 List of Epson Group Companies

Rev.	Date of Revision	Revised Content
3.7.2	August 1, 2013	<ul style="list-style-type: none"> - Updated Appendix 3 List of Epson Group Companies - Revised the organization name from “Visual Device Business Unit (the former TFT Operations Division) of the Visual Products Operations Division” to “the TFT liquid crystal panels business of the Visual Products Operations Division”
3.8	July 1, 2014	<p>Deleted “APPROACH TO ASSURANCE AGAINST CHEMICAL SUBSTANCE INCLUSION IN PRODUCTS” STANDARDS</p> <ul style="list-style-type: none"> - Added 2. Basic rules for assuring that banned substances are not contained in products <p>Appendix 1: Substance Handling Standards</p> <ul style="list-style-type: none"> - Revised the explanation in 2.Substance group handling standards partially < Unconditionally banned substances > - Added Endosulfan, Hexabromocyclododecane (HBCDD) - Polychlorinated naphthalene: (Cl: 3 or more) => (Cl: 1 or more) < Conditionally banned substances > - Cadmium and its compounds, lead and its compounds, Mercury and its compounds: For use in batteries, see Appendix 2 - Added a condition for jewelry to Lead and its compounds - Added a condition for azo dyes to azo compounds - Moved HBCDD to unconditionally banned substances - Moved musk xylene, MDA, diarsenic pentaoxide, diarsenic trioxide, 2,4-DNT, TCEP from level2 Substances to be eliminated from products <p><Notes regarding substances></p> <ul style="list-style-type: none"> - *A: Moved “Products to which EU RoHS Directive (2011/65/EU) applies” from Notes regarding laws <p><Notes regarding laws></p> <ul style="list-style-type: none"> - Added *1 According to Annex XVII of REACH Regulation No. 1907/2006, revised the name of the law of *7 - Added list of azodyes <p><Substances to be eliminated from products ></p> <ul style="list-style-type: none"> - Added the following explanations <p>As of July 2014, applications exempted from the RoHS Directive are being reviewed.</p> <p>The dates provided in the "Effective date of the prohibition" column in the tables on pages 21-25 are the dates that Epson has independently set as the final dates for accepting goods containing substances that are being phased out. Exempted applications and effective dates of the prohibition may change, depending on the results of reviews of applications exempted from the RoHS Directive.</p> <ul style="list-style-type: none"> - Deleted “Analytical standards for substances to be eliminated from products are also shown below. Analytical methods have not been established for all test samples.” - Added “Effective date of the prohibition” for exempted applications and the following explanation. <p>Exempted applications and effective dates of the prohibition may change, depending on the results of reviews of applications exempted from the RoHS Directive.</p> <ul style="list-style-type: none"> - Analytical standards : Added the following explanation. <p>*Use the method of analysis, testing, or measurement specified by Epson, if any.</p> <ul style="list-style-type: none"> - Moved musk xylene, MDA, diarsenic pentaoxide, diarsenic trioxide, 2,4-DNT, TCEP to Conditionally banned substances - Hexavalent Chromium and Its Compounds => Hexavalent Chromium Compounds - Added the following condition to level 2 of Hexavalent Chromium Compounds. Hexavalent Chromium Compounds must not be present in leather articles and articles containing leather parts that come into contact with the skin in concentrations equal to or greater than 3 ppm of the total dry weight of the leather or leather part

Rev.	Date of Revision	Revised Content
3.8	July 1,2014	<ul style="list-style-type: none"> - Mercury And Mercury Compounds: Revised the name of Hg-3 from “Mercury in straight fluorescent lamps for special purposes” to “Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes” - Lead and Lead Compounds: Revised the name of Pb-7 from Lead in ceramic for piezoelectronic devices to Lead in ceramic for electrical and electronic components - Lead and Lead Compounds: Revised the comment of Pb-7 - Lead and Lead Compounds: Added *See Pb-4 for high melting temperature type solders to the comment of Pb-14 - Added PAH, Trichloroethylene to level 2 <Substances Banned From Use In Manufacturing Processes> - Added Montreal Protocol Annex III and Bromochloromethane Appendix 2 - Deleted Appendix 2 “System Check Sheet for Assurance Against Chemical Substance Inclusion in Products” - Added Appendix 2 “Conditionally banned substances for battery” Appendix 3 - Updated Appendix 3 “List of Epson Group Companies”

Appendix 1 Substance Handling Standards

1. Definitions

Substances banned from inclusion in products including accessories, options, packaging materials etc.: Substances whose inclusion in products is prohibited by Epson

Unconditionally banned substances: Of the substances banned from inclusion in products, those substances that are prohibited from inclusion in Epson products regardless of the intended use and the inclusion condition and location.

Conditionally banned substances: Of the substances banned from inclusion in products, those substances that are prohibited from inclusion in Epson products depending on the intended use and the inclusion conditions and location.

Substances to be eliminated from products:

- Level 1 Substances for which the deadline for elimination has passed, and which prohibited, effectively immediately
- Level 2 Substances for which an elimination deadline has been set and whose inclusion will be prohibited

Controlled substances in products: Substances whose amount of inclusion in products is controlled

Substances banned from use in manufacturing processes: Substances whose use in manufacturing processes for production materials destined for Epson is prohibited

2. Substance group handling standards

Standards for the handling of substance groups are shown in items 2.1 through 2.4 below. Handling standards have been established pursuant to applicable laws and regulations^{*1}. Please ensure compliance with specified conditions relating to banned substances (e.g., thresholds, parts where substances are present, uses)^{*2}.

*1 The laws and regulations of all countries are not covered.

Epson does not guarantee the accuracy of CAS numbers. A representative CAS number is listed for substances that have multiple CAS numbers.

*2 The use of substances banned from inclusion in products is permitted with the approval of Epson in the following cases where use can be reliably controlled so that legal, regulatory and customer requirements are met.

- When a customer has requested its use
- When a substance is present in a natural material and where it is not technically possible to entirely eliminate the substance in the process used to refine the material for industrial use
- When a substance is produced in a synthetic process and where it is not technically possible to entirely eliminate the substance
- When specific exemption is indicated by Epson

See “Guidelines for Surveying Controlled-Substance in Products” for information on the handling of controlled substances.

URL: http://global.epson.com/SR/procurement/green_purchasing/green_survey.html

2.1 Unconditionally banned substances

A table of unconditionally banned substances is shown below. The applicable laws and regulations listed in the “Class” column of the table is not comprehensive and does not cover the laws and regulations in all countries. The examples of common uses provided in the table are not comprehensive.

Unconditionally Banned Substances

Class	No.	Substance Name	CAS No.	Examples of common uses
Group subject to the Labor Safety and Health Law (Japan)	1	White phosphorous	12185-10-3	match
	2	Benzidine and its salts	92-87-5, etc.	material for colorant
	3	4-aminodiphenyl / 4-aminodiphenyl and its salts	92-67-1, etc.	rubber antioxidant
	4	4-nitrodiphenyl and its salts	92-93-3, etc.	synthesis intermediate
	5	Bis (chloromethyl) ether	542-88-1	dye, pigment, methylating agent
	6	2-naphthylamine / beta-naphthylamine and its salts	91-59-8, etc.	material for colorant
	7	Rubber cement containing benzene, where the benzene accounts for more than 5% of the rubber cement solvent (including diluting agent)	-	
Group subject to the Law Concerning the Examination and Regulation of Manufacture etc. of Chemical Substances (Japan)	8	PCBs / PCTs	-	dielectric oil, heat carrier, grease
	9	Hexachlorobenzene	118-74-1	fungicide, pesticide
	10	Aldrin	309-00-2	preservative agent, pesticide
	11	Dieldrin	60-57-1	preservative agent, pesticide
	12	Endrin	72-20-8	pesticide, rodenticide
	13	DDT	50-29-3	pesticide
	14	Chlordane	57-74-9, etc.	pesticide
	15	Bis (tributyltin) oxide ^{*1}	56-35-9	preservative agent, fungicide
	16	N,N'-ditolyl-p-phenylenediamine, N-Tolyl-N'-xylyl-p-phenylenediamine, or N,N'-Dixylyl-pphenylenediamine	27417-40-9, 28726-30-9, 70290-05-0	rubber antioxidant
	17	2,4,6-tri-tert-butylphenol	732-26-3	antioxidant, other additives, grease
	18	Toxaphene	8001-35-2	pesticide, miticide
	19	Mirex	2385-85-5	flame retardant, pesticide, ant killer
	20	2,2,2-trichloro-1,1-bis(4-chlorophenyl)ethanol (Kelthane or Dicofol)	115-32-2	miticide
	21	Hexachlorobuta-1,3-diene	87-68-3	solvent
	22	Phenol, 2-(2H-benzotriazol-2-yl)-4,6-bis(1,1-dimethyl ethyl)- (Tinuvin320)	3846-71-7	ultraviolet absorber
	23	perfluorooctane sulfonyl fluoride (PFOS-F)	307-35-7	materials for related substances of PFOS
24	Pentachlorobenzene	608-93-5	pesticide	
25	Alpha hexachlorocyclohexane	319-84-6	by-product of lindane	
26	Beta hexachlorocyclohexane	319-85-7	by-product of lindane	
27	Gamma hexachlorocyclohexane	58-89-9	pesticide	
28	Chlordecone	143-50-0	pesticide	

