



Supplier Requirements for Product Environmental Compliance

1. **SCOPE**

1.1. Content

This specification covers the applicable documents, definitions and requirements for supplier Product Environmental Compliance.

1.2. Overview

The supplier requirements specified cover: 1) the elimination of “Banned Substances”, 2) the controlled usage of “Restricted Substances”, 3) the notification on the use/non-use of certain “Substances of Concern”, and 4) the disclosure of material content information.

1.3. Application

All material, parts, components and/or products (including packaging materials where indicated) supplied to TE Connectivity (TE), whether finished or semi-finished shall be subject to the requirements specified herein.

The scope of products required to be compliant with a particular Compliance Definition may vary by Business Units. Furthermore, there may be additional Business Unit specific requirements on product environmental compliance. Given these factors, each Business Unit may develop and use supporting specifications and / or procedures to ensure compliance with this specification and any additional Business Unit or industry requirements; however, such documentation shall not conflict with or supersede this specification.

2. **TABLE OF CONTENTS**

1. SCOPE	1
1.1. Content.....	1
1.2. Overview	1
1.3. Application.....	1
2. TABLE OF CONTENTS	1
3. APPLICABLE DOCUMENTS	2
3.1. Specifications and Standards.....	2
3.2. Form.....	2
3.3. Laws and Regulations (including all amendments) and Industry Standards	2
3.4. Web Sites.....	6
4. DEFINITIONS	6
5. REQUIREMENTS	8
5.1. For Type A Parts ONLY	8
5.2. For TSSM Parts ONLY.....	9
5.3. Tin Whisker Mitigation	9
5.4. Change Procedure	9
5.5. Product/Material Test	10
5.6. Product Labeling / Marking.....	11
5.7. Packaging	13
5.8. Product Certification	13
5.9. Legal/Notification Requirements	14
5.10. Hazardous Substance Management System and Record Retention	14
ANNEX A TE HAZARDOUS SUBSTANCE LIST	15
A.1 General Information.....	15
A.2 TE Hazardous Substance List – Table 2.....	17
REVISION HISTORY	31

Table 1

3. APPLICABLE DOCUMENTS

The following documents constitute a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies.

3.1. Specifications and Standards

i **NOTE**
Available on the TE Supplier Portal referenced in Paragraph 3.4.

- A. 100 Series Material Specifications, as applicable
- B. 112 Series Finish Specifications, as applicable
- C. [TEC-112-65](#) Plating, Tin (Whisker Mitigated, Lead-Free), Electrodeposited
- D. [TEC-207-14](#) Recycling Symbols and Codes for Packaging Material
- E. [TEC-1005](#) TE Total Quality Management Requirements for Suppliers
- F. [TEC-238-41](#) Requirements for Documenting Environmental Related Substance in Full Material Declaration

3.2. Form

- [6097](#) TE Banned Substance List, which is the list of all substances banned by TE globally. Included substances banned by Stockholm Convention, EU POPs regulation, GHG regulation and Montreal Protocol.
- [5081-2](#) Environmental Related Substances, which is a compilation list of banned, restricted and declarable substances under global legislations as well as relevant electronic industry lists. Included substances e.g. POPs, ODS, RoHS, REACH SVHC, REACH Annex XIV, REACH Annex XVII, PFOA, PFOS, GADSL, etc.

3.3. Laws and Regulations (including all amendments) and Industry Standards

TE's requirements for suppliers are based on the following laws and certain additional industry and customer requirements.

i **NOTE**
The following references do not form an exhaustive list and may be located on the applicable website identified in Paragraph 3.4.

A. International Treaty

- 1. Montreal Protocol on Substances that Deplete the Ozone Layer, ISBN 978-9966-076-79-3
- 2. OSPAR: Oslo-Paris Convention for The Protection of The Marine Environment Of The North-East Atlantic
- 3. ISPM-15: International standards For Phytosanitary Measures No.15 - Regulation of Wood Packaging Material in International Trade
- 4. Stockholm Convention on Persistent Organic Pollutants (POPs) by United Nations Environment Program (UNEP)
- 5. Minamata Convention (MC) on Mercury by United Nations Environment Program (UNEP)

B. EMEA

- 1. Austria BGGI 1990/194: Formaldehydverordnung, §2, 12/2/1990
- 2. Council Directive 2013/59/Euratom of 5 December 2013 laying down basic safety standards for protection against the dangers arising from exposure to ionizing radiation
- 3. Directive 2000/53/EC: ELV (End of Life Vehicle)

i **NOTE**
For the latest ELV exemption list, please visit the official website of the European Commission about ELV: http://ec.europa.eu/environment/waste/elv/legislation_en.htm

4. Directive 2011/65/EU: RoHS (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment) recast

i **NOTE**

RoHS recast was published by the European Parliament and the Council of the European Union on 8 June 2011. EEE Product scope under RoHS recast is broadened from 8 to 11 categories.

RoHS delegated directive 2015/863/EU added DEHP, DBP, BBP and DIBP to the RoHS substance restrictions (Annex II) and came into effect on 22 July 2019 for Categories 1-7, 10 & 11 and on 22 July 2021 for Categories 8 & 9. Therefore these four phthalates have been added to Table 2 as Restricted Substances under RoHS Restricted Substances in Parts and Materials.

RoHS recast is a CE marking directive, requiring finished EEE shipped to EU to bear the CE mark, and the obligation for the manufacturer to keep a Declaration of Conformity and technical files to document conformity to the directive. All these requirements may trigger more demands for test reports and systematic management in the supply chain.

5. For the latest RoHS exemption list (RoHS directive Annex III for Categories 1-7 and 10, and Annex IV for Categories 8 and 9), please visit the official website of the European Commission about RoHS2:
https://ec.europa.eu/environment/waste/rohs_eee/adaptation_en.htm
6. Directive 2012/19/EU: WEEE (Waste Electrical and Electronic Equipment) recast
7. Directive 2006/66/EC: On batteries and accumulators and waste batteries and accumulators
8. Directive 94/62/EC: Packaging and Packaging Waste
9. FLG No II 447/2002: Ordinance by the Federal Minister for Agriculture, Forestry, Environment and Water: Management on Bans and Restrictions for Partly Fluorinated and Fully Fluorinated Hydrocarbons and Sulphur Hexafluoride
10. Regulation (EC)1907/2006: Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) and establishing a European Chemicals Agency

i **NOTE**

TE is requiring suppliers to follow the European Court of Justice ruling of September 10, 2015 and the revised ECHA Guidance (Latest Version), which state that, in case of “complex articles”, the threshold for SVHC must be applied to both the product as a whole and simultaneously to each of the articles forming part of its composition. This is also known as the “O5A rule – Once an Article, Always an Article”.

11. Regulation (EC)1005/2009 of the European Parliament and of the Council of 16 September 2009 on substances that Deplete the Ozone Layer
12. Regulation (EU) No 517/2014 of the European Parliament and of the Council of 16 April 2014 on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006
13. Regulation (EU) 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants (POPs) (with EEA relevance)
14. Regulation (EU) 2017/852 of the European parliament and of the council of 17 May 2017 on Mercury
15. Swiss Chemical Risk Reduction Ordinance (ORRChem) of 18 May 2005
16. Swiss Chemical Ordinance (ChemO) of 5 June 2015
17. Regulation (EU) No 722/2012 of 8 August 2012 concerning particular requirements as regards the requirements laid down in Council Directives 90/385/EEC and 93/42/EEC with

respect to active implantable medical devices and medical devices manufactured utilizing tissues of animal origin (with EEA relevance)

18. Decision No 768/2008/EC of the European Parliament and of the Council of 9 July 2008 on a common framework for the marketing of products, and repealing Council Decision 93/465/EEC
19. Norwegian Regulation No. 550 amending Product Regulation No. 922 of 2004 with restriction on consumer products that contain perfluorooctanoic acid (PFOA), 27 May 2013
20. Austria: Batteries Ordinance 159/2008 - Amendment - (on end of exemptions, removing waste batteries etc.) Ordinance 109/2015
21. EAEU RoHS (Russia RoHS) – EAEU TR 037/2016 Technical regulation of the Eurasian Economic Union on the restriction of the Use of Hazardous Substances in Electrotechnical and Radio-electronic Products
22. Regulation (EU) 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures (CLP)
23. Regulation (EU) 528/2012 concerning the placing on the market and use of biocidal products (BPR)

C. Asia Pacific

1. China RoHS 2 (MIIT 2016 No.32) Administration on the Restriction of Hazardous Substances in Electrical and Electronic Products
2. China RoHS Catalog of Electrical and Electronic Products Subject to RoHS Compliance Management (Batch One)
3. China RoHS Conformity Assessment System: SAMR & MIIT Announcement on Releasing the Implementation Arrangements of the RoHS Conformity Assessment System for Electrical and Electronic Products
4. China ELV (MIIT 2015 No.38): Management Requirement on hazardous substances in automobiles and Recyclability and recoverability
5. GB/T 30512-2014 Requirements for Prohibited Substances on Automobiles
6. Japan No 53, 1988 Law Concerning the Protection of the Ozone Layer through the Control of Specified Substances and other measures
7. Japan Laws for the Regulation of Nuclear Source Material, Nuclear Fuel Material, and Reactors, 1986
8. Japan The Law Concerning the Examination and Regulation of Manufacture etc. of Chemical Substances
9. Japan Preventive measures against health impairment due to asbestos, 2007
10. Japan No. 117 of 1973 Chemical Substance Control Law (CSCL “Kashinho”, Japan REACH)
11. GB/T 26572-2011 Requirements of Concentration Limits for Certain Restricted Substances in Electrical and Electronic Products
12. SJ-T 11364-2014 Marking for the restriction of the use of hazardous substances in electronic and electrical product.
13. GB/T 39560 series standards Determination of certain substances in electrical and electronic products

14. SJ/T 11388-2009 General Guidelines of Environment-friendly Use Period of Electronic Information Products
15. GB 30981-2020 Limits of harmful substances of industrial protective coatings
16. GB 24409-2020 Limits of harmful substances of vehicle coatings
17. GB 33372-2020 Limits of Volatile Organic Compounds (VOCs) content in Adhesive
18. GB 38507-2020 Limits of Volatile Organic Compounds (VOCs) in printing ink
19. GB 38508-2020 Limits of Volatile Organic Compounds (VOCs) content in cleaning agent

D. North America

1. California Prop 65: The Safe Drinking Water and Toxic Enforcement Act of 1986
2. California Assembly Bill No 3025: Prohibition on the sale of polystyrene loose fill packaging
3. Canada Health Notice on Identification of Medical Devices Containing DEHP or BPA
4. Canada: Canadian Environmental Protection Act (c33,1999)
5. Canada: Prohibition of Certain Toxic Substances Regulations, 2012 (SOR/2012-285)
6. Canada: Products Containing Mercury Regulations (SOR/2014-254)
7. US: OSHA; 29 CFR 1910 Subpart Z – Toxic and Hazardous Substances: 1001-1052
8. US: Toxics in Packaging Clearinghouse (TPCH) of 1992
9. US: Mercury-Containing and Rechargeable Battery Management Act (USC 14301-143361996)
10. US: Toxic Substances Control Act (TSCA) (as amended)

E. Industry Standards

1. IEC 62321: Testing of RoHS restricted substances
2. IEC 62474: Material Declaration for Products of and for the Electrotechnical Industry
3. IECQ QC 080000: IEC Quality Assessment System for Electronic Components - Hazardous Substance Process Management System Requirements
4. JEDEC JESD201: Environmental Acceptance Requirements for Tin Whisker Susceptibility on Tin and Tin Alloy Surface Finishes
5. JESD22A121.01: Test Method for Measuring Whisker Growth on Tin and Tin Alloy Surface Finishes
6. JP002: Current Tin Whiskers Theory and Mitigation Practice Guidelines
7. JIG-201: Joint Industry Guide (JIG) Material Composition Declaration for Packaging of Electrotechnical Products
8. German GS Mark: GS (Geprüfte Sicherheit) safety testing product certification, which includes Polyaromatic Hydrocarbons (PAHs) tests
9. EN IEC 63000 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances (replaced EN50581 as of Nov. 19th, 2021)

3.4. Web Sites

- A. http://ec.europa.eu/environment/waste/rohs_eee/legis_en.htm
The official website of the European Commission with the information about RoHS2.
- B. http://ec.europa.eu/environment/waste/elv/legislation_en.htm
The official website of the European Commission with the information about ELV.
- C. <http://europa.eu/> Europa - The European Union On-Line
- D. <http://echa.europa.eu/> ECHA (European Chemicals Agency)
- E. <https://supplier.te.com> TE Supplier Portal
- F. <http://www.miit.gov.cn> Ministry of Industry and Information Technology of the People's Republic of China
- G. <http://www.jedec.org> JEDEC

4. DEFINITIONS

- A. **Article** - An object which during production is given a special shape, surface or design which determines its function to a greater degree than its chemical composition. A manufactured object which meets the definition of an article does not cease to be an article when it is assembled or joined with other objects in order to form with them a complex product. In such a situation, that manufactured object remains an 'Article'. This is also known as the "O5A" rule – once an article, always an article.
- B. **Banned Substance** - Substances whose intentional use is not permitted in any quantity for all indicated applications are defined as "Banned Substance". If a threshold value is indicated, it applies only to impurities (not intentionally added) and the amount of the impurity of the substance must be less than the threshold value. If no threshold value is indicated this implies that no impurities are allowed above the detectable limits of the valid test standards.

TE Hazardous Substance List (Table 2) identifies the Banned Substances (classified as "B"), with reference to Form 6097 that contains the list of substances banned globally by TE in all applications; and substances banned for specific applications and/or specific regions as indicated in Table 2.

- C. **Homogeneous Material** - means one material of uniform composition throughout or a material, consisting of a combination of materials, that cannot be disjointed or separated into different materials by mechanical actions such as unscrewing, cutting, crushing, grinding and abrasive processes.

