

Date: 31. August 2018
 Revision: 2.81
 Product Total Mass [mg]: 227.50

Requestor: VLSI Solution Oy
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Supplier information: Doc C

Product Name: VS1005GF-Q and VS1205GF-Q (QFGN 88 RoHS, gold wire, Flash memory included (top die))

References of “Threshold level” columns:

1) Report the **biggest content rate** (ppm) of the substance at the **homogeneous material level**. **Optionally** also the total **weight** of the substance in the product.

Weight = total weight of the substance in the product.

Content rate [ppm] = Content rate of the substance in the homogeneous material that has the biggest ppm content of the substance.

Example: Lead (Pb) content in lead frame plating [ppm] = weight of lead (Pb) in leadframe [10⁻⁹ g] / weight of the leadframe [mg]

2) Report the total **weight** of the substance **in the product**. **Optionally** also **content rate** (ppm) of the substance at the product.

Weight = total weight of the substance in the product.

Content rate [ppm] = Content rate of the substance in the product.

Example: Bismuth weight = Sum of Bismuth weights in each homogeneous material.

3) Any content = Not contain obviously OR under quantitation limit of accurate analytical method.

NA) Not Applicable.

cust.A = Customer from Japan cust.B = Customer from USA

REACH (SVHC) pages are in the end of this document before the REVISION HISTORY.

Material and Substance Declaration (JIG-101 Ed 4.1 and IEC 62474) – page 1 of 6

21.1. 2014 the Consumer Electronics Association (CEA), DIGITALEUROPE, and the Japanese Green Procurement Survey Standardization Initiative (JGPSSI) announced that the International Electrotechnical Commission standard IEC 62474 (<http://std.iec.ch/iec62474>) is the recommended electrotechnical industry’s material declaration standard and will replace the Joint Industry Guide (JIG-101 Ed 4.1).

| Substance | R (Regulated) JIG Criteria 1 | Threshold Level – cust.A | Threshold Level – cust.B | Above threshold level ? | | | If yes (Y), detailed information of contained substances | | |
|------------------------------------------------------------------------|----------------------------------------------------------|--------------------------------------------------|--------------------------|-------------------------|--------------------|--------------------|----------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | | Level JIG (Y/N) | Level cust.A (Y/N) | Level cust.B (Y/N) | Weight [mg] | Content rate [ppm] | Additional information on material composition of products |
| Asbestos | Intentionally added (1) | Any content (1 and 3) | Any content (3) | N | N | N | | | See JIG-101 for detailed CAS#. Also CAS# 132207-32-0, 132207-33-1. |
| Certain azocolourants and azodyes (which form certain aromatic amines) | 30 ppm by weight of the finished textile/leather product | Intentionally Added or 30 ppm (1) | | N | N | N | | | Must be reported only if it is used for leather/fabric products and those parts where they are likely to result in prolong skin contact. 30 ppm in finished textile or leather articles |
| Cadmium/Cadmium compounds | 100 ppm (1) | 20 ppm (resin paint, ink pigment and dying) (1) | 5 ppm (1) | N | N | N | | | |
| | | 20 ppm lead free soldering (1) | | | N | | | | |
| | | 75 ppm metals except for lead free soldering (1) | | | N | | | | |
| | 5 ppm by weight of battery | Other materials: Any content (1 and 3) | | N | N | | | | |
| Hexavalent Chromium / Hexavalent Chromium Compounds | 1000 ppm (1) | 100 ppm Chromate plating (1) | | N | N | N | | | Hexavalent Chromium = Chromium VI, 2011/65/EU (EU/RoHS Directive and its amendments); China Management Measures on EIP Pollution Control; California Electronic Waste Recycling Act SB 20, amended by SB 50 and AB 575; Revised law for Promotion of Effective Utilization of Resources(JMoss); Candidate list for European REACH Regulation No. 1907/2006/EC |
| | | Other materials: Any content (1 and 3) | | | N | N | | | |
| Arsenic/Arsenic Compounds | see SVHC list | 1000 ppm (1) | Any content (3) | N | N | N | | | JIG: see Diarsenic Pentaoxide and Diarsenic Trioxide in SVHC list. |
| Fluorinated greenhouse gases | Intentionally added (1) | NA | Any content (3) | N | N | N | | | HFC and PFC. For JIG also SF6. See JIG-101 for detailed CAS-numbers. |