Group subject to the Law Concerning the Examination and Regulation of Manufacture etc. of Chemical Substances (Japan)	29	Endosulfan	115-29-7 959-98-8 33213-65-9	pesticide
	30	Hexabromocyclododecane (HBCDD)	25637-99-4 3194-55-6 4736-49-6 65701-47-5 134237-50-6 etc.	flame retardant
DBBTs	31	DBBT (monomethyl-dibromo-diphenyl methane)	99688-47-8	dielectric oil
	32	DBB (di- μ -oxo-di-n-butyltin hydroxyborane)	75113-37-0	fungicide
	33	Pentachlorophenol	87-86-5	pesticide in general, insect repellent
	34	Monomethyl-tetrachloro-diphenyl methane	76253-60-6	dielectric oil
	35	Monomethyl-dichloro-diphenyl methane	81161-70-8	dielectric oil
Halogenated organic compounds	36	Specified PBB family of brominated flame retardants	-	flame retardant
	37	Specified PBDE family of brominated flame retardants	-	flame retardant
	38	Polychlorinated naphthalene (Cl: 1 or more)	-	preservative agent, pesticide, grease
Other	39	Asbestos	-	heat insulation material, bulking agent
	40	Ozone-depleting substances ^{*1}	-	refrigerant, blowing agent
	41	Dimethyl fumarate	624-49-7	preservative, fungicide

*1 Substances targeted by the Montreal Protocol

2.2 Conditionally banned substances

A table of conditionally banned substances is shown below. Please review the substance names and prohibitions in the table.

Conditionally Banned Substances

No.	Substance Name	Prohibitions	CAS No.
1	Nickel	<p>Prohibited in the following types of products that maintain direct, sustained contact with the skin:</p> <ul style="list-style-type: none"> • Earrings, necklaces, bracelets, chains, anklets, rings • The use of nickel in wristwatch cases, wristwatch bands, rivet buttons used in clothing, belts, rivets, zippers, and metal marks is prohibited if the rate of nickel released from these products equals or exceeds 0.5 µg/cm² per week. (The use of non-nickel coatings on the above products is prohibited if the rate of nickel released from these products is not 0.5 µg/cm² per week or less for at least two years under normal usage conditions.)^{*1} 	7440-02-0
2	Formaldehyde	<ul style="list-style-type: none"> • Products directly and indirectly related to fiber products such as clothing • Composite wood products below that do not meet the requirements of sections 93120-92130.12, title 17, California Code of Regulations <ul style="list-style-type: none"> (1) Hardwood plywood - veneer core (HWPW-VC) (2) Hardwood plywood - composite core (HWPW-CC) (3) Particleboard (PB) (4) Medium density fiberboard (MDF) (5) Thin medium density fiberboard (Thin MDF) (6) Finished goods that contain (1)-(5) <p>The following items are exempt</p> <ul style="list-style-type: none"> - Packing materials - Products where the final place of consumption is outside the state of California 	50-00-0
3	Cadmium and its compounds (*A)	<ul style="list-style-type: none"> • Prohibited in amounts exceeding 75 ppm in stabilizers, pigments, paints/inks, solders, or fluorescent lamps used in products.^{*2} • For use in batteries, see Appendix 2. • Heavy metals (lead, mercury, cadmium, and hexavalent chromium) shall not be contained in packaging materials in a total combined mass exceeding 100 ppm. 	7440-43-9, etc.
4	Hexavalent chromium compounds (*A)	<ul style="list-style-type: none"> • Heavy metals (lead, mercury, cadmium, and hexavalent chromium) shall not be contained in packaging materials in a total combined mass exceeding 100 ppm. 	-
5	Lead and its compounds (*A)	<ul style="list-style-type: none"> • Restricted in plastics, paints, and inks used in products. • Plastics shall not contain more than 100 ppm. Paints and inks shall not contain more than 100 ppm. Lead carbonate and lead sulfate shall not be contained in any concentration in paints and inks.^{*3} • For use in batteries, see Appendix 2. • Heavy metals (lead, mercury, cadmium, and hexavalent chromium) shall not be contained in packaging materials in a total combined mass exceeding 100 ppm. • Cord and cable jackets/sheathing that contain 300 ppm lead or lead compounds must be labeled^{*4} • In jewelry products (including watch bands), shall not exceed 200ppm. Crystal glass, glass, stainless steel, and natural jewelry not treated with lead additives are exempt.^{*7} • Jewelry (including watch bands) glass and stainless steel shall not contain more than 500 ppm. This does not apply, however, to internal watch parts that consumers do not touch.^{*1} 	7439-92-1, etc.
6	Mercury and its compounds (*A)	<ul style="list-style-type: none"> • For use in batteries, see Appendix 2. • Heavy metals (lead, mercury, cadmium, and hexavalent chromium) shall not be contained in packaging materials in a total combined mass exceeding 100 ppm. • Shall not be present in production materials other than those listed above^{*5} 	7439-97-6, etc.

7	Chlorinated paraffin	<ul style="list-style-type: none"> Inclusion as a component in paints/inks, coatings, and softening agents in sealants, and as a component in flame retardants used in rubbers and plastics is regulated as follows: The weight percent of SCCPs (short-chained chlorinated paraffins having 10-13 carbon atoms and containing 48% or more chlorine by weight; CAS No. 63449-39-8) shall not exceed 0.1% 	85535-84-8
8	Azo compounds (*B)	<ul style="list-style-type: none"> Azo compounds that form designated amines are prohibited in parts that come into contact with the human body in products designed to be in continuous physical contact with the human body. The use of azo dyes contained in the list of azodyes as substances is prohibited. The inclusion of azo compounds in excess of 1000 ppm is prohibited. 	As shown on separate table, P20
9	Cobalt chloride (*C)	<ul style="list-style-type: none"> Prohibited to exceed a concentration of 0.01% in silica gel or other preparations. 	7646-79-9
10	Perfluorooctane sulfonates(PFOS) and its salts (*D)	<ul style="list-style-type: none"> Shall not be contained in production materials ^{*6} The following items are exempt: (a) photo-resist for semi-conductor (b) etching agent (used for piezoelectric ceramic filters or compound semiconductors for high frequencies only) (c) photographic films for professional use (d) fire-fighting forms, fire-fighting agent for extinguisher (industrial use only), industrial extinguisher 	-
11	Tri-substituted organostannic compounds (*E)	<ul style="list-style-type: none"> Prohibited in amounts exceeding 1000ppm (calculated as a tin equivalent) in article ^{*8} ^{*1} 	-
12	Diocetyl tin (DOT) compounds	<ul style="list-style-type: none"> Prohibited in amounts exceeding 1000ppm (calculated as a tin equivalent) in article ^{*8} ^{*1} Adhesives are exempt. 	-
13	Di(2-ethylhexyl) phthalate (DEHP)	<ul style="list-style-type: none"> Prohibited in amounts exceeding 1000ppm per homogeneous material 	117-81-7
14	Dibutyl phthalate (DBP)	<ul style="list-style-type: none"> Prohibited in amounts exceeding 1000ppm per homogeneous material 	84-74-2
15	Benzyl butyl phthalate (BBP)	<ul style="list-style-type: none"> Prohibited in amounts exceeding 1000ppm per homogeneous material 	85-68-7
16	Diisobutyl phthalate (DIBP)	<ul style="list-style-type: none"> Prohibited in amounts exceeding 1000ppm per homogeneous material 	84-69-5
17	Dibutyltin (DBT) compounds	<ul style="list-style-type: none"> Prohibited in amounts exceeding 1000ppm in (calculated as a tin equivalent) mixtures and articles ^{*8} for supply to general public. ^{*1} Adhesives are exempt until December 31, 2014. 	-
18	5-tert-butyl-2,4,6-trinitro-o-m-xylene (Musk xylene)	<ul style="list-style-type: none"> Prohibited in amounts exceeding 1000 ppm per delivery configuration (Parts, units, finished products, etc.) 	81-15-2
19	4,4'-Diaminodiphenylmethane (MDA)	<ul style="list-style-type: none"> Prohibited in amounts exceeding 1000 ppm per delivery configuration (Parts, units, finished products, etc.) 	101-77-9
20	Diarsenic pentaoxide	<ul style="list-style-type: none"> Prohibited in amounts exceeding 1000 ppm per delivery configuration (Parts, units, finished products, etc.) 	1303-28-2
21	Diarsenic trioxide	<ul style="list-style-type: none"> Prohibited in amounts exceeding 1000 ppm per delivery configuration (Parts, units, finished products, etc.) 	1327-53-3
22	2,4 - Dinitrotoluene (2,4-DNT)	<ul style="list-style-type: none"> Prohibited in amounts exceeding 1000 ppm per delivery configuration (Parts, units, finished products, etc.) 	121-14-2
23	Tris(2-chloroethyl)phosphate (TCEP)	<ul style="list-style-type: none"> Prohibited in amounts exceeding 1000 ppm per delivery configuration (Parts, units, finished products, etc.) 	115-96-8