Examples include individual types of plastics, ceramics, glass, metals, alloys, paper, plating layer, board, resins and coatings. Consider the following:

1. A plastic component is a "Homogeneous Material" assuming it is of uniform composition throughout and is neither coated with nor has any other material attached to it which can be mechanically disjointed or separated.
 2. An electrical component such as a resistor would consist of a variety of "Homogeneous Materials" that could include ceramic, the lead-frame alloy and any plating applied to the lead-frame. Each of these must be treated as a separate "Homogeneous Material".
 3. TE requires that each plating layer or substrate metal is treated as an individual homogeneous material by TE suppliers.
- D. **Intentionally Added** - The deliberate use of a substance in the formulation of a material/part where the continued presence of it is desired to provide a specific characteristic, appearance or quality, or in the manufacturing process to achieve certain functions. If a material is "Intentionally Added" at any point in the supply chain, and remains in the product it must be consistently treated as "Intentionally Added" through the final product assembly.

Any catalysts or processing aids that are introduced during the manufacturing process and remain as part of the product are always considered “Intentionally Added”.

- E. **Material** - Chemical compounds and preparations that are supplied for the production of parts. Examples of “Materials” are: plastics/resins, metals, coatings, paint, adhesives, etc.
- F. **Part** - Mechanical parts, electrical devices or assemblies (including sub-parts), and components and/or products which are supplied to TE for use in their applications.

REACH refers to these as *Articles*.

- G. **Preparation** - means a mixture or solution composed of two or more substances.
- H. **Restricted Substance** - Substances that are prohibited for intentional use unless expressly stipulated otherwise in a regulatory exemption or by written approval from TE (such as in a TE specification or a Purchase Order). If a threshold value is indicated, it applies only to impurities (not intentionally added) and the amount of the impurity of the substance must be less than the threshold value.

TE Hazardous Substance List (Table 2) identifies the Restricted Substances (classified as “R”), with the indicated applications and the thresholds.

- I. **Substance** - means a chemical element and its compounds in the natural state or obtained by any manufacturing process, including any additive necessary to preserve its stability and any impurity deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition. A substance is either a material or a constituent of a material. Most substances will have a unique Chemical Abstracts Service (CAS) Registry Number assigned to them.
- J. **Substance of Concern** - Certain substances in specific materials/parts supplied to TE that are required to be declared if present and whose use may be prohibited by TE due to Industry / Business Unit specific requirements; e.g., Halogens to support industry Low-Halogen initiatives or a stricter threshold for certain heavy metals than the RoHS threshold to satisfy Business Unit requirements or contains no REACH SVHC above threshold to support specific Business Unit expectation. These substances are allowed unless explicitly restricted by TE via specification or Purchase Order. In anticipation of future restrictions, TE may request suppliers to eliminate usage of these substances following the *Change Procedure* outlined herein.

TE Hazardous Substance List (Table 2) identifies the Substances of Concern (classified as “C”), the indicated applications and the thresholds.

- K. **Supplier Material Declaration** - A Material Declaration discloses all (100%) of the homogeneous materials that are found in the supplied materials/parts and all (100%) of the substances that are contained in those materials. Materials or substances (whether “Intentionally Added” or not) contained in materials/parts purchased by a supplier (and in turn incorporated into supplier’s products) must be disclosed.

It is recognized that in certain situations, 100% disclosure by CAS Registry Number may not be feasible due to confidentiality or proprietary nature of the information. TE allows for a portion of the disclosure (up to 10%) to be considered confidential but requires that suppliers in those situations indicate the “non-use” of any of these (confidential) substances against TE’s Environmental Related Substances List (Form 5081-2), meaning if a confidential substance is found in the 5081-2 list, it must be declared. Follow TEC-238-41 Requirements for Documenting Environmental Related Substance in Full Material Declaration.

Note that the list of substances included in the Environmental Related Substances List is a more extensive list than those indicated in TE Hazardous Substance List (Table 2) herein.

- L. **Type A Part** – TE purchased part / material, for which ALL materials / substances are neither “completely provided” nor “precisely specified” by TE (see Type TSSM Part definition for the ONLY four scenarios of what constitutes “completely provided” or “precisely specified”).

Type A Part is commonly referred to as “commercial items” or “off-the-shelf items”.

In certain cases, TE may “provide” or “precisely specify” ONLY a PORTION of the materials / substances of the part / material being supplied and the supplier specifies or purchases the remainder of the part. For purposes of this specification, the part / material being supplied in these cases is considered to be a Type A part and the requirements for Type A part herein would apply to those portions of the part which are not “provided” or “precisely specified” via TE specification.

An example of this would be cable assemblies; where TE might provide certain components (such as connectors), where-as other components of the assembly (cable, etc.) would not be provided. The cable assemblies in these cases would be considered a Type A Part and the requirements for Type A part herein applies to the components not “provided” or “precisely specified” by TE.

- M. **TSSM** - TE Supplied or Specified Materials are purchased parts / materials, within which ALL materials / substances are either “completely provided” or “precisely specified” by TE. There are only four scenarios where a part / material could claim to be a TSSM Part.
1. TE supplies ALL the materials for the purchased item - This would typically be an assembler where ALL components of assembly are provided to Supplier. The supplier adds nothing to the part that would impact the material content or compliance.
 2. Purchased part is a molded component (e.g., housing) - Where TE specifies the exact resin by its trade name, supplier, grade, colorant, regrind, etc., and typically by a TE part number.
 3. Purchased part is a stamped or formed metal (e.g., contact) - Where TE exactly specifies the metal content by a 100 Series Material Specification.
 4. Purchased part is a plated metal component (e.g., contact) - Where TE either provides the unplated component or exactly specifies the metal content per 100 Series Material Specification **and** the plating deposit is exactly specified by a 112 Series Finish Specification.

i **NOTE**

Certain parts provided by a Supplier may be Type A Part while other parts supplied by the same Supplier may be TSSM Part. It is important that suppliers understand which Type(s) of parts/materials being provided to TE and conform to the requirements for that Type(s).

5. REQUIREMENTS

5.1. For Type A Parts ONLY

- A. All materials/parts supplied to TE shall comply with the requirements listed in TE Hazardous Substance List (Table 2 – incl. the banned substances listed in [Form 6097](#)).
- B. Suppliers of materials/parts to TE shall:
1. Provide a statement in a manner prescribed by TE certifying that supplied materials/parts are in compliance with the requirements listed in TE Hazardous Substance List (Table 2).
 - a. It is also the responsibility of the supplier to update this compliance information if the stated compliance status must be changed; either because of an erroneous initial assessment or due to product changes that have been approved by TE in accordance with the *Change Procedure* stated herein.
 - b. Suppliers shall, upon request from TE, provide documentation to demonstrate the basis for the compliance statement provided to TE.

An example of this documentation may be the physical test results of the material in accordance with the *Product/Material Test* requirements stated herein.
 2. Complete a Supplier Material Declaration in a manner prescribed by TE upon request.
 - a. It is also the responsibility of the supplier to update material declaration(s) if any information previously reported is changed or new information becomes available to

make the declaration more accurate in accordance with the *Change Procedure* stated herein.

- b. Suppliers shall, upon request from TE, provide documentation to demonstrate the basis for the Material Declaration supplied.

An example of this documentation may be the physical test results of the material in accordance with the *Product/Material Test* requirements stated herein.

i **NOTE**

It is the responsibility of the direct supplier (Tier 1) to TE to ensure compliance to Table 2 incl. Form 6097). The direct supplier is responsible for declaring the compliance of any materials / parts provided regardless of where the intentional additions or trace amounts were introduced into the supply chain, through and including the raw material supplier. The direct supplier is also responsible for providing the material content information of such materials/parts when TE requests full material disclosure (Supplier Material Declaration).

5.2. For TSSM Parts ONLY

- A. All materials/parts supplied to TE shall be in conformance to the applicable TE specification(s) specifying material content and compliance requirements.

Suppliers are required to supply product that is in conformance with the Requirements defined on the Purchase Order and the Terms and Conditions of the Purchase Order. There may be numerous specifications associated with a Purchase Order.

- B. Suppliers of materials/parts to TE shall provide a statement in a manner prescribed by TE certifying supplied materials/parts exactly conform to TE specification, and that no substances have been added during any manufacturing process that are banned or restricted per TE Hazardous Substance List (Table 2) without the written approval of TE.

i **NOTE**

Requirements in 5.1 apply to Type A Parts ONLY while 5.2 applies to TSSM Parts ONLY. Requirements from 5.3 to 5.10 apply to both Type A and TSSM Parts.

5.3. Tin Whisker Mitigation

- A. All suppliers of materials/parts that are Tin electroplated shall employ Tin whisker mitigation practices in accordance with JEDEC Specifications JESD201, JESD22A121.01 and JP002, unless specified otherwise by TE.
- B. TE Procurement may request appropriate test data to support a claim of adequate whisker mitigation in accordance with Finish Specifications (e.g.: TEC-112-65).

5.4. Change Procedure

- A. No Supplier of materials/parts to TE shall effect any change that will alter compliance to the requirements listed in TE Hazardous Substance List (Table 2) without express written approval from TE.
 1. If such a change is approved in writing by TE, the supplier may be required to issue a new part number for the re-formulated material/part and, for Type A Parts only, provide a new Supplier Material Declaration, as requested.
 2. In addition, where TE has specified a particular manufacturer and/or specific material composition, any deviation requires approval in writing.

i **NOTE**

This would include the substitution of reground or recycled material for "virgin".

5.5. Product/Material Test

- A. Although TE does not require physical test results to be supplied for all materials/parts, suppliers may be requested to provide:
1. Results of the materials/parts testing to demonstrate the basis for the Compliance Statement provided to TE.
 2. Results of the materials/parts testing to demonstrate the basis for the Material Declaration provided to TE.
 3. Test data to support a claim of adequate whisker mitigation, where suppliers are providing materials/parts that are Tin electroplated.
 4. Test data to support a claim of compliance with all regulations concerning radioactive substances in metals, specifically regarding stainless steels or other nickel bearing alloy contamination of Cobalt 60.
- B. Suppliers are responsible for assuring the validity of the provided test report and all tests shall meet the following requirements:
1. Contents: All test reports should have below contents:
 - 1) Date of test report, name of tester and location of test laboratory;
 - 2) Information to correlate test sample with supplier part number and TE part number with a serial number, revision, lot, or batch number;
 - 3) Description of test sample as well as actual tested part;
 - 4) The analytical test method used for each sample;
 - 5) Test results should include actual measured amount and TE limits specified in TEC-138-702. The test results should indicate pass or fail (or inconclusive for XRF only). Test method detection limit and calibration to the substance tested should also be shown;
 - 6) A photograph highlighting the actual tested part of the sample is recommended.
 2. Test Methods: Materials tested should be as homogeneous as possible. All tests should be performed using methods referenced in industrial standards as recommended below:

RoHS restricted substances:	IEC 62321
Low Halogen compounds:	EN 14582:2016, EPA SW-846 5050/9056

i **NOTE**
TE requires that each plating layer or substrate metal is treated as an individual homogeneous material by TE suppliers whenever handling TE test request.

3. Test Laboratory: All tests shall be performed in a nationally or internationally certified laboratory with ISO 17025 certification, whose accredited testing scope includes the subject tested substances, or other TE approved laboratory.

i **NOTE**
When Business Units have special testing requirements, these requirements will be communicated to suppliers and may be in addition to those listed above.

4. Test Report Validity: Test reports may be requested to be updated periodically.

C. Verification Testing

1. TE has a Verification Testing program to audit products for compliance.

The program uses certain types of testing, such as X-Ray Fluorescence (XRF) technology followed up with chemical testing, as needed.

2. It is TE's expectation that our Suppliers implement a similar program to routinely test and audit (validate) their supply chain for the material content in products that TE purchases. This would ensure that no discrepancies are discovered at TE, and that all subsequent consequences can be avoided. TE reserves the right to request verifications from suppliers detailing their ongoing testing and auditing of supply base to ensure compliance with this specification.

5.6. Product Labeling / Marking

A. EU RoHS Labeling

1. TE may require that certain materials/parts with corresponding requirements in TE Hazardous Substance List (Table 2) are labeled to indicate RoHS restricted substance compliance status. If required, the need for labeling will be communicated via specification or expressly included in Purchase Order instructions.

The format would be as defined herein, or per another mutually agreeable labeling standard.

1. Label Content

Directive 2011/65/EU (RoHS recast) restricted substance compliant products, components and materials shall be identified by the application of one of the following labels: "2011/65/EU substance comp" or "Directive 2011/65/EU Substance Compliant".

2. Label Format

- a. The label shall be applied on the product label – either printed as an integral part of the label or as a sticker applied to the label.

i **NOTE** *Labeling on inner unit package is encouraged wherever feasible; at a minimum, this identification shall be placed on the outer shipping container.*

- b. The label should be printed in reverse color printing.

B. EU RoHS CE Marking

1. For certain supplier products which fall "in scope" of Directive 2011/65/EU (RoHS recast), or certain materials/parts that TE uses to build into products "in scope" of RoHS recast, TE may require that the CE Marking be applied to the product in accordance with Regulation (EC) No 765/2008. If required, the need for CE Marking will be communicated via drawing, specification or expressly included in Purchase Order instructions

- a. If the CE conformity marking is reduced or enlarged the proportions given in Figure 1 below must be respected. Where the directive concerned does not impose specific dimensions, the CE marking must have a height of at least 5 mm. CE Marking shall be affixed visibly, legibly and indelibly on the product without specific color requirements. Wherever feasible, CE Marking should be on the product, such as by molding; at a minimum, this identification shall be placed on the shipping container for all saleable products, whether subassemblies or finished product, either printed as an integral part of the label or as a sticker applied to the label.



Figure 1

i **NOTE** *Suppliers may be legally obligated to provide EU RoHS CE Marking whether or not TE has so indicated; reference Regulation (EC) No 765/2008.*

C. China RoHS Labeling

1. For certain materials/parts, TE may require that the China RoHS label (composed of a recycling symbol for Environmental Friendly Use Period (EFUP) and a RoHS Hazardous Substances chart) be provided as part of the product label. For materials/parts with all six hazardous substances below their respective threshold in accordance with GB/T 26572-2011, the EFUP symbol in Figure 2 shall be used; otherwise (including cases when exemptions are applied), the EFUP symbol in Figure 3 shall be used (Figure 3 depicts an EFUP symbol with a value of 50 years as the example. For the numbering rule to determine the EFUP value, reference SJ/T 11388-2009). If required, the need for China RoHS label will be communicated via drawing, specification or expressly included in Purchase Order instructions.