Material and Substance Declaration (JIG-101 Ed 4.1 and IEC 62474) – page 2 of 6

| Substance | R (Regulated) JIG Criteria 1 | Threshold Level – JIG | Threshold Level – cust.A | Threshold Level – cust.B | Above threshold level ? | | | If yes (Y), detailed information of contained substances | | |
|----------------------------------------------------------|------------------------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-------------------------|--------------------|--------------------|----------------------------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | | | Level JIG (Y/N) | Level cust.A (Y/N) | Level cust.B (Y/N) | Weight [mg] | Content rate [ppm] | Additional information on material composition of products |
| Formaldehyde CAS#50-0-0 (wooden materials and furniture) | Intentionally Added (1) Composite wood products or Components | | Aerial concentration: 0.1 ml/m3 (1) | Select 1 of following: concentration in the air OR perforator method OR Desiccators method. | N | N | N | | | cust.A = DE ChemVerbotsV, AT BGBl. Nr. 194/1990, SE KIFS 1998:8 (9, 20-27 §§) cust.B: Select 1 of following: concentration in the air: 0.1 ppm (EN 717-1:2004), or perforator method: 6.5 mg/100g particleboard, 7.0 mg/100g fiberboard (both average value during 6 months), 8.0 mg particle/fiberboard one time measurement based EN 120:1992. or Desiccators method: average content 0.5 mg/l, Maximum content 0.7 mg/l (use N = 2, JIS A 5905 (Fiberboards, JIS A 5908 Particleboards) |
| Formaldehyde CAS#50-0-0 | 75 ppm (2) Textiles | | | | N | N | N | | | |
| HBCDD | see SVHC list | see "Brominated Flame Retardants (other than PBBs or PBDEs)" | | | | | | | | |
| Lead/Lead Compounds | 90 ppm (1) paint or other coating of product for childrens | 100 ppm (1) resin paint, ink pigment and dyeing | 500 ppm solder (1) | | N | N | N | | | |
| | 0.01 mass%, products designed or intended primarily for children 12 years *) | 1000 ppm for soldering parts of purchasing pwd and components (1) | 100 ppm other materials (1) | | N | N | N | | | *)Products designed or intended primarily for children 12 years of age or younger (U.S. Consumer Product Safety Improvement Act as modified by 76 FR 44463) |
| | 40 ppm by weight of battery | 500 ppm lead free soldering except for above (1) | | | N | N | | | | |
| | 0.03 mass% of surface coating material | 500 ppm other metal materials (1) | | | N | N | | | | |
| | Cables/cords with thermoset or thermoplastic coatings | 800 ppm electroless nickel plating (1) | | | N | N | | | | |
| | 1000 ppm (1) Other | Other materials: Any content (1 and 3) | | | N | N | | | | |
| Mercury / Mercury compounds | 1000 ppm or Intentionally Added (1) | | | | N | N | N | | | |
| | Intentionally added or 1 ppm by weight of battery | 0.0005 mass% of total Hg in homogenous material of battery, see CA) | | | NA | NA | NA | | | CA) Canadian Products Containing Mercury Regulations (SOR/2014-254) |
| Nickel / Nickel Compounds | Intentionally added (1), if prolonged skin contact is expected. | 1000 ppm (1) | DIN EN1811: During the testing, flaked nickel should not exceed 0.5 ug/cm2/week | | NA | NA | NA | | | Use of nickel or nickel in components and parts designed to be located inside the outer enclosure of a product need not be reported. Cust.B = cust.C. |
| Ozone Depleting Substances – Class I (CFCs, HBFCs, etc.) | Intentionally added (1) | Any content (1 and 3) | Any content (3) | | N | N | N | | | |
| Ozone Depleting Substances – Class II (HCFCs) | Intentionally added (1) | 1000 ppm (1) | Any content (3) | | N | N | N | | | |
| Perchlorates | 6 x 10 ⁻⁷ mass% of battery or product part | NA | NA | | NA | NA | NA | | | California Assembly Bill No. 826 - Perchlorate Contamination Prevention Act; implemented July 1, 2006. The only known application in use today in electronic industry is coin cell batteries. |