Treatment of Substances Regulated by REACH Regulation No. 1907/2006

For reference: European Chemical Agency's website <http://echa.europa.eu/web/guest/home>

- Substances subject to restrictions under Annex XVII shall be handled as required by law.
- Request to vendors delivering production materials to Epson's Microdevices Operations Division (quartz device businesses, semiconductor device businesses), and/or the TFT liquid crystal panels business of the Visual Products Operations Division:
If an article contains a substance on the Candidate List in a concentration above 0.1% wt, please notify Epson using the prescribed procedure.

Notes regarding substances

- *A Refer to the information on substances to be eliminated from products (page 21-25) for information on production materials used for products to which EU RoHS Directive (2011/65/EU) applies.
Products to which EU RoHS Directive (2011/65/EU) applies: Equipment which is dependent on electric currents or electromagnetic fields in order to work properly and equipment for the generation, transfer and measurement of such currents and designed for use with a voltage rating not exceeding 1000 volts for alternating current and 1500 volts for direct current. Large-scale stationary industrial tools and medical devices, monitoring and control instruments, equipments which are connected with the protection of the essential interests of the security of Member States, arms, munitions and war material are exempted.
Examples of Epson products exempted from EU RoHS Directive (2011/65/EU): Industrial robots and factory automation equipment, manual type screen, carrying case, etc.
- *B Designated amines and list of azodyes in conditionally banned substances are shown in page 20.
- *C Indicator cards are exempt because there are no risk of aspirating cobalt chloride under ordinary conditions (ordinary use).
- *D C8F17SO2X (X=OH, Metal salts (O-M+), halide, amide, and other derivatives including polymers)
- *E Tributyltin (TBT) compounds / Triphenyltin (TPT) compounds / Other tri-substituted organostannic compounds
Bis (tributyltin) oxide is belongs to a group of substances that is unconditionally banned under Japan's Law Concerning the Examination and Regulation of Manufacture, etc. of Chemical Substances.

Notes regarding laws

- *1 According to Annex XVII of REACH Regulation No. 1907/2006
- *2 The threshold in the E.U. is 100 ppm or less, but it is 75 ppm in Denmark.
- *3 According to Denmark's lead regulations (statutory order no. 1012).
- *4 According to California's Proposition 65
- *5 According to Sweden's regulations (SFS 1998:944).
- *6 According to Commission Regulation (EU) No 757/2010, Japanese Law Concerning the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc., and Canadian Perfluorooctane Sulfonate and its Salts and Certain Other Compounds Regulations (SOR/2008-178 May 29, 2008).
- *7 According to California's Lead-Containing Jewelry Law (AB2901).
- *8 Article: Production materials delivered to Epson except for chemical substances and preparations.

Designated amines (substances generated by the dissolution of one or more azo group)

Substance	Molecular Formula	CAS No.
o-anisidine	C ₇ H ₉ NO	90-04-0
2-naphthylamine	C ₁₀ H ₉ N	91-59-8
3,3'-dichlorobenzidine	C ₁₂ H ₁₀ Cl ₂ N ₂	91-94-1
biphenyl-4-ylamine	C ₁₂ H ₁₁ N	92-67-1
Benzidine	C ₁₂ H ₁₂ N ₂	92-87-5
o-toluidine	C ₇ H ₉ N	95-53-4
4-chloro-o-toluidine	C ₇ H ₈ ClN	95-69-2
2,4-toluenediamine	C ₇ H ₁₀ N ₂	95-80-7
o-aminoazotoluene	C ₁₄ H ₁₅ N ₃	97-56-3
5-nitro-o-toluidine	C ₇ H ₈ N ₂ O ₂	99-55-8
3,3'-dichloro-4,4'-diaminodiphenylmethane	C ₁₃ H ₁₂ Cl ₂ N ₂	101-14-4
4,4'-methylenedianiline	C ₁₃ H ₁₄ N ₂	101-77-9
4,4'-diaminodiphenylether	C ₁₂ H ₁₂ N ₂ O	101-80-4
p-chloroaniline	C ₆ H ₆ ClN	106-47-8
o-dianisidine	C ₁₄ H ₁₆ N ₂ O ₂	119-90-4
3,3'-dimethylbenzidine	C ₁₄ H ₁₆ N ₂	119-93-7
2-methoxy-5-methylaniline	C ₈ H ₁₁ NO	120-71-8
2,4,5-trimethylaniline	C ₉ H ₁₃ N	137-17-7
4,4'-thiodianiline	C ₁₂ H ₁₂ N ₂ S	139-65-1
4-methoxy-m-phenylenediamine	C ₇ H ₁₀ N ₂ O	615-05-4
4,4'-methylenedi-o-toluidine	C ₁₅ H ₁₈ N ₂	838-88-0
4-Aminoazobenzene	C ₁₂ H ₁₁ N ₃	60-09-3

List of azodyes

Substance name	CAS №
A mixture of disodium(6-(4-anisidino)-3-sulfonato-2-(3,5-dinitro-2-oxidophenylazo)-1-naohtholato)(1-(5-chloro-2-oxidophenylazo)-2-naphtholato)chromate(1-); trisodium bis(6-(4-anisidino)-3-sulfonato-2-(3,5-dinitro-2-oxidophenylazo)-1-naphtholato)chromate(1-)	Not allocated Component 1: CAS-No.:118685-33-9 C ₃₉ H ₂₃ ClCrN ₇ O ₁₂ S ₂ .2Na Component 2: C ₄₆ H ₃₀ CrN ₁₀ O ₂₀ S ₂ .3Na

2.3 Substances to be eliminated from products

A table of substances to be eliminated from products is shown below. In the table, the definitions of terms relating to elimination level are as follows:

- (1) Level 1: Immediately prohibited
- (2) Level 2: Prohibited as of a predetermined date
- (3) Exempted applications: Uses that are exempted from elimination

Exempted applications:

Exempted applications that have no bearing on Epson are not listed. (See the URL below for details.) Contact Epson if there is not item that should be selected.

Applications exempted from amended RoHS Directive

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:174:0088:0110:EN:PDF>

As of July 2014, applications exempted from the RoHS Directive are being reviewed. The dates provided in the "Effective date of the prohibition" column in the tables on pages 21-25 are the dates that Epson has independently set as the final dates for accepting goods containing substances that are being phased out. Exempted applications and effective dates of the prohibition may change, depending on the results of reviews of applications exempted from the RoHS Directive.