NOTE

Suppliers may be legally obligated to provide China RoHS label whether or not TE has so indicated; reference China Standard SJ-T 11364-2014.

- a. Requirements are described in the People's Republic of China Electronic Industry Standard SJ-T 11364-2014.
Suppliers shall be aware of and follow this specification, as applicable.
- b. The China RoHS label shall be applied on the product label – either printed as an integral part of the label or as a sticker applied to the label.



Figure 2



Figure 3

D. EU Waste Electrical and Electronic Equipment (WEEE) Marking

1. Suppliers shall be aware of and comply with EU Directive 2012/19/EU (WEEE), as applicable. Any finished EEE in scope of WEEE shall bear a marking indicating separate collection for EEE. The marking consists of the crossed-out wheeled bin, as shown below in Figure 4. The marking must be printed visibly, legibly and indelibly.
 - a. In certain cases where Suppliers have no legal requirement under WEEE, TE may request that the product be marked with the WEEE logo in accordance with the Directive.



NOTE

This would be required where TE is the importer or reseller of the WEEE relevant product into the EU.



Figure 4

E. EU CLP Labelling

1. Suppliers shall be aware of and comply with EU Regulation 1272/2008 (CLP), as applicable. Any substance or mixture in scope shall be labelled accordingly with the required product identifiers, hazard statements and pictograms, signal words, precautionary statements and supplier identity, as applicable.

F. EU BPR Labelling

1. Suppliers shall be aware of and comply with EU Regulation 528/2012, as applicable. Any product treated with, or intentionally incorporating, one or more biocidal products with a claim made regarding the biocidal property or function of the treated article shall be labeled accordingly.

5.7. Packaging

A. Restricted Substances

1. Restricted Substance requirements for packaging materials apply to all packaging materials supplied to TE, as well as all packaging materials used to ship parts/materials to TE or directly to TE's customer.
2. All packaging shall conform to Packaging Requirements as described in TE Hazardous Substance List (Table 2) (such as heavy metals, DMF and REACH SVHC, etc.).

B. Recycling Labeling

1. Recycling Labeling requirements apply to suppliers that provide TE packaging materials and suppliers whose packaging materials are used to supply products/materials to TE that could ultimately reach TE customers.

The Recycling Labeling requirements are per Packaging Standard TEC-207-14.

- a. TE will advise suppliers if packaging materials are required to conform via specification or Purchase Order.



NOTE

Suppliers may be legally obligated to label packaging materials for recycling whether or not TE has so indicated; e.g., reference China Standard GB 18455-2001 (Packaging Recycling Marking Requirements).

5.8. Product Certification

A. China RoHS

For certain materials/parts, TE may require that the Supplier's Declaration of RoHS conformity or China RoHS Voluntary Certificate be provided. If required, it will be communicated via drawing, specification or expressly included in Purchase Order instructions.

- a. Requirements are described in the SAMR & MIIT Announcement on Releasing the Implementation Arrangements of the RoHS Conformity Assessment System for Electrical and Electronic Products. Suppliers shall be aware of and follow these requirements, as applicable.

B. EU RoHS recast

For certain supplier products which fall "in scope" of RoHS recast, TE may require that Technical Files be provided to support TE's preparation of a Declaration of Conformity. If required, the need for Technical File will be communicated via drawing, specification or expressly included in Purchase Order instructions.

- a. Guidance on Technical Files is described in the EN EIC 63000 Guiding Standard for Compliance with RoHS2 Technical Documentation Requirements or TE equivalent guidance and template. Suppliers shall be aware of and follow this guidance, as applicable.

5.9. Legal/Notification Requirements

A. In addition to requirements referenced in this document, all suppliers shall comply with:

1. Any other legal and regulatory requirements applicable to any products provided to TE.
2. Any additional legal, regulatory or customer requirements (of which supplier is aware) when such requirements would apply to products sold by TE and into which supplier's products are incorporated.
Suppliers shall notify TE of any such additional requirements (of which supplier is aware).
3. All regulatory requirements in jurisdictions in which they operate, manufacture, supply and maintain products

B. Brexit

As of February 1st, 2020 the UK is no longer a member of the European Union but became a 'third country'. In December 2020 an EU-UK trade and cooperation agreement has been reached and as of January 1st, 2021 EU legislation is no longer applicable for products and chemicals placed on the market in Great Britain but new UK rules are implemented.

In regards to RoHS requirements, TE expects its suppliers to comply with the UK RoHS legislation requirements where applicable, such as applying the UKCA mark and creating a UKCA Declaration of Conformity.

In regards to REACH requirements, TE expects its suppliers to have mitigated the impacts of 'Brexit' on its customers and to offer fully compliant continuity of service and supply to TE as a customer. In particular, TE expects its suppliers to have transferred REACH registrations as necessary, including any held by the supplier's own UK-legal entities or appointed UK-located Only representatives to EU-recognized sister companies for any impacted substances (on its own, or in a mixture) sold to TE.

Suppliers have a responsibility to notify TE in writing 6 months beforehand for any substance (as defined by REACH) TE purchases from supplier, of which supplier foresees that no EU-REACH registration will be timely in place to prevent interruption of our supply chain and that is consistent with our internal management controls.

5.10. Hazardous Substance Management System and Record Retention

- A. All suppliers shall comply with the requirements stated in Quality Specification TEC-1005 or a TE Business Unit equivalent.
- B. All suppliers shall maintain a system such as IECQ QC080000 that controls and/or restricts and/or eliminates the use of hazardous substances from materials/parts and processes to meet regulatory and industrial / Business Unit compliance requirements.
- C. The supplier shall permit access to representatives and customers of TE and applicable regulatory agencies to the supplier's premises (and the premises of the supplier's subcontractors and suppliers) for the purpose of evaluating the supplier's facilities, processes, goods, hazardous substance management system and records
- D. The supplier is responsible for maintaining records (in accordance with Quality Specification TEC-1005 or an equivalent) for each of the materials/parts supplied.
- E. The supplier is responsible for notifying TE if nonconforming part/material has been shipped to TE and take necessary actions according to TEC-1005 or a TE Business Unit equivalent.

ANNEX A TE HAZARDOUS SUBSTANCE LIST

A.1 General Information

- a) All materials/parts supplied to TE shall conform to the requirements of the TE Hazardous Substance List (Table 2 incl. referenced [form 6097](#)), except where covered by valid exemption(s) in the RoHS Exemption List or where permitted due to specific needs as defined by the applicable product drawing requirements and/or related design standard.

However, TE recognizes the need to manufacture both RoHS compliant and RoHS non-compliant product (e.g. product for Mil-Aero industry) to meet various customer and industry requirements. TE therefore acknowledges some products may intentionally include lead or chromates (for example). It is incumbent on suppliers to clearly understand TE's purchase order requirements against the defined part numbers in it and to provide product back to TE that is in accordance with the part drawing, applicable standard, etc.

Suppliers shall conform to the requirements applicable to the Substance Classifications as set forth in paragraphs 3. (DEFINITIONS) and A.1.f below.

- b) When a substance is listed in Table 2 with a CAS number, then the requirement applies to the substance with that specific CAS number only. For substances without a specific CAS number, refer to Environmental Related Substances (5081-2) to find individual substances within that substance category.



NOTE

Go to the TE Supplier Portal at <https://supplier.te.com>, click "Documents" on top menu, search for KEYWORD 5081.

- c) The Environmental Related Substances (5081-2) is not an exhaustive (complete) list of all compounds that could be found within each category. In cases where a CAS number of "Various" is shown along with a description including Other (e.g. Various – Other Brominated Compounds) this would include all other substances falling into this category even though not listed specifically in 5081-2.
- d) Threshold limit values are shown as either "Intentionally Added", ppm (parts per million) by weight per Homogeneous Material (e.g. RoHS) or ppm by weight of product (e.g. REACH) as specified in the table.
- e) The formula for ppm calculation is $1,000,000 \times \text{mass substance} / \text{mass Homogeneous Material}$. The formula for ppb calculation is $1,000,000,000 \times \text{mass substance} / \text{mass Homogeneous Material}$.
- f) Substance Classifications
- B** (Banned): Prohibited in all listed applications; or prohibited for specific applications and/or specific regions as indicated
- R** (Restricted): Prohibited unless explicitly permitted by TE.
- C** (Substance of Concern): Required to be declared if present and allowed unless explicitly prohibited by TE to address Industry/ Business Unit specific requirements.
- g) The last three sub-tables (Restricted Halogen Elements and Compounds, Specific Industry / Business Unit Restrictions on RoHS substances and Misc. Specific Industry / Business Unit Restrictions) identify certain substances in specific materials/parts supplied to TE that are required to be declared if present and whose use may be prohibited by TE due to Industry / Business Unit specific requirements; e.g., Halogens to support industry Low-Halogen initiatives, or a stricter threshold for certain heavy metals than the RoHS threshold to satisfy Business Unit requirements. If these substances are restricted by certain Business Units in TE, the requirements will be explicitly communicated via product drawing, specification or Purchase Order instructions. In

anticipation of future restrictions, TE may request suppliers to eliminate usage of these substances following the *Change Procedure* outlined in 5.4.

i **NOTE**

When Substances with classification of Substance of Concern (C) in Table 2 are restricted by certain Business Units, these restrictions are in addition to the basic requirements defined under classification of Restricted Substance (R). For example, basic requirement for Lead / Lead Compounds in parts and materials are 1000ppm per homogeneous material; while certain Business Units may require 100ppm per plastic material.

A.2 TE Hazardous Substance List – Table 2

2.0 Compliance Definition: TE Banned Substances Overview table (note 1) – Chemical Families List See Form 6097 to determine which specific compounds are on the TE Banned substance List. Compounds on this list are banned for all applications			
Substance Category	Classification	Threshold level	Source
Chlorine compounds (other than flame retardants)	B	Intentionally added	POPs
Chlorobenzenes	B	Intentionally added	POPs
Fluorinated Greenhouse Gases Compounds (HFC, PFC, SF6, etc.), selected	B	-	GHG
Hexabromocyclododecane (HBCDD)	B	100ppm by weight	POPs
Ozone Depleting Substances (CFC, Halon, HFBC, HCFC & others)	B	-	ODS
Perfluorooctane Sulfonate, C817SO2X (X=OH, Metal salt, halide, and other derivates including polymers) (PFOS)	B	10ppm by weight in substances and mixtures; 1000ppm per homogenous material in articles; or 1ug/m2 per coated material	POPs
Perfluorooctanoic acid and salts and esters (PFOA) related substances	B	PFOA or any of its salts: 0.025 ppm per homogenous materials PFOA-related compound or a combination of PFOA-related compounds: 1 ppm per homogenous materials	POPs
Phenol and its compounds, selected	B	Intentionally added	POPs
Polybrominated Biphenyls (PBBs)	B	Intentionally added	POPs
Polybrominated Diphenyl Ethers (PBDEs)	B	10ppm per weight in substances; or for a combination of the substances up to 500 ppm by weight in mixtures or articles. Articles in scope of RoHS are exempted	POPs
Polychlorinated Biphenyls (PCBs)	B	Intentionally added	POPs
Polychlorinated dibenzo-p-dioxins (PCDD) and polychlorinated dibenzofurans (PCDF)	B	Intentionally added	POPs
Polychlorinated Naphthalenes (PCNs)	B	Intentionally added	POPs
Polychlorinated Terphenyls (PCTs)	B	Intentionally added	POPs
Short-chain chlorinated paraffins (SSCPs) (Alkanes C10-C13, chloro) and others	B	1500ppm by weight	POPs

2.1 Compliance Definition: RoHS Restricted Substances in Parts and Materials (Note 2)			
Substance Category	Classification	Threshold Level	Application(s)
Cadmium/Cadmium Compounds	R	100ppm per homogeneous materials	All except packaging and batteries
Chromium VI Compounds	R	1000ppm per homogeneous materials	
Mercury /Mercury Compounds	R	1000ppm per homogeneous materials	
Polybrominated Biphenyls (PBB)	R	1000ppm per homogeneous materials	All except packaging and batteries
Polybrominated Diphenyl Ethers (PBDE)	R	1000ppm per homogeneous materials	All except packaging and batteries
Lead/Lead Compounds	R	1000ppm per homogeneous materials	All except - packaging - batteries - surface contact layer of cables or cords with thermoset or thermoplastic coatings
Lead/Lead Compounds	R	300ppm by weight of surface coating (US CA Props 65 Prohibition)	surface contact layer of cables or cords with thermoset or thermoplastic coatings
Dibutylphthalate (DBP) (CAS No 84-74-2)	R	1000ppm per homogeneous materials	All except packaging and batteries

2.1 Compliance Definition: RoHS Restricted Substances in Parts and Materials (Note 2)			
Bis(2-ethylhexyl) phthalate (DEHP) (CAS No 117-81-7)	R	1000ppm per homogeneous materials	All except packaging and batteries
Butyl Benzyl Phthalate (BBP) (CAS No 85-68-7)	R	1000ppm per homogeneous materials	All except packaging and batteries
Diisobutyl phthalate (DIBP) (CAS No 84-69-5)	R	1000ppm per homogeneous materials	All except packaging and batteries

2.2 Compliance Definition: ELV Restricted Substances in Parts and Materials (Note 15)			
Substance Category	Classification	Threshold Level	Application(s)
Cadmium/Cadmium Compounds	R	100ppm per homogeneous materials	All parts and materials end up in automotive industry product
Chromium VI Compounds	R	1000ppm per homogeneous materials	
Mercury /Mercury Compounds	R	1000ppm per homogeneous materials	
Lead/Lead Compounds	R	1000ppm per homogeneous materials	