Material and Substance Declaration (JIG-101 Ed 4.1 and IEC 62474) – page 3 of 6

| Substance | R (Regulated) JIG Criteria 1 | | | Above threshold level ? | | | If yes (Y), detailed information of contained substances | | |
|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------|--------------------|--------------------|----------------------------------------------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | | Level JIG (Y/N) | Level cust.A (Y/N) | Level cust.B (Y/N) | Weight [mg] | Content rate [ppm] | Additional information on material composition of products |
| Category Name | Threshold Level – JIG | Threshold Level – cust.A | Threshold Level – cust.B | | | | | | |
| Perfluorooctanesulfonic acid (PFOS) | Intentionally added (1) | 1 micrograms/m ² in textiles or coated materials. 0.1 weight% (1000ppm) in semi-finished products or articles. 0.005% (50ppm) as substance or constituent of preparations (1) | 0.1 wt%, textile or other coated materials 1 micrograms/m ² of coated materials. (1) | N | N | N | | | <p>cust. A = EU 76/769/EEC, 30. amendment, Annex I, No. 52 Exemptions of use (only for cust. A and cust. B): a) photoresists or anti reflective coatings for photolithography processes b) photographic coatings applied to films, papers, or printing plates, c) mist suppressants for non-decorative hard chromium (VI) plating and wetting agents for use in controlled electroplating systems. PFOS substances, list may not include all variations: US EPA Significant New Use Rule 1: http://www.epa.gov/EPA-TOX/2002/December/Day-09/t31011.htm US EPA Significant New Use Rule 2 (which also include some PFAS molecules): http://www.epa.gov/EPA-TOX/2007/October/Day-09/t19828.htm</p> |
| Perfluorooctanoic acid (PFOA) and individual salts and esters of PFOA | Intentionally added (1) or 1 microgram/m ² (as the sum of PFOA). Textiles, photographic coatings applied to films, paper or printing plates and other coated consumer products. | Intentionally added (1) or 0.1 mass% of the part (as the sum of PFOA). All except textiles, photographic coatings applied to films, paper or printing plates and other coated consumer products. | NA | N | N | N | | | CAS# 335-67-1, 3825-26-1, 335-95-5, 2395-00-8, 335-93-3, 335-66-0, 376-27-2 and 3108-24-5. IEC 62474 (Norwegian products regulation Section 2-32). |
| Phenol,2-(2H-benzotriazol-2-yl)-4,6-bis(1, 1-dimethylethyl) | Intentionally added (1) | NA | NA | N | N | N | | | CAS# 3846-71-7, Japan (Law Concerning the Examination and Regulation of Manufacture) |
| Phthalates | 1000 ppm (2) | 1000 ppm (1) | Any content (3) | N | N | N | | | CAS# 117-81-7, CAS# 84-74-2, CAS# 85-68-7 |
| Phthalates | 1000 ppm of plasticized material (childrens toy that can be placed in a child's mouth or child care article) | 1000 ppm (1) | Any content (3) | N | N | N | | | CAS# 28553-12-0 and CAS# 68515-48-0 (Diisononyl phthalate (DINP)), CAS# 26761-40-0 and CAS# 68515-49-1 (Di-isodecyl phthalate (DIDP)), CAS# 117-84-0 for cust A. and cust. B also DnHP CAS# 84-75-3 |
| Polybrominated Biphenyls (PBBs) | 1000 ppm (1) | Any content (1 and 3) | Any content (3) | N | N | N | | | Also monobromodiphenyl (C12 H9 Br) included. |
| Polybrominated Diphenylethers (PBDEs) | 1000 ppm (1) | Any content (1 and 3) | Any content (3) | N | N | N | | | JIG includes also DecaBDE CAS# 1163-19-5, see detailed list in JIG-101. |
| Deca-Bromodiphenylether (Deca-BDE) (PBDE) | Intentionally added (1) TV and computer housings | NA | NA | N | N | N | | | JIG: TV and computer housings have lower Deca-BDE threshold level. |
| Polychlorinated Biphenyls (PCBs) and specific substitutes | Intentionally added (1) | Any content (1 and 3) | Any content (3) | N | N | N | | | The Law concerning the Examination and Regulation of Manufacture etc. of Chemical Substances (Class 1 chemical substances: Japanese law - PCBs only); Regulation (EC) No 850/2004; US Toxic Substance Control Act (TSCA) |
| Polychlorinated Terphenyls (PCTs) | 0.005% by weight (50 ppm) in material | NA | Any content (3) | N | N | N | | | |
| Polychlorinated Naphthalenes (> 3 chlorine atoms) | Intentionally added (1) | Any content (1 and 3) | Any content (3) | N | N | N | | | |
| Radioactive Substances | Intentionally added (1) | 1000 ppm (1) | Any content (3) | N | N | N | | | |