Substances to Be Eliminated From Products (Cadmium and Cadmium Compounds)

Substance Group to be Eliminated	Elimination Level	Coverage		Threshold	Effective date of the prohibition
Cadmium and its compounds	Level 1	• Production materials used for products to which EU RoHS directive (2011/65/EU) applies		100 ppm	Immediate
	Exempted applications	Cd-99	Batteries		-

Analytical standards for cadmium and cadmium compounds
<p>Analytical method in accordance with IEC62321</p> <p><u>Polymers / Metals / Electronics</u></p> <ul style="list-style-type: none"> - ICP-OES (Inductively Coupled Plasma-Optical Emission spectrometry) - ICP-MS (Inductively Coupled Plasma Mass Spectrometry) - AAS (Atomic Absorption Spectroscopy) <p>* Analysis should be performed by one of analytical methods described above. Alternative analytical methods recommended by analysis laboratories are also acceptable.</p> <p>* It is preferable to perform analysis by laboratories certified according to ISO 17025.</p> <p>* Use the method of analysis, testing, or measurement specified by Epson, if any.</p>

Substances To Be Eliminated From Products (Hexavalent Chromium Compounds)

Substance Group to be Eliminated	Elimination Level	Coverage	Threshold	Effective date of the prohibition
Hexavalent chromium compounds	Level 1	• Production materials used for products to which EU RoHS Directive (2011/65/EU) applies	1000 ppm	Immediate
	Exempted applications	None		

Substance Group to be Eliminated	Elimination Level	Coverage	Threshold	Effective date of the prohibition
Hexavalent chromium compounds	Level 2	• Leather articles and articles containing leather parts that come into contact with the skin	3 ppm (*1)	February 1, 2015
	Exempted applications	None		

*1 Shall not be present in concentrations equal to or greater than 3 ppm of the total dry weight of the leather or leather part.

Analytical standards for hexavalent chromium compounds

- * Analytical methods recommended by analysis laboratories are acceptable. Please note that “Spot-test” is not acceptable due to large limits of quantification (LOQ) and low accuracy.
- * It is preferable to perform analysis by laboratories certified according to ISO 17025.
- * Use the method of analysis, testing, or measurement specified by Epson, if any.

Substances to Be Eliminated From Products (Mercury And Mercury Compounds)

Substance Group to be Eliminated	Elimination Level	Coverage	Threshold	Effective date of the prohibition
Mercury and its compounds	Level 1	<ul style="list-style-type: none"> • Production materials used for products to which EU RoHS Directive (2011/65/EU) applies 	1000 ppm	Immediate
	Exempted applications	<p>Hg-1</p> <p>Mercury in single capped (compact) fluorescent lamps EU RoHS Exempted application No.: 1</p> <p><u>Comments</u> Mercury in single capped (compact) fluorescent lamps not exceeding (per burner):</p> <p>1(a) For general lighting purposes < 30 W: 2.5 mg 1(b) For general lighting purposes ≥ 30 W and < 50 W: 3.5 mg 1(c) For general lighting purposes ≥ 50 W and < 150 W: 5 mg 1(d) For general lighting purposes ≥ 150 W: 15 mg 1(e) For general lighting purposes with circular or square structural shape and tube diameter ≤ 17 mm: 7 mg 1(f) For special purposes: 5 mg</p>		July 21, 2015
		<p>Hg-3</p> <p>Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes EU RoHS Exempted application No.: 3</p> <p><u>Comments</u> Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL, Short length :≤ 500 mm) for special purposes not exceeding (per lamp) 3.5 mg</p>		July 21, 2015
		<p>Hg-4</p> <p>Mercury in other lamps not specifically mentioned in the RoHS Directive Annex EU RoHS Exempted application No.: 4</p> <p><u>Comments</u> Mercury in other discharge lamps for special purposes not specifically mentioned in the RoHS Directive Annex</p>		-
		<p>Hg-99</p> <p>Batteries</p>		-

Exempted applications and effective dates of the prohibition may change, depending on the results of reviews of applications exempted from the RoHS Directive.

Analytical standards for mercury and mercury compounds
<p>Analytical method in accordance with IEC62321</p> <p style="padding-left: 20px;">< Polymers / Metals / Electronics ></p> <ul style="list-style-type: none"> - CV-AAS (Cold Vapour Atomic Absorption Spectrometry) - CV-AFS (Cold Vapour Atomic Fluorescence Spectrometry) - ICP-OES (Inductively Coupled Plasma-Optical Emission spectrometry) - ICP-MS (Inductively Coupled Plasma Mass Spectrometry) <p>* Analysis should be performed by one of analytical methods described above. Alternative analytical methods recommended by analysis laboratories are also acceptable.</p> <p>* It is preferable to perform analysis by laboratories certified according to ISO 17025.</p> <p>* Use the method of analysis, testing, or measurement specified by Epson, if any.</p>

Substances to Be Eliminated From Products (Lead and Lead Compounds)

Substance Group to be Eliminated	Elimination Level	Coverage	Threshold	Effective date of the prohibition	
Lead and its compounds	Level 1	<ul style="list-style-type: none"> Production materials used for products to which EU RoHS directive (2011/65/EU) applies 	1000 ppm	Immediate	
	Exempted applications	Pb-1	Electrical and electronic components containing lead in a glass EU RoHS Exempted application No.: 7(c)-I <u>Comments</u> - Lead in glass used for electrical and electronic components - Lead in compounds used in electrical and electronic components (glass matrix compounds) This does not apply to components other than glass. Check Pb-7 for ceramic components. If electric or electronic components contain both glass (Pb-1) and ceramic (dielectric Pb-35), as in a ceramic capacitor, check whether exempted applications for both apply.		-
		Pb-2	Lead as an alloying element in steel containing up to 0.35% lead by weight EU RoHS Exempted application No.: 6(a) <u>Comments</u> - Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0.35 % lead by weight		July 21, 2015
		Pb-3	Aluminum containing up to 0.4% lead by weight, and copper alloy containing up to 4% lead by weight EU RoHS Exempted application No.: 6(b), 6(c) <u>Comments</u> - Lead as an alloying element in aluminium containing up to 0.4 % lead by weight - Copper alloy containing up to 4 % lead by weight		July 21, 2015
		Pb-4	Lead in high melting temperature type solders (i.e. tin-lead solder alloys containing more than 85% lead) EU RoHS Exempted application No.: 7(a) <u>Comments</u> - Lead in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead)		-
		Pb-5	Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission, and network management for telecommunications EU RoHS Exempted application No.: 7(b) <u>Comments</u> - Includes Pb-6 “Lead in solders for network infrastructure equipment for switching, signaling, transmission as well as network management for telecommunications” from Rev. 3.5 and earlier revisions of this standard		July 21, 2015
		Pb-7	Lead in ceramic for electrical and electronic components EU RoHS Exempted application No.: 7(c)-I, 7(c)-IV <u>Comments</u> - Lead in ceramic used for electrical and electronic components (e.g. piezoelectric devices) excluding lead in dielectric ceramic - Lead in PZT-based dielectric ceramic materials for capacitors being part of integrated circuits or discrete semiconductors (single-function semiconductors) <i>(Continued on the next page...)</i>		-

Lead and its compounds	Exempted applications	Pb-7	Check Pb-35 for capacitors having a rated voltage of 125 V AC or 250 V DC or higher. Ceramics in capacitors with a rated voltage less than this are no longer exempted applications. (Control to 1,000 ppm or less instead of Pb-7 criteria.)	-
		Pb-10	Lead in optical and filter glass. EU RoHS Exempted application No.: 13(a) <u>Comments</u> -Lead in white glasses used for optical applications	-
		Pb-14	Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages EU RoHS Exempted application No.: 15 <u>Comments</u> -Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages *See Pb-4 for high melting temperature type solders	July 21, 2015
		Pb-27	Lead bound in crystal glass as defined in Annex I (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC EU RoHS Exempted application No.: 29	July 21, 2015
		Pb-33	Lead in glass of fluorescent tubes not exceeding 0.2 % by weight EU RoHS Exempted application No.: 5(b)	July 21, 2015
		Pb-34	Lead in a dielectric body of a capacitance element (load capacity) integrated in a ceramic oscillator (3 external electrodes type) EU RoHS Exempted application No.: unique to the Epson Group <u>Comments</u> Lead in a ceramic dielectric and lead in the body of a capacitance element (load capacity) only for ceramic oscillator (3 external electrodes type). * See Pb-7 for the piezoelectric body portion of ceramic oscillators (3 external electrodes type).	Immediate
		Pb-35	Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher EU RoHS Exempted application No.: 7(c)-II <u>Comments</u> There are no longer exempted applications for ceramic capacitors that have a lower rated voltage than this.	-
		Pb-99	Batteries	-

Exempted applications and effective dates of the prohibition may change, depending on the results of reviews of applications exempted from the RoHS Directive.