2.3 Compliance Definition: REACH Annex XIV Substances of Very High Concerns (SVHC) in Parts and Materials (Note 3)			
Restricted Substance: SVHC that have entered Annex XIV and after sunset dates			
Substance Category	Classification	Threshold Level	Application(s)
5-Tert-Butyl-2,4,6-Trinitro-m-Xylene (Musk Xylene) (CAS No 81-15-2)	R	1000ppm by weight of article	All
Diamino-Diphenyl-Methane (4,4 - Diaminodiphenylmethane) (MDA) (CAS No 101-77-9)	R	1000ppm by weight of article	All
Dibutylphthalate (DBP) (CAS No 84-74-2)	R	1000ppm by weight of article	All
Bis(2-ethylhexyl) phthalate (DEHP), Di-sec-octyl Phthalate (CAS No 117-81-7)	R	1000ppm by weight of article	All
Benzyl Butyl Phthalate (BBP) (CAS No 85-68-7)	R	1000ppm by weight of article	All
Diarsenic Pentaoxide (CAS No 1303-28-2)	R	1000ppm by weight of article	All
Diarsenic Trioxide (CAS No 1327-53-3)	R	1000ppm by weight of article	All
2,4-Dinitrotoluene (CAS No 121-14-2)	R	1000ppm by weight of article	All
Diisobutyl phthalate (DIBP) (CAS No 84-69-5)	R	1000ppm by weight of article	All
Lead chromate (CAS No 7758-97-6)	R	1000ppm by weight of article	All
Lead chromate molybdate sulphate red (C.I. Pigment Red 104) (CAS No 12656-85-8)	R	1000ppm by weight of article	All
Lead sulfochromate yellow (C.I. Pigment Yellow 34) (CAS No 1344-37-2)	R	1000ppm by weight of article	All
Tris(2-chloroethyl)phosphate (TCEP) (CAS No 115-96-8)	R	1000ppm by weight of article	All
Trichloroethylene (CAS No 79-01-6)	R	1000ppm by weight of article	All
Sodium dichromate (CAS No 7789-12-0, 10588-01-9)	R	1000ppm by weight of article	All
Potassium dichromate (CAS No 7778-50-9)	R	1000ppm by weight of article	All
Ammonium dichromate (CAS No 7789-09-5)	R	1000ppm by weight of article	All
Potassium chromate (CAS No 7789-00-6)	R	1000ppm by weight of article	All
Sodium chromate (CAS No 7775-11-3)	R	1000ppm by weight of article	All
Chromium trioxide (CAS No 1333-82-0)	R	1000ppm by weight of article	All
Chromic acid, Oligomers of chromic acid and dichromic acid, Dichromic acid (CAS No 7738-94-5, 13530-68-2)	R	1000ppm by weight of article	All
2,2'-dichloro-4,4'-methylenedianiline (MOCA) (CAS No 101-14-4)	R	1000ppm by weight of article	All
Arsenic acid (CAS No 7778-39-4)	R	1000ppm by weight of article	All
Bis(2-methoxyethyl) ether (CAS No 111-96-6)	R	1000ppm by weight of article	All
1,2-Dichloroethane (CAS No 107-06-2)	R	1000ppm by weight of article	All
Formaldehyde, oligomeric reaction products with aniline (technical MDA) (CAS No 25214-70-4)	R	1000ppm by weight of article	All
Strontium Chromate (CAS No 7789-06-2)	R	1000ppm by weight of article	All
Pentazinc chromate octahydroxide (CAS No 49663-84-5)	R	1000ppm by weight of article	All
Potassium hydroxyoctaoxodizincatedichromate (CAS No 11103-86-9)	R	1000ppm by weight of article	All

2.3 Compliance Definition: REACH Annex XIV Substances of Very High Concerns (SVHC) in Parts and Materials (Note 3)			
Restricted Substance: SVHC that have entered Annex XIV and after sunset dates			
Dichromium tris(chromate) (CAS No 24613-89-6)	R	1000ppm by weight of article	All
1-bromopropane (CAS No 106-94-5)	R	1000ppm by weight of article	All
Diisopentyl phthalate (CAS No 605-50-5)	R	1000ppm by weight of article	All
1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP) (CAS No 71888-89-6)	R	1000ppm by weight of article	All
1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP) (CAS No 68515-42-4)	R	1000ppm by weight of article	All
1,2-Benzenedicarboxylic acid, dipentyl ester, branched and linear (CAS No 84777-06-0)	R	1000ppm by weight of article	All
Bis(2-methoxyethyl)phthalate (CAS No 117-82-8)	R	1000ppm by weight of article	All
Dipentyl phthalate (CAS No 131-18-0)	R	1000ppm by weight of article	All
n-pentyl-isopentylphthalate	R	1000ppm by weight of article	All
Anthracene oil (CAS No 90640-80-5)	R	1000ppm by weight of article	All
Pitch, coal tar, high-temp. (CAS No 65996-93-2)	R	1000ppm by weight of article	All
4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated [covering well-defined substances and UVCB substances, polymers and homologues] (CAS No examples: 2315-67-5, 2315-61-9, 9002-93-1, 2497-59-8, 9036-19-5, etc.)	R	1000ppm by weight of article	All
4-Nonylphenol, branched and linear, ethoxylated (CAS No various)	R	1000ppm by weight of article	All

2.4 Compliance Definition: REACH Candidate List SVHC known to be used in hardware products and Electrical and Electronic Equipment (Note 4)				
SVHC List	Substance Category	Classification	Threshold Level	Application(s)
Oct 2008	Triethyl Arsenate (CAS No 15606-95-8)	C	1000ppm by weight of article	All
Oct 2008	Sodium Dichromate	R	1000ppm by weight of article	All
Oct 2008	Cobalt Dichloride (CAS No 7646-79-9)	C	1000ppm by weight of article	All
Oct 2008	Lead Hydrogen Arsenate (CAS No 7784-40-9)	C	1000ppm by weight of article	All
Oct 2008	Shortchain Chlorinated Paraffins (C10-13)	R	1000ppm by weight of article	All
Jun 2011	2-ethoxyethyl acetate (CAS No 111-15-9)	C	1000ppm by weight of article	All
Jun 2011	1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP) (CAS No 68515-42-4)	R	1000ppm by weight of article	All
Jun 2011	1-methyl-2-pyrrolidone (CAS No 872-50-4)	C	1000ppm by weight of article	All
Jun 2011	1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP) (CAS No 71888-89-6)	R	1000ppm by weight of article	All
Jun 2011	Cobalt dichloride (CAS No: 7646-79-9)	C	1000ppm by weight of article	All
Dec 2011	2,2'-dichloro-4,4'-methylenedianiline (MOCA) (CAS No: 101-14-4)	R	1000ppm by weight of article	All
Dec 2011	N,N-dimethylacetamide (DMAC) (CAS No: 127-19-5)	C	1000ppm by weight of article	All
Dec 2011	bis(2-methoxyethyl) ether (CAS No 111-96-6)	R	1000ppm by weight of article	All
Dec 2011	1,2-Dichloroethane (CAS No: 107-06-2)	R	1000ppm by weight of article	All
Dec 2011	Bis(2-methoxyethyl) phthalate (DMEP) (CAS No: 117-82-8)	C	1000ppm by weight of article	All
Dec 2011	Formaldehyde, oligomeric reaction products with aniline (PMDA) (CAS No: 25214-70-4)	R	1000ppm by weight of article	All
Jun 2012	1,2-bis(2-methoxyethoxy)ethane (TEGDME; triglyme) (CAS No: 112-49-2)	C	1000ppm by weight of article	All
Jun 2012	1,2-dimethoxyethane; ethylene glycol dimethyl ether (EGDME) (CAS No: 110-71-4)	C	1000ppm by weight of article	All
Jun 2012	Diboron trioxide (CAS No: 1303-86-2)	C	1000ppm by weight of article	All

2.4 Compliance Definition: REACH Candidate List SVHC known to be used in hardware products and Electrical and Electronic Equipment (Note 4)				
Jun 2012	Formamide (CAS No: 75-12-7)	C	1000ppm by weight of article	All
Jun 2012	1,3,5-Tris(oxiran-2-ylmethyl)-1,3,5-triazinane-2,4,6-trione (TGIC) (CAS No: 2451-62-9)	C	1000ppm by weight of article	All
Jun 2012	1,3,5-tris[(2S and 2R)-2,3-epoxypropyl]-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione (β-TGIC) (CAS No: 59653-74-6)	C	1000ppm by weight of article	All
Jun 2012	4,4'-bis(dimethylamino)benzophenone (Michler's ketone) (CAS No: 90-94-8)	C	1000ppm by weight of article	All
Jun 2012	N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler's base) (CAS No: 101-61-1)	C	1000ppm by weight of article	All
Jun 2012	[4-[4,4'-bis(dimethylamino)benzhydrylidene]cyclohexa-2,5-dien-1-ylidene]dimethylammonium chloride (C.I. Basic Violet 3) [with ≥ 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)] (CAS No: 548-62-9)	C	1000ppm by weight of article	All
Jun 2012	[4-[[4-anilino-1-naphthyl][4-(dimethylamino)phenyl]methylene]cyclohexa-2,5-dien-1-ylidene] dimethylammonium chloride (C.I. Basic Blue 26) [with ≥ 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)] (CAS No: 2580-56-5)	C	1000ppm by weight of article	All
Jun 2012	α,α-Bis[4-(dimethylamino)phenyl]-4(phenylamino)naphthalene-1-methanol (C.I. Solvent Blue 4) [with ≥ 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)] (CAS No: 6786-83-0)	C	1000ppm by weight of article	All
Jun 2012	4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol [with ≥ 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)] (CAS No: 561-41-1)	C	1000ppm by weight of article	All
Dec 2012	Hexahydromethylphthalic anhydride [1], Hexahydro-4-methylphthalic anhydride [2], Hexahydro-1-methylphthalic anhydride [3], Hexahydro-3-methylphthalic anhydride [4] [The individual isomers [2], [3] and [4] (including their cis- and trans- stereo isomeric forms) and all possible combinations of the isomers [1] are covered by this entry] (CAS No: 25550-51-0, 19438-60-9, 48122-14-1, 57110-29-9)	C	1000ppm by weight of article	All
Dec 2012	Cyclohexane-1,2-dicarboxylic anhydride [1], cis-cyclohexane-1,2-dicarboxylic anhydride [2], trans-cyclohexane-1,2-dicarboxylic anhydride [3] [The individual cis- [2] and trans- [3] isomer substances and all possible combinations of the cis- and trans-isomers [1] are covered by this entry] (CAS No: 85-42-7, 13149-00-3, 14166-21-3)	C	1000ppm by weight of article	All
Dec 2012	Pyrochlore, antimony lead yellow (CAS No: 8012-00-8)	C	1000ppm by weight of article	All
Dec 2012	Henicosfluoroundecanoic acid (CAS No: 2058-94-8)	C	1000ppm by weight of article	All
Dec 2012	4-Aminoazobenzene (CAS No: 60-09-3)	C	1000ppm by weight of article	All
Dec 2012	Lead titanium zirconium oxide (CAS No : 12626-81-2)	C	1000ppm by weight of article	All
Dec 2012	Lead monoxide (lead oxide) (CAS No: 1317-36-8)	C	1000ppm by weight of article	All
Dec 2012	o-Toluidine (CAS No: 95-53-4)	C	1000ppm by weight of article	All
Dec 2012	Dibutyltin dichloride (DBTC) (CAS No: 683-18-1)	C	1000ppm by weight of article	All

2.4 Compliance Definition: REACH Candidate List SVHC known to be used in hardware products and Electrical and Electronic Equipment (Note 4)				
Dec 2012	Lead bis(tetrafluoroborate) (CAS No: 13814-96-5)	C	1000ppm by weight of article	All
Dec 2012	Lead dinitrate (CAS No: 10099-74-8)	C	1000ppm by weight of article	All
Dec 2012	Trilead bis(carbonate)dihydroxide (CAS No: 1319-46-6)	C	1000ppm by weight of article	All
Dec 2012	N,N-dimethylformamide (CAS No: 68-12-2)	C	1000ppm by weight of article	All
Dec 2012	4-Nonylphenol, branched and linear [substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, covering also UVCB- and well-defined substances which include any of the individual isomers or a combination thereof] (CAS No various examples: 26543-97-5, 104-40-5, 84852-15-3, 84852-15-3, 11066-49-2)	C	1000ppm by weight of article	All
Dec 2012	Lead oxide sulfate (CAS No: 12036-76-9)	C	1000ppm by weight of article	All
Dec 2012	Lead titanium trioxide (CAS No: 12060-00-3)	C	1000ppm by weight of article	All
Dec 2012	1,2-Diethoxyethane (CAS No: 629-14-1)	C	1000ppm by weight of article	All
Dec 2012	Tetrolead trioxide sulphate (CAS No: 12202-17-4)	C	1000ppm by weight of article	All
Dec 2012	[Phthalato(2-)]dioxotrilead (CAS No: 69011-06-9)	C	1000ppm by weight of article	All
Dec 2012	N-pentyl-isopentylphthalate (CAS No: 776297-69-9)	C	1000ppm by weight of article	All
Dec 2012	Pentalead tetraoxide sulphate (CAS No: 12065-90-6)	C	1000ppm by weight of article	All
Dec 2012	Heptacosafuorotetradecanoic acid (CAS No: 376-06-7)	C	1000ppm by weight of article	All
Dec 2012	Tricosafuorododecanoic acid (CAS No: 307-55-1)	C	1000ppm by weight of article	All
Dec 2012	Dioxobis(stearato)trilead (CAS No: 12578-12-0)	C	1000ppm by weight of article	All
Dec 2012	Pentacosafuorotridecanoic acid (CAS No: 72629-94-8)	C	1000ppm by weight of article	All
Dec 2012	Methoxyacetic acid (CAS No: 625-45-6)	C	1000ppm by weight of article	All
Dec 2012	Methyloxirane (Propylene oxide) (CAS No: 75-56-9)	C	1000ppm by weight of article	All
Dec 2012	Trilead dioxide phosphonate (CAS No: 12141-20-7)	C	1000ppm by weight of article	All
Dec 2012	Diisopentylphthalate (CAS No: 605-50-5)	R	1000ppm by weight of article	All
Dec 2012	1,2-Benzenedicarboxylic acid, dipentylester, branched and linear (CAS No: 84777-06-0)	R	1000ppm by weight of article	All
Dec 2012	Fatty acids, C16-18, lead salts (CAS No: 91031-62-8)	C	1000ppm by weight of article	All
Dec 2012	Orange lead (lead tetroxide) (CAS No: 1314-41-6)	C	1000ppm by weight of article	All
Dec 2012	Diazene-1,2-dicarboxamide (C,C'-azodi(formamide)) (CAS No : 123-77-3)	C	1000ppm by weight of article	All
Dec 2012	Sulfurous acid, lead salt, dibasic (CAS No: 62229-08-7)	C	1000ppm by weight of article	All
Dec 2012	Lead cyanamidate (CAS No: 20837-86-9)	C	1000ppm by weight of article	All
Jun 2013	Cadmium (CAS No: 7440-43-9)	C	1000ppm by weight of article	All
Jun 2013	Cadmium oxide (CAS No: 1306-19-0)	C	1000ppm by weight of article	All
Jun 2013	Ammonium pentadecafluorooctanoate (APFO) (CAS No: 3825-26-1)	C	1000ppm by weight of article	All
Jun 2013	Dipentyl phthalate (DPP) (CAS No: 131-18-0)	C	1000ppm by weight of article	All
Dec 2013	Cadmium sulphide (CAS No: 1306-23-6)	C	1000ppm by weight of article	All