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| Substance | R (Regulated) JIG Criteria 1 | Threshold Level – cust.A | Threshold Level – cust.B | Above threshold level ? | | | If yes (Y), detailed information of contained substances | | |
|----------------------------------------------------------------|----------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------|-------------------------|--------------------|--------------------|----------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | | Level JIG (Y/N) | Level cust.A (Y/N) | Level cust.B (Y/N) | Weight [mg] | Content rate [ppm] | Additional information on material composition of products |
| Category Name | Threshold Level – JIG | Threshold Level – cust.A | Threshold Level – cust.B | Level JIG (Y/N) | Level cust.A (Y/N) | Level cust.B (Y/N) | Weight [mg] | Content rate [ppm] | Additional information on material composition of products |
| Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins) | Intentionally added or 0.1 mass % | Any content (1 and 3) | Any content (3) | N | N | N | | | SCCP, CAS# 85535-84-8, 108171-26-2, 71011-12-6, 61788-76-9. Candidate list for European REACH Regulation No. 1907/2006/EC; (EC) 850/2004(POPs regulation); Norway Product Regulations FOR-2004-06-01-922; Swiss Ordinance on Reduction of Risk from Chemical Products. |
| Certain Tributyl Tin (TBT) and Triphenyl Tin (TPT) compounds | Intentionally added (1) | Any content (1 and 3) | Any content (3) | N | N | N | | | Also Tributyl tin bromide (CAS# 1461-23-0), Triphenyl tin (CAS# 668-34-8), Triphenyl tin bromide (C6 H5)3 Sn Br and Mixture of tributyl tin cyclopentanecarboxylate and its analogs (Tributyl tin naphthenate, CAS# 85409-17-12). |
| Tributyl Tin Oxide (TBTO) | 1000 ppm or Intentionally Added (2) | Any content (1 and 3) | NA | N | N | N (3) | | | |
| Antimony/Antimony Compounds | NA | 1000 ppm (1) | NA | N | N | N (3) | | | |
| Beryllium/Beryllium Compounds (JIG: only Beryllium Oxide) | 1000 ppm (2) criteria 3 – I (for information only) | 1000 ppm (1) | Any content (3) | N | N | N | | | For JIG: reportable applications: ceramics |
| Bismuth/Bismuth Compounds | NA | 1000 ppm (1) | NA | N | N | N (3) | | | |
| Brominated Flame Retardants (other than PBBs or PBDEs) | 1000 ppm (2) criteria 3 – I (for information only) | 1000 ppm (1) | 1000 ppm (1) | N | N | N | | | cust.B: TBBP-A-bis (CAS# 21850-44-2), JIG: (other than PBBs or PBDEs or Hexabromocyclododecane(HBCDD)) JS709, 0.1% total bromine content by weight (1 000 ppm) in the plastic material, see Annex B of JIG-101 for detailed Substance Lists with CAS Numbers and/or EC Numbers. |
| Brominated flame retardants (other than PBBs, PBDEs, or HBCDD) | Industry Standards IEC 61249-2-21 and IPC-4101 | 0.09 mass% total bromine content in laminate. Criteria 3 – I (for information only) | NA | N | N | N | | | A printed wiring board laminate refers to the layered board materials excluding surface finishes and components whereas a printed wiring board assembly refers to an assembly that uses a printed wiring board laminate for component mounting and interconnecting purposes. |
| Selenium/Selenium Compounds | NA | 1000 ppm (1) | NA | N | N | N (3) | | | |
| Polyvinyl Chloride (PVC) and PVC Copolymers | 1000 ppm (2) criteria 3 – I (for information only) | 1000 ppm (1) | Any content (3) | N | N | N | | | JS709, 0.1% total chlorine content by weight (1 000 ppm) in the plastic material. See Annex B of JIG-101 for detailed Substance Lists with CAS Numbers and/or EC Numbers. |
| Tris (2-chloroethyl) phosphate (TCEP) | 1000 ppm (2) criteria 2 – A (for Assessment only) | NA | NA | N | N | N | | | CAS# 115-96-8, requirement from ECHA Registry of Intentions |
| Dibutyltin (DBT) compounds | 0.1 % by weight (1000 ppm) of tin in a material *) | NA | NA | N | N | N | | | *) Commission Regulation (EU) No 276/2010 defines a concentration limit of 0.1% by weight of tin in the article or part thereof. Likewise Commission Decision 2009/251/EC defines a concentration limit of 0.00001% by weight of DMF in the product or part of the product and Commission Regulation (EC) No 552/2009 defines a concentration limit of 0.1% by weight of PFOS in the semifinished product or article or part thereof. Because no legal definition of part is provided in these legislations, the most potentially restrictive concentration limit is not adequately specified. Therefore, the concentration limit is applied at the level of a material vs. a part to ensure disclosure of the regulated substances for the most basic unit of a part. |