<p>Analytical standards for lead and lead compounds</p> <p>Analytical method in accordance with IEC62321</p> <p>< Polymers / Metals / Electronics ></p> <ul style="list-style-type: none"> - ICP-OES(Inductively Coupled Plasma-Optical Emission spectrometry) - ICP-MS(Inductively Coupled Plasma Mass Spectrometry) - AAS(Atomic Absorption Spectroscopy) <p>* Analysis should be performed by one of analytical methods described above. Alternative analytical methods recommended by analysis laboratories are also acceptable.</p> <p>* It is preferable to perform analysis by laboratories certified according to ISO 17025.</p> <p>* Use the method of analysis, testing, or measurement specified by Epson, if any.</p>
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Substances to Be Eliminated From Products (Perfluorooctanoic acid (PFOA) and its salt)

Substance Group to be Eliminated	CAS No.	Elimination Level	Coverage	Threshold	Effective date of the prohibition
Perfluorooctanoic acid (PFOA) and its salt	—	Level 2	<ul style="list-style-type: none"> Production materials 	Shall not be used Intentionally	January 1,2016 (*1)

*1 To meet the December 31, 2015, voluntary PFOA phase-out deadline in the U.S.

Substances to Be Eliminated From Products (PAH)

Substance Group to be Eliminated	CAS No.	Elimination Level	Coverage	Threshold	Effective date of the prohibition
Benzo[a]pyrene (BaP) Benzo[e]pyrene (BeP) Benzo[a]anthracene (BaA) Chrysen (CHR) Benzo[b]fluoranthene (BbFA) Benzo[j]fluoranthene (BjFA) Benzo[k]fluoranthene (BkFA) Dibenzo[a,h]anthracene (DBAhA)	50-32-8 192-97-2 56-55-3 218-01-9 205-99-2 205-82-3 207-08-9 53-70-3	Level 2	<ul style="list-style-type: none"> Production materials containing rubber or plastic components that come into direct as well as prolonged or short-term repetitive contact with the skin or oral cavity 	1ppm (*1)	December 27, 2015

*1 The concentration per covered material based on Annex XVII of REACH regulations

Substances to Be Eliminated From Products (Trichloroethylene)

Substance Group to be Eliminated	CAS No.	Elimination Level	Coverage	Threshold	Effective date of the prohibition
Trichloroethylene	79-01-6	Level 2	<ul style="list-style-type: none"> Production materials 	1000ppm (*1)	April 1, 2015

*1 The concentration in each delivery of parts, units, finished products, etc., from a supplier, based on the definition of REACH Regulation (1907/2006).

2.4 Substances banned from use in manufacturing processes

Substances banned from use in manufacturing processes at vendor sites are shown below. The applicable laws and regulations listed in the “Class” column of the table is not comprehensive and does not cover the laws and regulations in all countries.

Substances Banned From Use In Manufacturing Processes

Class	No.	Substance Name
(Japan) Substances prohibited by the Industrial Safety and Health Law (Article 55 and Enforcement Order 16)	1	White phosphorous
	2	Benzidine and its salts
	3	4-aminodiphenyl and its salts
	4	Amosite
	5	Crocidolite (blue asbestos)
	6	4-nitrodiphenyl and its salts
	7	Bis (chloromethyl) ether
	8	Beta-naphthylamine and its salts
	9	Rubber cement containing benzene, where the benzene accounts for more than 5% of the rubber cement solvent (including diluting agent)
	10	Formulations and other substances containing in excess of 1% by weight of any of the substances cited in Nos. 2 through 8
Montreal Protocol Annex A, B, E and C-II, III	11	1,1,1-trichloroethane
	12	Carbon tetrachloride
	13	Methyl bromide (bromo-methane)
	14	CFC-11
	15	CFC-111
	16	CFC-112
	17	CFC-113
	18	CFC-114
	19	CFC-115
	20	CFC-12
	21	CFC-13
	22	CFC-211
	23	CFC-212
	24	CFC-213
	25	CFC-214
	26	CFC-215
	27	CFC-216
	28	CFC-217
	29	Halon-1211
	30	Halon-1301
	31	Halon-2402
	32	HBFCs
	33	Bromochloromethane

Note: The following uses are exempt from this prohibition:

- (1) Small amounts of chemical reagent occasionally used as a comparative or calibration chemical in R&D applications.
- (2) CFC contained as a cooling agent in existing facilities or equipment.
- (3) Halons contained as an extinguishing material in existing facilities or equipment.

Appendix 2 Conditionally banned substances for battery

1. Cadmium and its compounds

Classification of batteries			Prohibition	
Primary battery				
1	<ul style="list-style-type: none"> ▪ Alkaline manganese battery ▪ Manganese dioxide battery 	Button cell	Shall not exceed 20ppm by weight	
		Non-button cell	Shall not exceed 10ppm by weight	
2	<ul style="list-style-type: none"> ▪ Lithium battery 	Portable battery (*1)	Shall not exceed 20ppm by weight	
		for medical equipment or for emergency and alarm systems	Button cell	Shall not exceed 250ppm by weight
			Non-button cell	Shall not exceed 150ppm by weight
3	<ul style="list-style-type: none"> ▪ Rest of primary batteries 	Portable battery (*1)	Shall not exceed 20ppm by weight	
		Specialty battery (*2)	Shall not exceed 150ppm by weight	
Secondary battery				
4	<ul style="list-style-type: none"> ▪ Lead acid battery 	Portable battery (*1)	Shall not to exceed 20ppm by weight	
		Specialty battery (*2)	Shall not exceed 100ppm by weight	
5	<ul style="list-style-type: none"> ▪ NiMH battery ▪ Alkaline secondary battery 	Portable battery (*1)	Button cell	Shall not exceed 20ppm by weight
			Non-button cell	Shall not exceed 10ppm by weight
6	<ul style="list-style-type: none"> ▪ Lithium ion battery 	Portable battery (*1)	Button cell	Shall not exceed 20ppm by weight
			Non-button cell	Shall not exceed 10ppm by weight
7	<ul style="list-style-type: none"> ▪ Rest of secondary batteries 	Portable battery (*1)	Shall not exceed 20ppm by weight	

2. Lead and its compounds

Classification of batteries			Prohibition
Primary battery			
1	<ul style="list-style-type: none"> ▪ Manganese dioxide Batteries 	All	Shall not exceed 1,000ppm by weight
2	<ul style="list-style-type: none"> ▪ Alkaline manganese battery 	Button cell	Shall not exceed 1,000ppm by weight
		Non-button cell	Shall not exceed 40ppm by weight
3	<ul style="list-style-type: none"> ▪ Rest of secondary battery 	All	Shall not exceed 2,000ppm by weight This does not apply, however, to lithium button cells
Secondary battery			
4	<ul style="list-style-type: none"> ▪ Ni-cd battery ▪ NiMH battery ▪ Alkaline secondary battery ▪ Lithium ion battery 	Non-button cell	Shall not exceed 4,000ppm by weight

3. Mercury and its compounds

Classification of batteries		Prohibition	
Primary battery			
1	•Mercury-oxide battery	All	Shall not be used
2	•Manganese dioxide batteries	Button cell	Shall not intentionally be added When the substance is contained as impurity, it shall not exceed 5 ppm by weight and 25mg per cell
		Non-button cell	shall not intentionally be added When the substance is contained as impurity, it shall not exceed 1 ppm by weight
3	•Alkaline manganese battery	Button cell	Shall not intentionally be added When the substance is contained as impurity, it shall not exceed 20,000 ppm by weight and 25mg per cell
		Non-button cell	Shall not intentionally be added When the substance is contained as impurity, it shall not exceed 1 ppm by weight
4	•Rest of primary battery	Button cell	Shall not intentionally be added When the substance is contained as impurity, it shall not exceed 20,000 ppm by weight
		Non-button cell	Shall not exceed 5 ppm by weight
Secondary battery			
5	•Lead acid battery	All	Shall not exceed 5ppm by weight
6	•Ni-cd battery •NiMH battery •Alkaline secondary battery •Lithium ion battery	Button cell	Shall not exceed 20,000ppm by weight
		Non-button cell	Shall not exceed 1 ppm by weight
7	•Rest of secondary battery	Button cell	Shall not exceed 20,000ppm by weight
		Non-button cell	Shall not exceed 5ppm by weight

*1 Portable battery is sealed and can be hand-carried. The following battery or accumulator is exempted.

- Battery or accumulator designed exclusively industrial or professional uses
- Automotive battery or accumulator
- Battery or accumulator for emergency and alarm systems including emergency lighting or for medical equipment

*2 Specialty battery means the following battery or accumulator.