2.4 Compliance Definition: REACH Candidate List SVHC known to be used in hardware products and Electrical and Electronic Equipment (Note 4)				
Dec 2013	Lead di(acetate) (CAS No: 301-04-2)	C	1000ppm by weight of article	All
Dec 2013	Dihexyl phthalate (DnHP) (CAS No: 84-75-3)	C	1000ppm by weight of article	All
Dec 2013	Imidazolidine-2-thione; 2-imidazoline-2-thiol (ETU) (CAS No: 96-45-7)	C	1000ppm by weight of article	All
Dec 2013	Trixylyl phosphate (TXP) (CAS No: 25155-23-1)	C	1000ppm by weight of article	All
Dec 2013	Disodium 3,3'-[[[1,1'-biphenyl]-4,4'-diylbis(azo)]bis(4-aminonaphthalene-1-sulphonate) (C.I. Direct Red 28) (CAS No 573-58-0)	C	1000ppm by weight of article	All
Dec 2013	Disodium 4-amino-3-[[4'-(2,4-diaminophenyl)azo][1,1'-biphenyl]-4-yl]azo]-5-hydroxy-6-(phenylazo)naphthalene-2,7-disulphonate (C.I. Direct Black 38) (CAS No 1937-37-7)	C	1000ppm by weight of article	All
Jun 2014	1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear (CAS No 68515-50-4)	C	1000ppm by weight of article	All
Dec 2014	2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320) (CAS No 3846-71-7)	C	1000ppm by weight of article	All
Dec 2014	2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328) (CAS No 25973-55-1)	C	1000ppm by weight of article	All
Dec 2014	2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE) (CAS No 15571-58-1)	C	1000ppm by weight of article	All
Dec 2014	Reaction mass of 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate and 2-ethylhexyl 10-ethyl-4-[[2-[(2-ethylhexyl)oxy]-2-oxoethyl]thio]-4-octyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (reaction mass of DOTE and MOTE)	C	1000ppm by weight of article	All
Jun 2015	1,2-Benzenedicarboxylic acid, di-C6-10-alkyl esters (CAS No 68515-51-5)	C	1000ppm by weight of article	All
Jun 2015	1,2-Benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters (CAS No 68648-93-1)	C	1000ppm by weight of article	All
Dec 2015	1,3-propanesultone (CAS No 1120-71-4)	C	1000ppm by weight of article	All
Dec 2015	2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol (UV-327) (CAS No 3864-99-1)	C	1000ppm by weight of article	All
Dec 2015	2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV-350) (CAS No 36437-37-3)	C	1000ppm by weight of article	All
Dec 2015	Perfluorononan-1-oic acid (2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,9-heptafluorononanoic acid and its sodium and ammonium salts (PFNA) (CAS No examples: 375-95-1, 21049-39-8, 4149-60-4)	C	1000ppm by weight of article	All
Jun 2016	Benzo[def]chrysene (Benzo[a]pyrene) (CAS No 50-32-8)	C	1000ppm by weight of article	All
Jan 2017	4,4'-isopropylidenediphenol (Bisphenol A) (BPA) (CAS No 80-05-7)	C	1000ppm by weight of article	All
Jan 2017	Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts (CAS No Examples: 335-76-2, 3830-45-3, 3108-42-7)	C	1000ppm by weight of article	All
Jul 2017	Perfluorohexane-1-sulphonic acid and its salts (CAS No Examples: 355-46-4, 70225-16-0, 3871-99-6, 68259-08-5)	C	1000ppm by weight of article	All
Jan 2018	Cadmium dihydroxide (CAS No 21041-95-2)	C	1000ppm by weight of article	All
Jan 2018	1,6,7,8,9,14,15,16,17,18,18-dodecachloropentacyclo[12.2.1.16,9.02,13.05,10]octadeca-7,15-diene (Dechlorane Plus) [covering any of its individual isomers or any combination thereof] (CAS No Examples: 13560-89-9, 135821-74-8, 135821-03-3)	C	1000ppm by weight of article	All

2.4 Compliance Definition: REACH Candidate List SVHC known to be used in hardware products and Electrical and Electronic Equipment (Note 4)				
Jun 2018	Octamethylcyclotetrasiloxane (D4) (CAS No 556-67-2)	C	1000ppm by weight of article	All
Jun 2018	Decamethylcyclopentasiloxane (D5) (CAS No 541-02-6)	C	1000ppm by weight of article	All
Jun 2018	Dodecamethylcyclohexasiloxane (D6) (CAS No 540-97-6)	C	1000ppm by weight of article	All
Jun 2018	Disodium octaborate (CAS No 12008-41-2)	C	1000ppm by weight of article	All
Jun 2018	Ethylenediamine (CAS No 107-15-3)	C	1000ppm by weight of article	All
Jun 2018	Lead (CAS No 7439-92-1)	R	1000ppm by weight of article	All
Jun 2018	Terphenyl, hydrogenated (CAS No 61788-32-7)	C	1000ppm by weight of article	All
Jun 2018	benzene-1,2,4-tricarboxylic acid 1,2 anhydride (trimellitic anhydride) (TMA) (CAS No 552-30-7)	C	1000ppm by weight of article	All
Jun 2018	dicyclohexyl phthalate (DCHP) (CAS No 84-61-7)	C	1000ppm by weight of article	All
Jan 2019	2,2-bis(4'-hydroxyphenyl)-4-methylpentane (CAS No 6807-17-6)	C	1000ppm by weight of article	All
Jul 2019	Tris(4-nonylphenyl, branched and linear) phosphite (TNPP) with $\geq 0.1\%$ w/w of 4-nonylphenol, branched and linear (4-NP)	C	1000ppm by weight of article	All
Jan 2020	1,2-bis(4-methylpentyl)benzene-1,2dicarboxylate (Diisohexyl phthalate) (CAS No 71850-09-4)	C	1000ppm by weight of article	All
Jan 2020	2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one (CAS No 71868-10-5)	C	1000ppm by weight of article	All
Jan 2020	2-benzyl-2-dimethylamino-4'-morpholinobutyrophenone (CAS No 119313-12-1)	C	1000ppm by weight of article	All
Jan 2020	Perfluorobutane sulfonic acid (PFBS) and its salts	C	1000ppm by weight of article	All
Jun 2020	2-methylimidazole (CAS No 693-98-1)	C	1000ppm by weight of article	All
Jun 2020	Dibutylbis(pentane-2,4-dionato-O,O')tin (CAS No 22673-19-4)	C	1000ppm by weight of article	All
Jan 2021	bis(2-(2-methoxyethoxy) ethyl) ether (CAS No 143-24-8)	C	1000ppm by weight of article	All
Jan 2021	Diocetyl tin dilaurate, stannane, dioctyl-, bis(coco acyloxy) derivs., and any other stannane, dioctyl-, bis(fatty acyloxy) derivs. wherein C12 is the predominant carbon number of the fatty acyloxy moiety	C	1000ppm by weight of article	All
Jul 2021	Medium chain-chlorinated paraffins (MCCP) UVCB substances consisting of more than or equal to 80% linear chloroalkanes with carbon chain lengths within the range from C14 to C17	C	1000ppm by weight of article	All
Jul 2021	Phenol, alkylation products (mainly in para position) with C12-rich branched or linear alkyl chains from oligomerisation, covering any individual isomers and/ or combinations thereof (PDDP)	C	1000ppm by weight of article	All
Jul 2021	4,4'-(1-methylpropylidene)bisphenol (bisphenol B)	C	1000ppm by weight of article	All
Jan 2022	6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol (DBMC)	C	1000ppm by weight of article	All
Jan 2022	tris(2-methoxyethoxy)vinylsilane	C	1000ppm by weight of article	All
Various	Any other SVHC not listed above Note 4	C	1000ppm by weight of article	All

2.5 Compliance Definition: REACH Annex XVII Restriction Items in Parts and Materials			
a) Entries classified as B/R for ALL applications			
Entry - Substance Category	Classification	Threshold Level	Application(s)
1. Polychlorinated Terphenyls (PCT)	B	Intentionally added	All
5. Benzene (CAS No 71-43-2)	B	5ppm by weight of product	All
6. Asbestos	B	1000ppm by weight of product	All
20. Tri-substituted Organostannic Compounds, such as Tributyl Tin (TBT), Triphenyl Tin (TPT), Tricyclohexyl Tin, Triethyl Tin, Trihexyl Tin, Trimethyl Tin, Trioctyl Tin, Tripentyl Tin, Triphenyl Tin, Tripropyl Tin	B	Intentionally added	All
20. Tributyl Tin Oxide (TBTO) (CAS No 56-35-9)	B	Intentionally added	All
20. Dibutyltin (DBT) compounds	B	1000ppm per homogeneous materials	All
20. Dioctyltin (DOT) compounds	R	1000ppm per homogeneous materials	All
21. Di- μ -oxo-di-n-butylstanniohydroxyborane / dibutyltin hydrogen borate C ₈ H ₁₉ BO ₃ SN (DBB)	B	1000ppm by weight of product	All
24. Monomethyl — tetrachlorodiphenyl methane, Trade name: Ugilec 141 (CAS No 76253-60-6)	B	Intentionally added	All
25. Monomethyl-dichloro-diphenyl methane Trade name: Ugilec 121 Ugilec 21 (CAS No 81161-70-8)	B	Intentionally added	All
26. Monomethyl-dibromo-diphenyl methane bromobenzylbromotoluene, mixture of isomers Trade name: DBBT (CAS No 99688-47-8)	B	Intentionally added	All
45. Diphenylether, octabromo derivate	B	Intentionally added	All
49. 1,2,4-Trichlorobenzene (CAS No 120-82-1)	R	Intentionally added	All
50. Polycyclic Aromatic Hydrocarbons (PAH) (Note 9a)	B	Intentionally added (Note 9a)	All
51. Selected Phthalates Group 1 (BBP CAS No 85-68-7 DBP CAS No 84-74-2 DEHP CAS No 117-81-7 DIBP CAS No 84-69-5)	R	1000ppm per homogeneous materials individually or in any combination	All
61. Dimethyl Fumarate (DMF) (CAS No 624-49-7)	B	0.1ppm by weight of product	All
b) Entries classified as B for SPECIFIC applications			
12. 2-Naphthylamine and its salts (91-59-8 and various)	B	1000ppm by weight of product	preparations
13. Benzidine and its salts	B	1000ppm by weight of product	preparations
14. 4-Nitrobiphenyl (CAS No 92-93-3)	B	1000ppm by weight of product	preparations
15. 4-Aminobiphenyl xenylamine and its salts (92-67-1 and various)	B	1000ppm by weight of product	preparations
32. Chloroform (CAS No 67-66-3)	B	1000ppm by weight of product	Cleaning agent
34. 1,1,2-Trichloroethane (CAS No 79-00-5)	B	1000ppm by weight of product	Cleaning agent
35. 1,1,2,2-Tetrachloroethane (CAS No 79-34-5)	B	1000ppm by weight of product	Cleaning agent
36. 1,1,1,2-Tetrachloroethane (CAS No 630-20-6)	B	1000ppm by weight of product	Cleaning agent
37. Pentachloroethane (CAS No 76-01-7)	B	1000ppm by weight of product	Cleaning agent
38. 1,1-Dichloroethene (CAS No 75-35-4)	B	1000ppm by weight of product	Cleaning agent
43. Azocolourants and azodyes which form certain aromatic amines, selected (Note 8)	B	30ppm by weight of finished textile/leather article	Textiles and leather
46. Nonylphenol and Nonylphenol ethoxylates	B	1000ppm by weight of product	Cleaning agent
59. Dichloromethane (CAS No 75-09-2)	B	1000ppm by weight of product	paint strippers
66. Bisphenol A (CAS No 80-05-7)	B	200ppm by weight of product	Thermal paper

2.5 Compliance Definition: REACH Annex XVII Restriction Items in Parts and Materials			
c) Entries classified as C			
Entry - Substance Category	Classification	Threshold Level	Application(s)
27. Nickel/Nickel Compounds (Notes 5 and 6)	C	Intentionally added	All, where prolonged skin contact is expected
28. Substances which appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 classified as carcinogen category 1A or 1B (Table 3.1) or carcinogen category 1 or 2 (Table 3.2)	C	Intentionally added	All (Note 7)
29. Substances which appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 classified as germ cell mutagen category 1A or 1B (Table 3.1) or mutagen category 1 or 2 (Table 3.2)	C	Intentionally added	All (Note 7)
30. Substances which appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 classified as toxic to reproduction category 1A or 1B (Table 3.1) or toxic to reproduction category 1 or 2 (Table 3.2)	C	Intentionally added	All (Note 7)
48. Toluene (CAS No 108-88-3)	C	1000ppm by weight of product	adhesives or spray paints
52. Selected Phthalates Group 2 (DIDP CAS No 26761-40-0 and 68515-49-1 DINP CAS No 28553-12-0 and 68515-48-0 DNOP CAS No 117-84-0)	C	1000ppm per homogeneous materials	All
54. 2-(2-methoxyethoxy)ethanol (DEGME) (CAS No 111-77-3)	C	1000ppm by weight of product	paints, paint strippers, cleaning agents, self-shining emulsions
55. 2-(2-butoxyethoxy)ethanol (DEGBE) (CAS No 112-34-5)	C	3% by weight of product	spray paints or spray cleaners in aerosol dispensers
56. Methylenediphenyl diisocyanate (MDI) (CAS No 26447-40-5)	C	1000ppm by weight of product	preparations
57. Cyclohexane (CAS No 110-82-7)	C	1000ppm by weight of product	neoprene-based contact adhesives
62. (a) Phenylmercury acetate (CAS No 62-38-4) (b) Phenylmercury propionate (CAS No 103-27-5) (c) Phenylmercury 2-ethylhexanoate (CAS No 13302-00-6) (d) Phenylmercury octanoate (CAS No 13864-38-5) (e) Phenylmercury neodecanoate (CAS No 26545-49-3)	C	100ppm per homogeneous materials	All