Material and Substance Declaration (JIG-101 Ed 4.1 and IEC 62474) – page 5 of 6

| Substance | Threshold Level – JIG | Threshold Level – cust.A | Threshold Level – cust.B | Above threshold level ? | | | If yes (Y), detailed information of contained substances | | |
|-----------------------------------------|------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------------|--------------------|--------------------|----------------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | | Level JIG (Y/N) | Level cust.A (Y/N) | Level cust.B (Y/N) | Weight [mg] | Content rate [ppm] | Additional information on material composition of products |
| Diocyltin (DOT) compounds | 0.1 % by weight (1000 ppm) of tin in a material *) | NA | NA | N | N | N | | | ANNEX XVII of REACH Regulation (EC) No 1907/2006 and Commission Regulation (EU) No 276/2010 |
| Tri-substituted organostannic compounds | Intentionally added (1) or 0.1 % by weight (1000 ppm) of tin in a material *) | NA | NA | N | N | N | | | ANNEX XVII of REACH Regulation (EC) No 1907/2006 and Commission Regulation (EU) No 276/2010; Japan Law concerning the evaluation of chemical substances Norwegian product regulation |
| Chlorinated flame retardants (CFR) | IPC-4101 and IEC 61249-2-21 | 0.09 mass% total chlorine content in laminate (Printed Wiring Board (PWB) Laminates). Criteria 3 - I (for information only) | NA | N | N | N | | | A printed wiring board laminate refers to the layered board materials excluding surface finishing and components. See IEC 62474 Reference Substance worksheet for more details (CAS Numbers and/or EC Numbers, etc.). |
| Chlorinated flame retardants (CFR) | 0.1% total chlorine content by weight (1 000 ppm) in the plastic material – I (for information only) | NA | NA | N | N | N | | | JS709, see Annex B of JIG-101 for detailed Substance Lists with CAS Numbers and/or EC Numbers. |
| Benzo[a]pyrene | IEC 62474 date 24.9.2014 | 0.0001 mass% of the plastic or rubber part | NA | N | N | N | | | CAS# 50-32-8. Rubber or plastic parts that come into direct, prolonged or repetitive skin or oral cavity contact except those for toys or childcare articles. This declarable substance is a polycyclic aromatic hydrocarbon (PAH). ANNEX XVII of REACH Regulation (EC) No 1907/2006 and Commission Regulation (EU) No 1272/2013 |
| Benzo[e]pyrene | IEC 62474 date 24.9.2014 | 0.0001 mass% of the plastic or rubber part | NA | N | N | N | | | CAS#192-97-2 . See description above (Rubber orskin or oral...) |
| Benzo[a]anthracene | IEC 62474 date 24.9.2014 | 0.0001 mass% of the plastic or rubber part | NA | N | N | N | | | CAS# 56-55-3. IUPAC names: Benz(a)anthracene, benzo[a]anthracene, Benz[a]anthracene, tetraphene. Member of Polycyclic-aromatic hydrocarbons (PAH) group. See description above (Rubber orskin or oral...) |
| Chrysen, other name: Chrysene (CHR) | IEC 62474 date 24.9.2014 | 0.0001 mass% of the plastic or rubber part | NA | N | N | N | | | CAS# 218-01-9. IUPAC names: 1,2,5,6-Dibenzonaphthalen, Benzo[a]phenanthrene, Chrysene. Member of Polycyclic-aromatic hydrocarbons (PAH). See description above (Rubber orskin or oral...) |
| Benzo[b]fluoranthene | IEC 62474 date 24.9.2014 | 0.0001 mass% of the plastic or rubber part | NA | N | N | N | | | CAS# 205-99-2. See description above (Rubber orskin or oral...) |
| Benzo[j]fluoranthene | IEC 62474 date 24.9.2014 | 0.0001 mass% of the plastic or rubber part | NA | N | N | N | | | CAS# 205-82-3. See description above (Rubber orskin or oral...) |
| Benzo[k]fluoranthene | IEC 62474 date 24.9.2014 | 0.0001 mass% of the plastic or rubber part | NA | N | N | N | | | CAS# 207-08-9. See description above (Rubber orskin or oral...) |
| Dibenzo[a,h]anthracene | IEC 62474 date 24.9.2014 | 0.0001 mass% of the plastic or rubber part | NA | N | N | N | | | CAS# 53-70-3. See description above (Rubber orskin or oral...) |