- Can not be hand-carried
- Battery or accumulator designed exclusively industrial or professional uses
- Automotive battery or accumulator
- Battery or accumulator for emergency and alarm systems including emergency lighting or for medical equipment

Reference laws and regulations :

EU Battery Directive, Turkey: Battery regulation (No. 25569), U.S.:Federal Mercury-Containing and Rechargeable Battery Management Act, Mercury regulations in some U.S. States (Maine, Connecticut, Rhode Island), Argentina: Law No. 26.184 Portable Electric Power and Resolution 14/2007, Brazil: Battery Regulation(Resolution 401/2008), Paraguay: Law No.3107/2006, Taiwan: Official Announcement of Restrictions on the Manufacture, Import, and Sales of Dry Cell Batteries, China: regulations on the mercury content of battery product, China: National standard GB24427-2009, Korea: Electrical Appliances Safety Control Act Enforcement

Appendix 3 List of Epson Group Companies

The list below is current as of June 1, 2014.

Country and region	Company
Japan	Seiko Epson Corporation
	Miyazaki Epson Corporation
	Epson Direct Corporation
	Tohoku Epson Corporation
	Epson Atmix Corporation
	Orient Watch Corporation
	Akita Epson Corporation
	Tamaya Technics Inc.
	Toyocom Trading Co Ltd.
	Epson Logistics Corporation
South Korea	Epson Korea Co., Ltd
China	Tianjin Epson Co., Ltd.
	Fujian Epson Co., Ltd.
	Epson Engineering (Shenzhen) Ltd.
	E&G Electronic (Shenzhen) Ltd.
	Epson Precision (Hong Kong) Ltd.
	Epson Precision (Shenzhen) Ltd.
	Epson Wuxi Co., Ltd.
Epson Precision Suzhou Co., Ltd.	
Taiwan	Epson Taiwan Technology & Trading Ltd.
Philippines	Epson Precision (Philippines) Inc.
Malaysia	Epson Precision (Johor) Sdn. Bhd.
	Epson Precision Malaysia Sdn. Bhd.
Thailand	Epson Precision (Thailand) Ltd.
Singapore	Singapore Epson Industrial Pte. Ltd.
Indonesia	P.T.Epson Batam
	P.T.Indonesia Epson Industry
America	Epson Portland Inc.
	Epson El Paso, Inc.
	Epson Seattle, Inc.
Brazil	Epson Paulista Limitada
U.K.	Epson Telford Ltd.

Issued By

Seiko Epson Corporation

CS/Quality Assurance and Environment Department

Epson Group Green Purchasing Standard for Production Materials: Old and new comparison table

【Revised on July 1,2014】

P	Rev.3.7.2 (Old)	Rev.3.8 (New)	Changed item
Front cover	Rev. <u>3.7.2</u> Revised: <u>August 1, 2013</u> Enacted: <u>August 1, 2013</u>	Rev. <u>3.8</u> Revised: <u>July 1, 2014</u> Enacted: <u>October 1, 2014</u>	Revised Revision No., Revised date, Enacted date
1	Table of Contents <APPROACH TO ASSURANCE AGAINST CHEMICAL SUBSTANCE INCLUSION IN PRODUCTS> <STANDARDS> - <u>Appendix 2: System Check Sheet for Assurance Against Chemical Substance Inclusion in Products</u> -	Table of Contents - <STANDARDS> <u>2. Basic rules for assuring that banned substances are not contained in products-</u> - <u>Appendix 2: Conditionally banned substances for battery</u>	Deleted Added Deleted Added
2-3 (Rev.3.7.2)	APPROACH TO ASSURANCE AGAINST CHEMICAL SUBSTANCE INCLUSION IN PRODUCTS	-	Deleted
2	STANDARD -	STANDARDS <u>2. Basic rules for assuring that banned substances are not contained in products-</u>	Added
3	5. Approach to part approval relating to chemical substance inclusion in products NOTE: •Where necessary to meet customer requirements or other needs, Epson may ask vendors to meet certain other requirements or provide certain other information. Examples: • <u>Analysis report on the six substances regulated by the EU RoHS Directive</u>	5. Approach to part approval relating to chemical substance inclusion in products NOTE: •Where necessary to meet <u>Epson</u> customer requirements or other needs, Epson may ask vendors to meet certain other requirements (<u>e.g., provide information or analysis results</u>). Please provide the information using the method specified by Epson. Examples: • <u>Report on the results of analyses or tests of substances specified by Epson (Use the method of analysis, testing, or measurement specified by Epson, if any.)</u>	Added and revised the explanations
7	<u>5.2.3 Procurement management</u> •Confirm and instruct vendors on the things they need to do based on this Green Purchasing Standard. (<u>see Appendix 2</u>), and rectify any problems.	<u>6.2.3 Procurement management</u> •Confirm and instruct vendors on the things they need to do based on this Green Purchasing Standard, and rectify any problems.	Deleted the word
8	<u>5.2.4 Manufacturing process</u> •Confirm and instruct contract manufacturers on the things they need to do based on this Green Purchasing Standard. (<u>See Appendix 2.</u>)	<u>6.2.4 Manufacturing process</u> •Confirm and instruct contract manufacturers on the things they need to do based on this Green Purchasing Standard.	Deleted the word
9	<u>5.3 Inspection and issues needing correction</u> •Check that procedures relating to assurance against chemical substance inclusion in products are being observed. (<u>See Appendix 2.</u>)	<u>6.3 Inspection and issues needing correction</u> •Check that procedures relating to assurance against chemical substance inclusion in products are being observed.	Deleted the word

Epson Group Green Purchasing Standard for Production Materials: Old and new comparison table

P	Rev.3.7.2 (Old)	Rev.3.8 (New)	Changed item
12-13	6.2 Revision history -	7.2 Revision history Added the history of Rev.3.8	Added the revision history of Rev.3.8
14	2. Substance group handling standards <u>but as a general rule, the use of substances banned from inclusion in products is prohibited</u> *2, *3.	2.Substance group handling standards <u>Please ensure compliance with specified conditions relating to banned substances (e.g., thresholds, parts where substances are present, uses) *2.</u>	Revised the explanation
	• <u>When permitted as an exclusionary item in laws, regulations, etc.</u>	• <u>When a customer has requested its use</u>	Revised the explanation
	*3 <u>If Epson finds that a substance is present in a vendor-supplied product, Epson will investigate the cause and request improvement.</u>	-	Deleted the explanation
16	2.1 Unconditionally banned substances -	2.1 Unconditionally banned substances <u>29. Endosulfan</u>	Added a substance
	-	<u>30. Hexabromocyclododecane (HBCDD)</u>	Added a substance
	<u>36. Polychlorinated naphthalene (Cl: 1 or more)</u>	<u>38. Polychlorinated naphthalene (Cl: 3 or more)</u>	Revised the scope
17	2.2 Conditionally banned substances 3. Cadmium and its compounds • <u>Not permitted to exceed 75 ppm in stabilizers,</u> • <u>Not permitted to exceed 10 ppm by weight in alkaline batteries, manganese batteries and nickel hydride batteries (excluding button cells). Not permitted to exceed 20 ppm by weight in any other batteries.</u> • <u>Industrial batteries are exempt.</u> • <u>Heavy metals (lead, mercury, cadmium, and hexavalent chromium) are not permitted in packaging materials in a total combined mass exceeding 100 ppm.</u>	2.2 Conditionally banned substances 3. Cadmium and its compounds • <u>Prohibited in amounts exceeding 75 ppm in stabilizers,</u> • <u>For use in batteries, see Appendix 2.</u> - • <u>Heavy metals (lead, mercury, cadmium, and hexavalent chromium) shall not be contained in packaging materials in a total combined mass exceeding 100 ppm.</u>	Revised the word(same meaning) Revised the condition
	4. Hexavalent chromium compounds • <u>Heavy metals (lead, mercury, cadmium, and hexavalent chromium) are not permitted in packaging materials in a total combined mass exceeding 100 ppm.</u>	4. Hexavalent chromium compounds • <u>Heavy metals (lead, mercury, cadmium, and hexavalent chromium) shall not be contained in packaging materials in a total combined mass exceeding 100 ppm.</u>	Revised the word(same meaning)
	5. Lead and its compounds • <u>Lead carbonate and lead sulfate are not permitted in any concentration in paints and inks.*3</u> • <u>Not permitted to exceed 1000 ppm by weight in alkaline and manganese batteries, and 4000 ppm by weight in nickel hydride batteries (excluding button cells).</u> • <u>Heavy metals (lead, mercury, cadmium, and hexavalent chromium) are not permitted in packaging materials in a total combined mass exceeding 100 ppm.</u> • <u>In jewelry products (including watch bands), not permitted to exceed 200ppm.</u>	5. Lead and its compounds • <u>Lead carbonate and lead sulfate shall not be contained in any concentration in paints and inks.*3</u> • <u>For use in batteries, see Appendix 2.</u> • <u>Heavy metals (lead, mercury, cadmium, and hexavalent chromium) shall not be contained in packaging materials in a total combined mass exceeding 100 ppm.</u> • <u>In jewelry products (including watch bands), shall not exceed 200ppm.</u>	Revised the word(same meaning) Revised the condition
			Revised the word(same meaning)