2.6 Compliance Definition: Restrictions in Packaging Materials			
Substance Category	Classification	Threshold Level	Application(s)
Heavy Metals (Lead, Cadmium, Chromium VI and Mercury)	R	100ppm combined by weight	Packaging or packaging components
Expanded polystyrene (EPS) (CAS No 9003-53-6), loose fill only (Note 10)	R	Intentionally added	
Dimethyl Fumarate (DMF) (CAS No 624-49-7)	R	0.1ppm by weight of product	
See REACH SVHC	C	1000ppm by weight of product	
Methyl bromide (CAS No 74-83-9)	R	Intentionally added	
Any biocides used in treatment of wood packaging or transport material not approved in EU Biocides Directive or other local legislation	B	Intentionally added	
Phthalates (examples BBP, DBP, DEHP, DIBP) (Note 17)	R	100ppm by homogeneous materials individually or in any combination	
US TPCH – Perfluoroalkyl and polyfluoroalkyl substances (PFAS)	R	Intentionally added	
Formaldehyde (CAS No 50-00-0)	B	Intentionally added (Note 5)	Composite Wood products or components
		75ppm by weight of textile product	Textiles
Mercury/Mercury compounds	B	Intentionally added	wood and wooden materials
Arsenic/Arsenic Compounds	B	Intentionally added	
Tar oils and creosotes	B	Intentionally added	

2.7 Compliance Definition: Restricted Substances in Batteries (Note 11)			
Substance Category	Classification	Threshold Level	Application(s)
Cadmium/Cadmium Compounds	R	5ppm by weight of battery	All batteries
Lead/Lead Compounds	R	40ppm by weight of battery	All batteries
Mercury /Mercury Compounds	R	5ppm by weight of battery	All batteries

2.8 Compliance Definition: Canada and US Prohibition of Certain Toxic Substances			
Substance Category	Classification	Threshold Level	Application(s)
Dodecachloropentacyclo 1, 3, 4-Metheno-1H-cyclobuta(cd)pentalene, Mirex (CAS No 2385-85-5)	B	Intentionally added	All
Hexachlorobenzene (CAS No 118-74-1)	B	Intentionally added	All
2-Methoxyethanol (CAS No 109-86-4)	B	Intentionally added	All
N-Nitrosodimethylamine (CAS No 62-75-9)	B	Intentionally added	All
Pentachlorobenzene (CAS No 608-93-5)	B	Intentionally added	All
Tetrachlorobenzene	B	Intentionally added	All
Benzenamine, N-phenyl-, reaction products with styrene and 2,4,4-trimethylpentene (BNST) (CAS No 68921-45-9)	B	Intentionally added	All except for additive in rubber
Hexachlorobutadiene (CAS No 87-68-3)	B	Intentionally added	All
Decabromodiphenyl ethane (DBDPE) (CAS No 84852-53-9)	C	Intentionally added	All
PIP (3:1) (US TSCA)	B	Intentionally added	All
2,4,6-TTB (US TSCA)	B	0.3 % by weight of product	Chemical products
Hexachlorobutadiene (HCBd) (US TSCA)	B	Intentionally added	All except for burning as waste fuel
Pentachlorothiophenol (PCPT) (US TSCA)	B	0.1 % by weight of product	All

2.9 Compliance Definition: Banned Substances in Manufacturing			
Substance Category	Classification	Threshold Level	Application(s)
Ozone Depleting Substances (CFC, Halon, HBFC, HCFC & others)	B	Intentionally added	Manufacturing process
Hexachloroethane (CAS No 67-72-1)	B	Intentionally added	Manufacturing process of nonferrous metals
Polychlorinated Naphthalenes	B	Intentionally added	Manufacturing process
Perfluorooctane Sulfonate, C ₈ F ₁₇ SO ₂ X (X = OH, Metal salt, halide, amide, and other derivatives including polymers) (PFOS)	B	Intentionally added	Manufacturing process
Sulfur fluoride (SF ₆) (CAS No 2551-62-4)	B	Intentionally added	Manufacturing process of magnesium die-casting
PIP (3:1) (US TSCA)	B	Intentionally added	Manufacturing process
Hexachlorobutadiene (HCBd) (US TSCA)	B	Intentionally added	Manufacturing process
Pentachlorothiophenol (PCPT) (US TSCA)	B	0.1 % by weight of product	Manufacturing process

2.10 Compliance Definition: Misc. Banned & Restricted Substances in Parts & Materials			
Substance Category	Classification	Threshold Level	Application(s)
Halogenated Aromatic Substances (HAS)	B	500ppm for mono-halogenated or 50ppm for poly-halogenated aromatic substances per homogeneous materials of the components.	Capacitors and Transformers
Perchlorate Compounds	B	6ppb by weight of product	All
Phenol, 2-(2H-benzotriazol-2-yl)- 4,6-bis(1,1-dimethylethyl) (CAS No 3846-71-7)	B	Intentionally added	All

2.10 Compliance Definition: Misc. Banned & Restricted Substances in Parts & Materials			
Substance Category	Classification	Threshold Level	Application(s)
Radioactive Substances	B	Intentionally added (Note 5)	All
Formaldehyde (CAS No 50-00-0)	B	Intentionally added (Note 5)	Composite Wood products or components
		75ppm by weight of textile product	Textiles
2,4,6-Tri-t-Butylphenol (CAS No 732-26-3)	B	Intentionally added	Antioxidant and lubricating and fuel oils
N,N'-ditolyl-p-phenylenediamin (CAS No 27417-40-9), Ntolyl-N'-xylyl-p-phenylenediamine (CAS No 28726-30-9), N,N'-dixylyl-p-phenylene diamine (CAS No 70290-05-0), N,N'-Di-4-tolyl-1,4-phenylenediamine (CAS No 620-91-7), N,N'-Di-2-tolyl-1,4-phenylenediamine (CAS No 15017-02-4)	B	Intentionally added	Rubber anti-aging agent and Styrene-butadiene rubber
Short Chain Chlorinated Paraffins (SCCPs)	B	Intentionally added	All

2.11 Compliance Definition: Restricted Halogen Elements and Compounds in Parts and Materials (see Note 12)			
Substance Category	Classification	Threshold Level	Application(s)
Bromine	C	900ppm per homogeneous materials	All
		900ppm per homogeneous materials	
		Intentionally Added	
Chlorine	C	900ppm per homogeneous materials	All
		Intentionally Added	
		1500ppm per homogeneous materials	
Total Bromine and Chlorine (Br+Cl)	C	1500ppm per homogeneous materials	All
Fluorine	C	900ppm per homogeneous materials	All
		Intentionally Added	
		Intentionally Added	

2.12 Compliance Definition: Specific Industry / Business Unit Restrictions on RoHS substances in Parts and Materials			
Substance Category	Classification	Threshold Level	Application(s)
Cadmium/Cadmium Compounds	C	2ppm per homogeneous materials	wood and wooden materials
		5ppm per homogeneous materials	Plastic, rubber, ink, pigment, paint, dyes
		20ppm per homogeneous materials	Solder materials, plating, surface coating
		50ppm per homogeneous materials	Metal materials
Chromium VI Compounds	C	Intentionally added or 500ppm per homogeneous materials (Note 13)	All except packaging and batteries
Lead/Lead Compounds	C	90ppm per homogeneous materials	wood and wooden materials; paint
		100ppm per homogeneous materials	Plastic, rubber, ink, pigment, dyes, non-metallic and non-ceramic coatings
		500ppm per homogeneous materials	Solder materials, Metal materials
Mercury/Mercury Compounds	C	Intentionally added or 50ppm per homogeneous materials (Note 13)	All except packaging and batteries

2.13 Compliance Definition: Misc. Specific Industry / Business Unit Restrictions in Parts and Materials			
Substance Category	Classification	Threshold Level	Application(s)
Latex	C	Intentionally added	All
Any material containing or derived from BPA (Bisphenol A) (CAS No 80-05-7)	C	Intentionally added	All
Animal Byproducts (Note 14)	C	Intentionally added	All
Nickel/Nickel Compounds (except metallic nickel or nickel containing alloys in applications not involving prolonged skin contact)	R	1000ppm per homogeneous materials	All
Phthalates	C	1000ppm per homogeneous materials	All

2.13 Compliance Definition: Misc. Specific Industry / Business Unit Restrictions in Parts and Materials			
Arsenic/Arsenic Compounds	C	1000ppm per homogeneous materials	All except semiconductors and metal alloys
Antimony/Antimony compounds	C	1000ppm per homogeneous materials	All
Beryllium/Beryllium Compounds	C	1000ppm per homogeneous materials	All
Flame Retardants (containing phosphorus), selected	C	1000ppm per homogeneous materials	All
Formaldehyde (CAS No 50-00-0)	C	Intentionally added	detergents, cleaning agents and polishes
Volatile Organic Compounds (VOCs) (Note 16)	C	Intentionally added	Paints, coatings, inks, adhesives, cleaning agents
Chlorinated Organic Solvents	C	Intentionally added	detergents, cleaning agents, degreaser, adhesive
Expanded polystyrene (EPS) (CAS No 9003-53-6)	C	Intentionally added	Packaging or packaging components
Red Phosphorous (CAS No 7723-14-0)	C	Intentionally added	All
Any other substances not listed in this specification, but covered by TE 5081-2 Declarable List	C	Detectable levels per homogeneous materials	All
Polycyclic-aromatic hydrocarbons (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 Dibenzof[a,h]anthracene (DBAhA) 53-70-3	C	1ppm / 0.5ppm per weight of rubber or plastic component (Note 9b)	All

Table 2 (end)

NOTES

- Form 6097 - TE Banned Substances:** contains the list of substances that TE bans globally, if a substance currently listed in Table 2 becomes a globally banned substance for all applications it will be moved to form 6097. Table 2.0 provides an overview table to indicate to which substance categories the banned substances on Form 6097 belong. To know the specific substance, you need to check Form 6097, as every substance is listed with its CAS No. If not listed on 6097, the substance is not globally banned by TE and the applicable legislation and threshold applies.
- RoHS exemptions - RoHS threshold levels apply to all materials and parts (except packaging and batteries) unless valid exemption(s) can be applied. For the latest exemption list (RoHS Directive Annex III for Categories 1 – 7, 10 & 11, and Annex IV for Categories 8 & 9), please visit the official website of the European Commission about RoHS2: http://ec.europa.eu/environment/waste/rohs_eee/legis_en.htm.

Areas of particular concern for RoHS compliance (*note this is not an exhaustive list of risk areas*)

- Cadmium in metals, especially Zinc containing metals (e.g. free cutting Brass, Zinc die-cast, hot dip Zinc). Use of recycled metal materials significantly increases the risk of contamination and should be used with caution.
- Cadmium and Lead are frequently used as colorants in plastics. Use of uncontrolled plastic regrind significantly increases the risk of cross-contamination of compliant materials.
- Prior to ca. 2008 Lead and Cadmium were widely used as additives in electro less nickel plating baths. Care should be taken to verify that RoHS compliant Lead and Cadmium-free formulations are used.
- Lead is routinely used as a stabilizer in PVC.
- DEHP, DBP, BBP and DIBP are used as plasticizers in flexible materials such as but not limited to: flexible PVC, O-rings, soft rubber articles, gaskets, adhesives, multi-part epoxies, neoprene, nitrile rubber and rubberized ABS.

NOTE: TE prohibits the use of these phthalates in supplied product beginning March 31st, 2019 and consistent with supplier messaging.