Material and Substance Declaration (JIG-101 Ed 4.1 and IEC 62474) – page 6 of 6

| Substance | Threshold Level – JIG | Threshold Level – cust.A | Threshold Level – cust.B | Above threshold level ? | | | If yes (Y), detailed information of contained substances | | |
|-----------------------------------------------------------------------------------|--------------------------|---------------------------------------------------|--------------------------|-------------------------|--------------------|--------------------|----------------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | | Level JIG (Y/N) | Level cust.A (Y/N) | Level cust.B (Y/N) | Weight [mg] | Content rate [ppm] | Additional information on material composition of products |
| Benzo[a]pyrene | IEC 62474 date 24.9.2014 | 0.00005 mass% of the plastic or rubber part | NA | N | N | N | | | CAS# 50-32-8. Rubber or plastic parts of toys and childcare articles that come into direct, prolonged or repetitive skin or oral cavity contact. This declarable substance is a polycyclic aromatic hydrocarbon (PAH). ANNEX XVII of REACH Regulation (EC) No 1907/2006 and Commission Regulation (EU) No 1272/2013. |
| Benzo[e]pyrene | IEC 62474 date 24.9.2014 | 0.00005 mass% of the plastic or rubber part | NA | N | N | N | | | CAS# 192-97-2. See description above (Rubber orchildcare...skin or oral...) |
| Benzo[a]anthracene | IEC 62474 date 24.9.2014 | 0.00005 mass% of the plastic or rubber part | NA | N | N | N | | | CAS# 56-55-3. See descriptions above (Rubber orchildcare...skin or oral...) |
| Chrysen, other name: Chrysene (CHR) | IEC 62474 date 24.9.2014 | 0.00005 mass% of the plastic or rubber part | NA | N | N | N | | | CAS# 218-01-9. See descriptions above (Rubber orchildcare...skin or oral...) |
| Benzo[b]fluoranthene | IEC 62474 date 24.9.2014 | 0.00005 mass% of the plastic or rubber part | NA | N | N | N | | | CAS# 205-99-2. See description above (Rubber orchildcare...skin or oral...) |
| Benzo[j]fluoranthene | IEC 62474 date 24.9.2014 | 0.00005 mass% of the plastic or rubber part | NA | N | N | N | | | CAS# 205-82-3. See description above (Rubber orchildcare...skin or oral...) |
| Benzo[k]fluoranthene | IEC 62474 date 24.9.2014 | 0.00005 mass% of the plastic or rubber part | NA | N | N | N | | | CAS# 207-08-9. See description above (Rubber orchildcare...skin or oral...) |