Epson Group Green Purchasing Standard for Production Materials: Old and new comparison table

P	Rev.3.7.2 (Old)	Rev.3.8 (New)	Changed item
17	2.2 Conditionally banned substances 5. Lead and its compounds -	2.2 Conditionally banned substances 5. Lead and its compounds <u>•Jewelry (including watch bands) glass and stainless steel shall not contain more than 500 ppm. This does not apply, however, to internal watch parts that consumers do not touch. *1</u>	Added the condition
	6. Mercury and its compounds <u>•Not permitted to exceed 1 ppm by weight in alkaline and manganese batteries or to be intentionally added thereto. Not permitted to exceed 1 ppm by weight in nickel hydride batteries (excluding button cells), 20,000 ppm by weight in button cells, and 5 ppm in any other batteries.</u> <u>•Heavy metals (lead, mercury, cadmium, and hexavalent chromium) are not permitted in packaging materials in a total combined mass exceeding 100 ppm.</u>	6. Mercury and its compounds <u>•For use in batteries, see Appendix 2.</u> <u>•Heavy metals (lead, mercury, cadmium, and hexavalent chromium) shall not be contained in packaging materials in a total combined mass exceeding 100 ppm.</u>	Revised the condition Revised the word(same meaning)
18	2.2 Conditionally banned substances 8. Azo compounds -	2.2 Conditionally banned substances 8. Azo compounds <u>•The use of azo dyes contained in the list of azodyes as substances is prohibited. The inclusion of azo compounds in excess of 1000 ppm is prohibited.</u>	Added the condition Revised No. of page
	As shown on separate table, P20	As shown on separate table, P21	
	9. Cobalt chloride <u>•Not permitted to exceed a concentration of 0.01% in silica gel or other preparations.</u>	9. Cobalt chloride <u>•Prohibited to exceed a concentration of 0.01% in silica gel or other preparations.</u>	
	11. Tri-substituted organostannic compounds <u>•Not permitted to exceed a concentration of 1000ppm (calculated as a tin equivalent) in article *8</u>	11. Tri-substituted organostannic compounds <u>•Prohibited in amounts exceeding 1000ppm (calculated as a tin equivalent) in article *8 *1</u>	
	12. Dioctyltin (DOT) compounds <u>•Not permitted to exceed a concentration of 1000ppm (calculated as a tin equivalent) in article *8</u>	12. Dioctyltin (DOT) compounds <u>•Prohibited in amounts exceeding 1000ppm (calculated as a tin equivalent) in article *8 *1</u>	
	13. Di(2-ethylhexyl) phthalate (DEHP) <u>•Not permitted to exceed a concentration of 1000ppm</u>	13. Di(2-ethylhexyl) phthalate (DEHP) <u>•Prohibited in amounts exceeding 1000ppm per homogeneous material</u>	Revised the word(same meaning)
	14. Dibutyl phthalate(DBP) <u>•Not permitted to exceed a concentration of 1000ppm</u>	14. Dibutyl phthalate(DBP) <u>•Prohibited in amounts exceeding 1000ppm per homogeneous material</u>	
	15. Benzyl butyl phthalate(BBP) <u>•Not permitted to exceed a concentration of 1000ppm</u>	15. Benzyl butyl phthalate(BBP) <u>•Prohibited in amounts exceeding 1000ppm per homogeneous material</u>	
16. Diisobutyl phthalate (DIBP) <u>•Not permitted to exceed a concentration of 1000ppm</u>	16. Diisobutyl phthalate (DIBP) <u>•Prohibited in amounts exceeding 1000ppm per homogeneous material</u>		
17. Dibutyltin (DBT) compounds <u>•Not permitted to exceed a concentration of 1000ppm in (calculated as a tin equivalent) mixtures and articles (*8) for supply to general public.</u>	17. Dibutyltin (DBT) compounds <u>•Prohibited in amounts exceeding 1000ppm in (calculated as a tin equivalent) mixtures and articles *8 for supply to general public. *1</u>		

Epson Group Green Purchasing Standard for Production Materials: Old and new comparison table

P	Rev.3.7.2 (Old)	Rev.3.8 (New)	Changed item
18	2.2 Conditionally banned substances 18. Hexabromocyclododecane (HBCDD) •Not permitted to exceed a concentration of 1000ppm	2.2 Conditionally banned substances -	Moved to unconditionally banned substance
	-	18. 5-tert-butyl-2,4,6-trinitro-m-xylene (Musk xylene) •Prohibited in amounts exceeding 1000 ppm per delivery configuration (Parts, units, finished products, etc.)	Moved from Substances to Be Eliminated From Products (level 2)
	-	19. 4,4'-Diaminodiphenylmethane (MDA) •Prohibited in amounts exceeding 1000 ppm per delivery configuration (Parts, units, finished products, etc.)	
	-	20. Diarsenic pentaoxide •Prohibited in amounts exceeding 1000 ppm per delivery configuration (Parts, units, finished products, etc.)	
	-	21. Diarsenic trioxide •Prohibited in amounts exceeding 1000 ppm per delivery configuration (Parts, units, finished products, etc.)	
	-	22. 2,4 – Dinitrotoluene (2,4-DNT) •Prohibited in amounts exceeding 1000 ppm per delivery configuration (Parts, units, finished products, etc.)	
	-	23. Tris(2-chloroethyl)phosphate (TCEP) •Prohibited in amounts exceeding 1000 ppm per delivery configuration (Parts, units, finished products, etc.)	
19	Notes regarding substances -	Notes regarding laws *A Products to which EU RoHS Directive (2011/65/EU) applies: <u>Equipment which is dependent on electric currents or electromagnetic fields in order to work properly and equipment for the generation, transfer and measurement of such currents and designed for use with a voltage rating not exceeding 1000 volts for alternating current and 1500 volts for direct current. Large-scale stationary industrial tools and medical devices, monitoring and control instruments, equipments which are connected with the protection of the essential interests of the security of Member States, arms, munitions and war material are exempted. Examples of Epson products exempted from EU RoHS Directive (2011/65/EU): Industrial robots and factory automation equipment, manual type screen, carrying case, etc.</u>	Moved from Notes regarding laws
	Notes regarding laws -	*1 According to Annex XVII of REACH Regulation No. 1907/2006	Added a note
	*6 According to California's <u>Electronic Waste Recycling Act of 2003 (AB2901).</u>	*7 According to California's <u>Lead-Containing Jewelry Law (AB2901).</u>	Revised the name of law

Epson Group Green Purchasing Standard for Production Materials: Old and new comparison table

P	Rev.3.7.2 (Old)	Rev.3.8 (New)	Changed item
19	Notes regarding laws <u>Products to which EU RoHS Directive (2011/65/EU) applies: Equipment which is dependent on electric currents or electromagnetic fields in order to work properly and equipment for the generation, transfer and measurement of such currents and designed for use with a voltage rating not exceeding 1000 volts for alternating current and 1500 volts for direct current. Large-scale stationary industrial tools and medical devices, monitoring and control instruments, equipments which are connected with the protection of the essential interests of the security of Member States, arms, munitions and war material are exempted. Examples of Epson products exempted from EU RoHS Directive (2011/65/EU): Industrial robots and factory automation equipment, manual type screen, carrying case, etc.</u>	Notes regarding laws -	Moved to Notes regarding substances *A
20	-	<u>List of azodyes</u>	Added a list
21	2.3 Substances to be eliminated from products -	2.3 Substances to be eliminated from products <u>As of July 2014, applications exempted from the RoHS Directive are being reviewed.</u> <u>The dates provided in the "Effective date of the prohibition" column in the tables on pages 21-25 are the dates that Epson has independently set as the final dates for accepting goods containing substances that are being phased out. Exempted applications and effective dates of the prohibition may change, depending on the results of reviews of applications exempted from the RoHS Directive.</u>	Added an explanation
	Analytical standards for substances to be eliminated from products are also shown below. Analytical methods have not been established for all test samples.	-	Deleted explanations
	Effective date	<u>Effective date of the prohibition</u>	Added a word
	Analytical standards for cadmium and cadmium compounds -	Analytical standards for cadmium and cadmium compounds <u>*Use the method of analysis, testing, or measurement specified by Epson, if any.</u>	Added an explanation
22	Substances To Be Eliminated From Products (Hexavalent Chromium <u>and Its Compounds</u>)	Substances To Be Eliminated From Products (Hexavalent Chromium Compounds)	Revised the substance name
	Effective date	<u>Effective date of the prohibition</u>	Added a word
	-	Hexavalent chromium compounds ----- (Coverage) Leather articles and articles containing leather parts that come into contact with the skin (Threshold) 3ppm (*1) (Effective Date of the prohibition) February 1, 2015 *1 Shall not be present in concentrations equal to or greater than 3 ppm of the total dry weight of the leather or leather part.	Added the condition