3. Authorization list – SVHC that have entered Annex XIV are subject to ECHA authorization after sunset dates. For the latest Authorization list and sunset date of each substance, please refer to: <https://echa.europa.eu/authorisation-list>
If Annex XIV SVHC are present in parts and materials supplied to TE, suppliers should take proactive actions and target the immediate removal and substitution of these SVHC to ensure that these SVHC are removed from the parts and materials supplied to TE before their respective sunset dates, as TE will request suppliers to phase out usage of these SVHC in the future while following the *Change Procedure* outlined in 5.4.
According to Article 56 of REACH regulation, any SVHC that have entered Annex XIV and has passed the applicable sunset date shall not be used, imported, manufactured or placed on the market for a use by a manufacturer, importer or downstream user unless an authorization is granted for their specific use by ECHA. Articles that contain these SVHC are so far still allowed to be imported to EU, as long as Article 33 communication obligation and article 7(2) notification obligation are met. Further details please refer to [REACH regulation](#). TE has upgraded these SVHC from classification C (when they are on the Candidate list) to R (when they are on Annex XIV and passed their sunset date); But for some SVHC e.g. HBCDD that also have been added to the EU POPs regulation, the classification is upgraded to class B, due to the fact that EU POPs takes precedent over REACH and applies stricter bans and as such the substance is moved to Form 6097. Any Intentional use of HBCDD is banned for use in supplier products sold to TE that may directly or indirectly enter our manufacturing supply chain.
4. SVHC – SVHC should be reported per O5A rule – Once an Article, Always an Article. TE is requiring suppliers to follow the European Court of Justice ruling of September 10, 2015 and the revised ECHA Guidance (Latest Version), which state that, in case of “complex articles”, the threshold for SVHC must be applied to both the product as a whole and simultaneously to each of the articles forming part of its composition.
SVHC that are known to be used in hardware products and electrical and electronic equipment are listed in Table 2. This information represents our current knowledge based on REACH Annex XV, research on uses of chemicals, industry association assessments and data in material declaration systems. For a complete list of SVHC, please refer to ECHA website: <http://echa.europa.eu/candidate-list-table>
NOTE: TE does not claim that Table 2 is a comprehensive or complete list or that it represents the SVHC present or not present in the particular products supplied to TE. This information is subject to change and is provided strictly for reference and as a possible starting point for assessment. Supplier is responsible for conducting own assessment of and reporting on the existence or nonexistence of SVHC in materials/parts supplied to TE.
5. Regulatory thresholds for substances in these applications are based on emission or exposure limits rather than on the concentration in the product. Examples of regulatory limits are:
Formaldehyde: in hardwood plyboard with veneer core – 0.05 ppm (measured as gaseous emission from product) per California Code of Regulations;
For Nickel in applications of prolonged skin contact - 0.5 micrograms/sq cm/week per DIN EN 1811;
Radioactive substances - a dose rate exceeding 1 µSv h⁻¹ at a distance of 0,1 m.
Because emission and exposure levels cannot be derived from actual concentrations, a threshold level of “intentionally added” is indicated for reporting.
6. Nickel /nickel compounds shall not be intentionally added in articles intended to come into direct and prolonged contact with the skin (e.g., an outer enclosure for a portable electronic product designed to be carried). Use of nickel or nickel contained in components and parts designed to be located inside the outer non-nickel enclosure of a product is allowed, unless the enclosure is sufficient to ensure that the rate of nickel release from those parts coming into direct and prolonged contact with the skin will not exceed 0,5 µg/cm² /week for a period of at least two years of normal use of the product.
7. For REACH Annex XVII restriction item 28 ~ 30, these substances could possibly be candidate pool for future SVHC, although current list is much longer than SVHC list. These substances are added to this specification in order to give supplier an early warning and guidance that these are SVHC candidate pool, to raise their awareness and phase out proactively. Also note these lists are dynamic with new substances added, so only the category, directive and table number are mentioned.
8. The European Community's ban applies to azocolourants and azodyes that by reductive cleavage of azo groups may release one of the 22 aromatic amines listed in 5081-2 list under substance category of “Azocolourants and azodyes which form certain aromatic amines”. The threshold level given applies to these amines, not to the azocolourants and azodyes.
- 9a. In addition to the eight Polycyclic Aromatic Hydrocarbons (PAH) compounds banned by Annex XVII, all PAH substances are banned, please refer to 5081-2 for a complete list of PAH substances.
All PAH substances are banned from “intentionally added”. For impurities, shall not contain benzo(a)pyrene (CAS No 50-32-8) above 20ppm per homogeneous material; sum of all PAHs shall not exceed 200ppm per homogeneous material.
- 9b. For articles for supply to the general public, PAHs content in any of their 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, under normal or reasonably foreseeable conditions of use, shall be less than 1 mg/kg (0,0001 % by weight of this component) of any of the listed PAHs. For toys, including activity toys, and childcare articles, PAHs content in any of their 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, under normal or reasonably foreseeable conditions of use, shall be less than 0,5 mg/kg (0,00005 % by weight of this component) of any of the listed PAHs.

10. This restriction ONLY applies to EPS loose fill (also called EPS peanuts) packaging materials as a fill agent for the packing and shipping of product, NOT to all EPS packaging materials (such as cores for reels or EPS cushioning that is used to pack product).
The restriction also does NOT apply to expanded polystyrene loose fill packaging materials that comply with the following requirements:
(1) On and after January 1, 2012, until December 31, 2013, inclusive, it is comprised of at least 60 percent recycled material.
(2) On and after January 1, 2014, until December 31, 2016, inclusive, it is comprised of at least 80 percent recycled material.
(3) On and after January 1, 2017, it is comprised of 100 percent recycled material.
11. Supplier shall comply with all applicable environmental laws pertaining to marking, labeling and restricting certain substances in batteries sold to or on behalf of Buyer, including but not limited to:
- Regulation (EU) 2017/852 on Mercury
- EU Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators;
- US EPA Mercury-Containing and Rechargeable Battery Management Act (PUBLIC LAW 104-142—MAY 13, 1996);
- Chinese Standard GB 24427-2021 “Content limitation of mercury, cadmium and lead for zinc anode primary battery”;
- Korea: Law on quality management and control of safety of industrial products Battery regulation;
- Taiwan Restrictions on the Manufacture, Import, and Sale of Dry Cell Batteries;
- New York Env Law § 27-0719 Battery Management and Disposal;
- Swiss Ordinance on Reduction of Risk from Chemical Products;
- Austria Ordinance 109/2015;
- Canada: Products Containing Mercury Regulations.
For example, according to EU Regulation 2006/66/EC, Batteries, accumulators and button cells containing more than 5ppm (0.0005 %) Mercury, more than 20ppm (0.002 %) Cadmium or more than 40ppm (0.004 %) Lead, shall be marked with the chemical symbol for the metal concerned; e.g. Hg, Cd or Pb.
The battery reporting threshold level is based on the strictest known legal requirement. However, for simplification, the same reporting threshold level is set for all kind of batteries, even if the underlying legal requirement is only applicable for only one specific battery type.
Batteries exemption - In some unique circumstances, a battery may meet very specific exemption criteria. If exempt, then content above applicable threshold must be labeled on the battery and reported. Supplier must notify TE of the specific exemption being claimed for battery.
12. Halogen elements restriction – the thresholds in this table are counted based on halogenated elements instead of halogenated compounds, such as bromine, chlorine and fluorine.
13. Chromium (VI) compounds are restricted from “intentionally added” if required by certain Business Units. For impurities, shall not contain Chromium (VI) compounds above 500ppm per homogeneous material.
Mercury/Mercury compounds are restricted from “intentionally added” if required by certain Business Units. For impurities, shall not contain Mercury/Mercury compounds above 50ppm per homogeneous material.
14. Animal byproducts - EU Regulation (EU) No 722/2012 requires notification of devices manufactured utilizing tissues of animal origin, either added as an ingredient to the material and or used in the manufacturing process.
15. ELV exemptions - ELV threshold levels apply to all materials and parts end up in automotive industry products unless valid exemption(s) can be applied. For the latest ELV exemption list, please visit the official website of the European Commission about ELV: http://ec.europa.eu/environment/waste/elv/legislation_en.htm.
16. VOCs are restricted when paints, coatings, inks, adhesives and cleaning agents are supplied to China market, follow corresponding GB standards.
17. EU REACH Annex XVII entry 51 restricts the following selected Phthalates Group 1: BBP - CAS: 85-68-7, DBP - CAS: 84-74-2, DEHP – CAS: 117-81-7; DIBP – CAS: 84-69-5 in all packaging and packaging components with a threshold of 1000ppm per homogenous material individually or in any combination; US TPCH restricts all phthalates in all packaging and packaging components with a threshold of 100ppm per weight of the product. As it is very difficult to make a distinction between packaging per region and this spec has a global coverage, TE has decided to apply following restriction of 100ppm per homogenous material which is a combination of both in its most stringent form.

REVISION HISTORY

Rev	Date	Revision Description
A	13 Aug, 2009	Initial Release
B	18 Aug, 2009	Corrigendum in Expanded Substance List (Table 4).
C	29 Oct, 2009	Add applicable specifications and standards (2.1); Update definitions for Type A Supplier and Type B Supplier (3); Update applications for lead/lead compounds in batteries (Table 2); Corrigendum in Expanded Substance List (Table 4).
D	23 Dec, 2009	Update Table of Contents to show subsections (1.4); Update definitions for Type A Part and Type B Part (3); Replace Expanded Substance List (Table 4) with Environmental Related Substances (5081-2), add instructions to search 5081-2 from Supplier Portal (5.1); Reformat Hazardous Substance List (Table 2), split table per Compliance Definition; Corrigendum and update of Table 2 due to deletion of Table 4; Add the second SVHC list to Table 2 (Jan 2010 list); Update threshold level for Nickel/Nickel compounds in Table 2.
E	26 Jan, 2010	Add ban of formaldehyde on textiles (Table 2); Corrigendum of Table 2; RoHS exemption 22 and 35 expired (Table 3).
F	21 Mar, 2011	Update company name and logo to TE Connectivity.
G	2 Jul, 2012	Add revision history to show changes between revisions; Business Units may develop additional specifications based on this specification (1.3); Update Applicable Documents (3); Update Definition for "Homogeneous Material", "Intentionally Added", "Material", "Substance", "Substance of Concern" and "Type A Part"; Add definition for "Preparation" (4); Add a Note under 5.2 Update Tin Whisker Mitigation (5.3.B); Update Product/Material Test requirements (5.5); Add note of RoHS recast to Product Labeling (5.6.A); Add Product Certification requirements (5.8); Add nonconformance notification requirements (5.10.D); Key changes in Hazardous Substance List (Table 2): <ul style="list-style-type: none"> - Adjust the sequence of sub tables to RoHS, SVHC, Annex XVII, Packaging, Battery, Canada, Manufacturing and Misc Ban; - add REACH Mar2010, June2010, Dec2010, June2011, Dec2011 and June2012 SVHC; - add a Compliance Definition for REACH Annex XVII Restriction items; - add requirements in packaging; - simplify requirements in batteries; - add a Compliance Definition for Canada Prohibitions; - add banned substances in manufacturing process; - add and update notes to Table 2; Update RoHS exemption list, add scope and dates of applicability, add maximum validity period (Table 3); Add Annex A Specific Industry / Business Unit Restrictions (Table 4): <ul style="list-style-type: none"> - add requirements for Restricted Halogen Elements and Compounds; - add Specific Industry / Business Unit Restrictions on RoHS substances; - add other Specific Industry / Business Unit requirements.
H	22 Jul, 2013	Update Applicable Documents (3); Revise RoHS 2 label text and revise requirement on reverse color printing from "shall" to "should", add explanation and figures in China RoHS label, add EU RoHS 2 CE Marking, add explanation and figure in EU WEEE label (5.6); Add EU RoHS 2 Technical File preparation (5.8); Integrate Table 2 and Table 4 under Annex A – TE Hazardous Substance List; Key changes in TE Hazardous Substance List (Table 2): <ul style="list-style-type: none"> - Upgrade HBCDD from Substance of Concern (C) to Restricted Substance (R) due to Stockholm Convention restriction on POPs; - Add REACH Dec2012, June2013 SVHC; - Revise threshold level for asbestos to 1000ppm by weight of product;

Rev	Date	Revision Description
		<ul style="list-style-type: none"> - Upgrade Benzenamine, N-phenyl-, reaction products with styrene and 2,4,4-trimethylpentene (CAS No 68921-45-9) from Substance of Concern (C) to Banned Substance (B) with certain exemptions, upgrade Hexachlorobutadiene (CAS No 87-68-3) from Substance of Concern (C) to Banned Substance (B) due to Canada Prohibition regulation update; - Upgrade 2,4,6-Tri-t-Butylphenol (CAS No 732-26-3), N,N'-ditolyl-p-phenylenediamin (CAS No 27417-40-9), Ntolyl-N'-xylyl-p-phenylenediamine (CAS No 28726-30-9), N,N'-dixylyl-p-phenylene diamine (CAS No 70290-05-0) from Substance of Concern (C) to Banned Substance (B) for certain applications due to Japan CSCL Kashin-ho Class I Specified Substance ban in products; - Revise threshold level for BPA from 50ppm to intentionally added; - Update REACH Authorization list from 14 to 22 SVHC in note 2 under Table 2; <p>Make Table 3 Annex B – RoHS Exemption List;</p> <ul style="list-style-type: none"> - Strikethrough expired exemptions: 2(b) (1), 7(c)-III, 11(a), 11(b), 12 and 23; add expiration date for 7(c)-IV.
J	27 Jan, 2014	<ul style="list-style-type: none"> - Add Dec 2013 SVHC list to Table 2.
K	13 Aug, 2014	<ul style="list-style-type: none"> - 3.3.B Add reference to Norway PFOA ban; - 4.B Refine definition of Homogeneous Material to address TE treats each plating layer or substrate metal as an individual homogeneous material; - 4.G Revise definition of Restricted Substance to restrict "Intentionally Add" of restricted substance, and the threshold level limit only applies to impurities (not intentionally added); - 5.5.A Add test requirement for radioactive substances in metals; - 5.5.C.2 Revise Verification Test requirement; - Annex A TE Hazardous Substance List – Table 2 <ul style="list-style-type: none"> - Add REACH June 2014 SVHC List; - Add REACH Annex XVII items 12, 13 and 15 to ban the use in preparations; - Revise REACH Annex XVII item 59 from "C" to "B", change to Banned Substance; - Add PFOA as Banned Substances; - Annex B RoHS Exemption List <ul style="list-style-type: none"> - Add 1(g), 4(g) and 41 exemptions; - Strikethrough 16, 39 and 40 exemptions as expired exemptions.
L	15 Jul, 2015	<ul style="list-style-type: none"> - 3.3.B update regulation (EU) No 517/2014 to repeal Regulation (EC) No 842/2006; update Regulation (EU) No 722/2012 to replace Directive 2003/32/EC; add Austria: Batteries Ordinance 159/2008; - 3.3.D add Canada Products Containing Mercury Regulations; - 3.3.E add IEC 62474 Material Declaration for Products of and for the Electrotechnical Industry - Annex A TE Hazardous Substance List – Table 2 <ul style="list-style-type: none"> - For any SVHC that have entered Annex XIV Authorization List and has passed corresponding sunset dates, TE has upgraded these SVHC from classification "C" to "R"; - Replace the complete list of SVHC by SVHC known to be used in hardware products and electrical and electronic equipment, with a link to ECHA website for reference to the complete SVHC list. Add relevant Dec 2014 and June 2015 SVHC. - Update Note 2 under Table 2, update the list of SVHC authorization list, add disclaimer to listing SVHC known to be used based on TE assessment; <ul style="list-style-type: none"> - Annex XVII changes: <ul style="list-style-type: none"> - Item 20, Dibutyltin (DBT) compounds, upgrade classification from "R" to "B"; - Add item 22, Pentachlorophenol and its salts and esters, ban in preparations; - Delete item 39, 1,1,1 Trichloroethane, methylchloroform, as removed from Annex XVII, and already covered by ODS ban; - Delete item 41 Hexachloroethane, as application is not relevant; - Item 42 was deleted by REACH because listed in POPs Regulation (EU) No 519/2012 on 2013-2-13. Move the ban to "Misc. Banned Substances in Parts & Materials" tab. No change in threshold, application and Classification. - Item 46, Nonylphenol and Nonylphenol ethoxylates, change application to "Cleaning agent", change IA to "1000ppm by weight of product". - Mercury/mercury compounds restriction in batteries: change threshold level from IA to 5ppm per homogenous material per Canada Mercury and Austria regulation. Add both Canada Mercury and Austria regulation in Note 9 under table 2. - Canada Prohibition on Benzenamine, N-phenyl-, reaction products with styrene and 2,4,4-trimethylpentene, change application to "All except for additive in rubber". Delete the exemption of BNST used as additives in lubricant as exemption expired on March 14, 2015; - Fluorinated Greenhouse Gases Compounds (HFC, PFC, SF6, etc.), selected, Exclude SF6 from the general ban. Change SF6 to Restricted Substance;