Epson Group Green Purchasing Standard for Production Materials: Old and new comparison table

P	Rev.3.7.2 (Old)	Rev.3.8 (New)	Changed item
22	Analytical standards for hexavalent chromium compounds -	Analytical standards for hexavalent chromium compounds <u>*Use the method of analysis, testing, or measurement specified by Epson, if any.</u>	Added an explanation
23	Substances to Be Eliminated From Products (Mercury And Mercury Compounds) Effective date	Substances to Be Eliminated From Products (Mercury And Mercury Compounds) Effective date <u>of the prohibition</u>	Added a word
	Hg-1 Effective date of the prohibition: -	Hg-1 Effective date of the prohibition: <u>July 21, 2015</u>	Added effective date of the prohibition
	Hg-3 Mercury in <u>straight fluorescent lamps</u> for special purposes Effective date of the prohibition: - Comments: Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes not exceeding (per lamp): 3.5 mg (Short length (≤ 500 mm))	Hg-3 Mercury in <u>cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL)</u> for special purposes Effective date of the prohibition : <u>July 21, 2015</u> Comments: Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL, Short length : ≤ 500 mm) for special purposes not exceeding (per lamp) 3.5 mg	Revised the name of exempted application Added effective date of the prohibition Revised a comment
	-	Exempted applications and effective dates of the prohibition may change, depending on the results of reviews of applications exempted from the RoHS Directive.	Added explanations
Analytical standards for mercury and mercury compounds -	Analytical standards for mercury and mercury compounds <u>*Use the method of analysis, testing, or measurement specified by Epson, if any.</u>		
24	Substances to Be Eliminated From Products (Lead and Lead Compounds) Effective date	Substances to Be Eliminated From Products (Lead and Lead Compounds) Effective date <u>of the prohibition</u>	Added a word
	Pb-2 Effective date of the prohibition:-	Pb-2 Effective date of the prohibition : <u>July 21, 2015</u>	Added effective date of the prohibition
	Pb-3 Effective date of the prohibition:-	Pb-3 Effective date of the prohibition : <u>July 21, 2015</u>	
	Pb-5 Effective date of the prohibition:-	Pb-5 Effective date of the prohibition : <u>July 21, 2015</u>	
24-25	Substances to Be Eliminated From Products (Lead and Lead Compounds) Pb-7 Lead in ceramic for <u>piezoelectronic devices</u> Comments: - <u>Applies to ceramics for piezoelectric elements (e.g., piezoelectric buzzer, ceramic resonator, actuator)</u> - <u>Lead contained in piezoelectric element ceramics</u> - <u>Lead in specific compounds used in piezoelectric elements (ceramic matrix compound)</u> -Lead in PZT based dielectric ceramic materials for capacitors being part of integrated circuits or discrete semiconductors As for ceramic oscillators (3 external electrodes type), also check whether they fall within Pb-34.	Substances to Be Eliminated From Products (Lead and Lead Compounds) Pb-7 Lead in ceramic for <u>electrical and electronic components</u> Comments: - <u>Lead in ceramic used for electrical and electronic components (e.g. piezoelectronic devices) excluding lead in dielectric ceramic</u> - - -Lead in PZT based dielectric ceramic materials for capacitors being part of integrated circuits or discrete semiconductors (<u>single-function semiconductors</u>) -	Revised the name of exempted applications Revised comments

Epson Group Green Purchasing Standard for Production Materials: Old and new comparison table

P	Rev.3.7.2 (Old)	Rev.3.8 (New)	Changed item
25	Pb-14 Effective date of the prohibition: - Comments: -Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages -	Pb-14 Effective date of the prohibition: <u>July 21, 2015</u> Comments: -Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages <u>*See Pb-4 for high melting temperature type solders</u>	Added effective date of the prohibition Added an explanation
	Pb-27 Effective date of the prohibition : -	Pb-27 Effective date of the prohibition: <u>July 21, 2015</u>	Added effective date of the prohibition
	Pb-33 Effective date of the prohibition: -	Pb-33 Effective date of the prohibition: <u>July 21, 2015</u>	
	Pb-34 Effective date of the prohibition: -	Pb-34 Effective date of the prohibition: <u>Immediate</u>	
	Pb-35 Comments: (NOTE: Adopt an alternative as soon as possible. Since alternative parts & technology exist, it is only a matter of time before they are removed from exempted applications.) -	Pb-35 Comment: -	Deleted an explanation
	-	Exempted applications and effective dates of the prohibition may change, depending on the results of reviews of applications exempted from the RoHS Directive.	Added explanations
Analytical standards for lead and lead compounds -	Analytical standards for lead and lead compounds <u>*Use the method of analysis, testing, or measurement specified by Epson, if any.</u>		
26	Substances to Be Eliminated From Products (level 2) (Perfluorooctanoic acid (PFOA) and its salt) Effective date	Substances to Be Eliminated From Products (level 2) (Perfluorooctanoic acid (PFOA) and its salt) Effective date <u>of the prohibition</u>	Added a word
	Substances to Be Eliminated From Products (level 2) -	Substances to Be Eliminated From Products (level 2) (PAH) Benzo[a]pyrene (BaP) 50-32-8 Benzo[e]pyrene (BeP) 192-97-2 Benzo[a]anthracene (BaA) 56-55-3 Chrysen (CHR) 218-01-9 Benzo[b]fluoranthene (BbFA) 205-99-2 Benzo[j]fluoranthene (BjFA) 205-82-3 Benzo[k]fluoranthene (BkFA) 207-08-9 Dibenzo[a,h]anthracene (DBAhA) 53-70-3 ----- (Coverage) • Production materials containing rubber or plastic components that come into direct as well as prolonged or short-term repetitive contact with the skin or oral cavity (Threshold) 1ppm (*1) (Effective date of the prohibition) December 27, 2015 *1 The concentration per covered material based on Annex XVII of REACH regulations	Added a substance

Epson Group Green Purchasing Standard for Production Materials: Old and new comparison table

P	Rev.3.7.2 (Old)	Rev.3.8 (New)	Changed item
26	Substances to Be Eliminated From Products (level 2) -	Substances to Be Eliminated From Products (level 2) Trichloroethylene 79-01-6 ----- (Coverage) • Production materials (Threshold) 1,000ppm (*1) (Effective date of the prohibition) April 1, 2015 *1 The concentration in each delivery of parts, units, finished products, etc., from a supplier, based on the definition of REACH Regulation (1907/2006).	Added a substance
28 (Rev.3.7.2)	Substances to Be Eliminated From Products (level 2) 5-tert-butyl-2,4,6-trinitro-m-xylene (Musk xylene) 4,4'-Diaminodiphenylmethane (MDA) Diarsenic pentaoxide Diarsenic trioxide	- - - -	Moved to Conditionally banned substances
29 (Rev.3.7.2)	Substances to Be Eliminated From Products (level 2) 2,4 – Dinitrotoluene (2,4-DNT) Tris(2-chloroethyl)phosphate (TCEP)	Substances to Be Eliminated From Products (level 2) - -	Moved to Conditionally banned substances
27	2.4 Substances banned from use in manufacturing processes Montreal Protocol Annex A, B, E and C-II -	2.4 Substances banned from use in manufacturing processes Montreal Protocol Annex A, B, E and C-II, <u>III</u> <u>33. Bromochloromethane</u>	Added a substance
28-29	-	Appendix 2 Conditionally banned substances for battery	Added
31-33 (Rev.3.7.2)	<u>Appendix 2 System Check Sheet for Assurance Against Chemical Substance Inclusion in Products</u>	-	Deleted
30	Appendix 3 List of Epson Group Companies - <u>Epson (Shanghai) Information Equipment Co., Ltd.</u> Epson <u>Toyocom</u> Suzhou Co., Ltd	Appendix 3 List of Epson Group Companies <u>Epson Logistics Corporation</u> - Epson <u>Precision</u> Suzhou Co., Ltd.	Added Deleted Revised a company's name