Rev	Date	Revision Description
		<ul style="list-style-type: none"> - Add Sulfur fluoride (SF6) as Class "R"; - Add Red Phosphorous as Class "C", under "Misc. Specific Industry / Business Unit Restrictions in Parts and Materials"; - Add rest 5081-2 declarable substances under "Misc. Specific Industry / Business Unit Restrictions in Parts and Materials" as Class "C". - Annex B RoHS Exemption List <ul style="list-style-type: none"> - Strikethrough 19, 20, 22, 23, 26, 27, 28, 35 and 36 exemptions as expired exemptions.
M	5 Apr, 2017	<ul style="list-style-type: none"> - 3.2 Add TE Standard TEC-238-41; - 3.3 Add link to ELV exemption; - 3.3 Update Note under RoHS, DEHP, DBP, BBP and DIBP will come to effect from 2019; Add link to RoHS exemption (and replace Annex B RoHS exemption list); - 3.3 Add Note under REACH for O5A requirement; - 3.3 Update China RoHS 2 reference; - 3.3 Delete reference to JIG 101; - 3.4 Add links to official EU websites for RoHS and ELV information; - 4 Add a definition of "Article"; - 5.6.C update China RoHS terminology EPUP to EFUP; - Annex A TE Hazardous Substance List – Table 2 <ul style="list-style-type: none"> - Lower threshold for PBB and PBDE from 1000ppm per homogeneous material to Not Detectable; - Add Trichloroethylene as Restricted Substance as it enters Annex XIV Authorization list and passed the sunset date; - Add Dec 2015, June 2016 and Jan 2017 at risk SVHC; - Update threshold for all SVHC from "1000ppm per weight or product" to "1000ppm per weight of article" to be align with REACH O5A rule; - Add REACH Annex XVII restriction items 62 certain phenylmercury compounds and 66 BPA as class "C". - Add a sub-table for Stockholm Convention Ban on Persistent Organic Pollutants (POPs); - Delete PBB and PBDE from Specific Industry / Business Unit Restrictions on RoHS; - Add DEHP, DBP, BBP and DIBP to Specific Industry / Business Unit Restrictions on RoHS; - Update Notes under Table 2; - Delete Annex B and Table 3 RoHS Exemption List, replaced by link to official EU website for RoHS information in 3.4.
N	27 Mar, 2018	<ul style="list-style-type: none"> - 5.5.B Product/Material Test, delete mandatory supplier part number requirement on test report, replace by "Information to correlate test sample with supplier part number and TE part number..."; - Annex A TE Hazardous Substance List – Table 2 <ul style="list-style-type: none"> - 12 new SVHC that have entered Annex XIV and after sunset dates are added as Restricted Substance to Compliance Definition: REACH Annex XIV Substances of Very High Concerns (SVHC) in Parts and Materials; these SVHC are upgraded from class C to class R accordingly in SVHC known to be used in hardware products and electrical and electronic Equipment; - 3 new SVHC from July 2017 and Jan 2018 SVHC lists are added to SVHC known to be used in hardware products and electrical and electronic Equipment; - 51. Selected Phthalates Group 1 in Compliance Definition: REACH Annex XVII Restriction Items in Parts and Materials are upgraded from class C to R since these phthalates have entered Annex XIV and after sunset date. - "Chlorinated and Brominated Dioxins or Furans" is renamed to "Polychlorinated dibenzo-p-dioxins (PCDD) and Polychlorinated dibenzofurans (PCDF)" and moved from "Compliance Definition: Misc. Banned & Restricted Substances in Parts & Materials" to "Compliance Definition: Stockholm Convention Ban on Persistent Organic Pollutants (POPs)"; - N,N'-Di-4-tolyl-1,4-phenylenediamine (CAS No 620-91-7) and N,N'-Di-2-tolyl-1,4-phenylenediamine (CAS No 15017-02-4) are added as new banned substances under "Compliance Definition: Misc. Banned & Restricted Substances in Parts & Materials" in application "Rubber anti-aging agent and Styrene-butadiene rubber" due to Japan CSCL Kashin-ho Class I Specified Substance ban in products update; - Iodine compounds are deleted from "Compliance Definition: Restricted Halogen Elements and Compounds in Parts and Materials". Note 12 is updated accordingly; - "BPA (Bisphenol A) (CAS No 80-05-7)" is revised to "Any material containing or derived from BPA (Bisphenol A) (CAS No 80-05-7)" in "Compliance Definition: Misc. Specific

Rev	Date	Revision Description
		Industry / Business Unit Restrictions in Parts and Materials” to exactly match Health Canada declaration requirement on Medical devices.
P	30 Mar, 2018	<ul style="list-style-type: none"> - 3.3.B.4 update the Note under RoHS directive adding amendment directive 2015/863/EU and mention DEHP, DBP, BBP and DIBP are upgraded to Restricted Substances in Table 2; - Annex A TE Hazardous Substance List – Table 2 <ul style="list-style-type: none"> - In sub-table RoHS Restricted Substances in Parts and Materials, add batteries as excepted application for PBB and PBDE; - Move DEHP, DBP, BBP, DIBP from sub-table Specific Industry / Business Unit Restrictions on RoHS substances in Parts and Materials to sub-table RoHS Restricted Substances in Parts and Materials, and upgrade classification C (Substance of Concern) to R (Restricted Substance); - Update Notes 1 and 13 under Table 2.
R	18 Jul, 2018	<ul style="list-style-type: none"> - Annex A TE Hazardous Substance List – Table 2 <ul style="list-style-type: none"> - In sub-table SVHC known to be used in hardware products and electrical and electronic Equipment, add June 2018 SVHC substances. - In sub-table Misc. Specific Industry / Business Unit Restrictions in Parts and Materials, add specific PAHs substances and Note 9b. Change original Note 9 to 9a.
R1	03 Aug, 2018	<ul style="list-style-type: none"> - Update General Note 3 (page 25): <ul style="list-style-type: none"> - 'subset' date changed to 'sunset' date. - latest authorization list URL link corrected.
S	11 Apr, 2019	<ul style="list-style-type: none"> - Corrected spelling (e.g. SvHC to SVHC, etc.), refined wording. - 3.2 Form added TEC-238-41 - 3.3 update title Laws and regulations and industry standards <ul style="list-style-type: none"> - 3.3.A Updated ref Montreal Protocol; Updated description ISPM-15; add Minamata Convention on Mercury - 3.3.B Updated Euratom Directive to 2013/59/Euratom; Remove Dir. 2009/251/EC because no longer in force; update Description Regulation 1005/2009; add Regulation (EU) 2017/852 on Mercury; remove 2010/571/EU cause repealed by RoHS Directive; remove Dir. 93/465/EC cause repealed by 768/2008/EC; add Decision 768/2008/EC. - 3.3.C update Japan No 53, 1988 & Japan No117 of 1973 by adding No; update description GB/T 26125-2011. - 3.3.D update description Bill No 3025; update references Canada and US legislations. Removed US Clean Air Act as not relevant for Spec. - 3.3.E Update description IEC 62321 - 3.4 update link to TE supplier portal - 5.5.B.2.Update test Methods Low halogen compounds to EN 14582:2016 - 5.6.B.1.a add figure 1 under CE mark - 5.6.C. update ref. China Standard to SJ-T 11364-2014 - 5.7.B Note update description China standard GB 18455-2001 - 5.10.E Removed the note cause to confusing. - Annex A. b) Note update link to supplier portal <ul style="list-style-type: none"> - h) Newly added information in regards acknowledgement some products may need to be non-compliant - Annex A. TE Hazardous substance List - Table 2: <ul style="list-style-type: none"> - Gave the sub-tables a number for easy reference - In sub-table 2.1: set threshold level back on 1000 ppm for PBB and PBDE and remove note 2 - Added sub-table 2.2 ELV restricted Substances in Parts and Materials - In sub-table 2.3: <ul style="list-style-type: none"> - Add abbreviation MDA, update Benzyl Butyl Phthalate, Change SVHC to SVHC - In sub-table 2.4: <ul style="list-style-type: none"> - Change SVHC to SVHC; add Jan 2019 SVHC - In sub-table 2.5: <ul style="list-style-type: none"> - Split the table in sub-sections a), b) & c) - Removed 19 Arsenic/Arsenic compounds cause already listed under packaging materials - Add 21 DBB: B – 1000ppm by weight of product - Removed 31.Tar oils and creosotes cause already listed under packaging materials - Added 45. Diphenylether – B – intentionally added - Added 68 PFOA: C - 25 ppb by weight of product

Rev	Date	Revision Description
		<ul style="list-style-type: none"> - In sub-table 2.6: add Mercury/Mercury compounds – B – Intentionally added in wood materials NOTES: updated note 1 e) added a note to warn for prohibition of use of 4 phthalates (conform Dir. (EU) 2015/863) as of March 31 st , 2019. And added note 16.
T	08 Aug, 2019	<ul style="list-style-type: none"> - 3.3 C Add China RoHS Catalog and Conformity Assessment System - 5.8 A Update China RoHS certification requirement - Annex A. TE Hazardous substance List - Table 2: <ul style="list-style-type: none"> - In sub-table 2.4: <ul style="list-style-type: none"> - Add Jul 2019 SVHC
U	05 Feb, 2020	<ul style="list-style-type: none"> - 3.3 B updated EU laws - 4. & 5.2 Changed Type B part to TSSB part - 5.6 B updated CE Marking Regulation ref. to (EC) No 765/2008 - 5.9 Added B – Brexit/REACH requirements - Annex A – Table 2: <ul style="list-style-type: none"> - 2.4 added the 4 new JAN 2020 SVHC - 2.5 moved entry 68 PFOA from c) to a) due to this restriction will become applicable as of 4 July 2020 (also in Regulation (EU)2019/1021 implementing the restriction of the Stockholm Convention) - 2.5 moved entry 66 Bisphenol A from c) to b) because this restriction became applicable as of Jan. 2, 2020. - 2.9 added PFOA under Stockholm Convention restrictions - Note 3 updated wording - Note 11 added Regulation (EU) 2017/852 on Mercury - Added Note 17
U1	24 Feb, 2020	<ul style="list-style-type: none"> - Added extra HBCDD info to note 3
V	13 Jul, 2020	<ul style="list-style-type: none"> - 3.2 Added reference to Form 6097; added info on substances included in 5081-2 - 3.3 A ISBN No Montreal protocol updated <ul style="list-style-type: none"> - 4. RoHS – Note updated <ul style="list-style-type: none"> - B. changed European Union to EMEA - 21. Added EAEU RoHS; CLP & BPR Regulation - C. added VOC information (16 – 20) - E. added EN IEC 63000 - 4. Definition Banned Substances updated with reference to Form 6097 and included if no threshold value no impurities allowed above detection level.; Def. Substance updated - 5.1 A. added reference to form 6097 - 5.6. added E & F EU CLP & EU BPR labelling requirements - 5.9 point 3 added - Annex A: <ul style="list-style-type: none"> - A1 a) reference to form 6097 added - A2 – Table 2: <ul style="list-style-type: none"> - Sub-table 2.0 added with reference and link to 6097 - Corrected the sub-table numbering & note numbering - Following Substances removed because added to 6097: <ul style="list-style-type: none"> 2.3 HBCDD 2.4 DecaBDE, PFOA 2.5 PFOA 2.9 complete table 2.10 Fluorinated GHG; ODS, PFOA - 2.3 added Annex XIV SVHC that passed sunset date 4 Jul 2020 - 2.4 corrected classification of REACH SVHC that are already on Annex XIV and passed their sunset date (changed from C to R) & added new REACH June 2020 SVHC - 2.5 entry 51 corrected - 2.6 included REACH Annex XVII entry 51 for packaging - 2.8 added DBDPE - 2.9 removed (incl. in 6097) - 2.10 updated - 2.13 added VOC requirements; changed wording on Nickel compounds and updated to R instead of C.

Rev	Date	Revision Description
		- Notes 1 & 16 changed, note 17 removed
W	9 Mar, 2021	<ul style="list-style-type: none"> - 3.3 B added US TSCA - 5.8 B a. added comment on validity of EN50581 - 5.9 B updated Brexit statement - Annex A2: <ul style="list-style-type: none"> - table 2.3 added SVHCs on Annex XIV that passed their sunset date (Oct. 2020 & Jan. 2021) - table 2.4 removed those SVHC that were added to table 2.3 and added the 2 new SVHC for Jan. 2021 - table 2.6 added 1 US TPCH substances and updated the phthalates restriction (see note 17) - table 2.8 & 2.9 added US TSCA substances - Note 17 added
Y	3 Aug, 2021	<ul style="list-style-type: none"> - 3.3 C. Asia Pacific: deleted GB18455-2001 & GB/T26125-2011; added GB/T 39560 series - 4. Definitions: banned substances – added “and/or specific regions” to the definition - Annex A1 – f) B (banned) – added “or prohibited for spec. applications and/or specific regions as indicated”. - Annex A2: <ul style="list-style-type: none"> - Table 2.4 added 3 new SVHC for Jul. 2021 - Note 1: added more clarification on the listed substances on Form 6097 - Note 11: updated Chinese standard GB 24477-2021
Z	14 Mar, 2022	<ul style="list-style-type: none"> - E. Industry Standards: deleted EN50581 as it was withdrawn on Nov. 18, 2021. - 5.8 B RoHS Recast: deleted reference to EN50581 - Annex A2 <ul style="list-style-type: none"> - Table 2.4 added 2 new SVHC for Jan. 2022 - Table 2.5 deleted entry 22 & 33 as they are already deleted from the official REACH Annex XVII List