| Dibenzo[a,h]anthracene | IEC 62474 date 24.9.2014 | 0.00005 mass% of the plastic or rubber part | NA | N | N | N | | | CAS# 53-70-3. See description above (Rubber orchildcare...skin or oral...) |
| Benzenamine, N-phenyl-, reaction products with styrene and 2,4,4-trimethylpentene | IEC 62474 date 8.4.2015 | Intentionally added. Reportable applications: All | NA | N | N | N | | | CAS# 68921-45-9. Typical applications: Lubricating agent in motors, storage drives; lubricant additive (antioxidant/corrosion inhibitor/tarnish inhibitor/scavenger/antiscaling agent), mould release agent; organic chemical for industrial use. Prohibition of Certain Toxic Substances Regulations, 2012, CANADA |

See also SVHC list in the end of this document!

Additional Material and Substance Declarations:

| Substance | Threshold Level | Threshold Level – cust.B | Above threshold level ? | | If yes (Y), detailed information of contained substances | | |
|----------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------------|-------------------------|--------------------|----------------------------------------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | Level (Y/N) | Level cust.B (Y/N) | Weight [mg] | Content rate [ppm] | Additional information on material composition of products |
| Cobalt Chloride | 0.01 weight% (100 ppm) (1) | NA | N | N | | | As for the service parts, the professional products, and the transportation parts, when the content exceeds 100ppm to less than 10000ppm display the text "Restricted to professional user" to the cobalt chloride inclusion quality wrapping. Directives of EU: 2003/34/EC, 98/98/EC and 2004/73/EC. |
| Phthalate esters | 1000 ppm (1) | Any content (3) | N | N | | | See also "Phthalates" in previous table of this document. |
| Mirex (Perchlordecone) | Intentionally added (1) | Any content (3) | N | N | | | CAS# 2385-85-5. Prohibition of Certain Toxic Substances Regulations, 2005 (SOR/SOR/2005-41. Published in Canada Gazette Part II, 2006-11-29 Vol. 140, No. 24 |
| Hydrofluorocarbon (HFC), Perfluorocarbon (PFC) | Any content (3) | Any content (3) | N | N | | | |
| Halogen-Bromine (Br) | | >900 ppm (1) | N | N | | | IEC 61249-2-21:2003 |
| Halogen-Chlorine (Cl) | | >900 ppm (1) | N | N | | | IEC 61249-2-21:2003 |
| Total Halogen Br + Cl | | >1500 ppm (1) | N | N | | | IEC 61249-2-21:2003 |
| Halogenated aromatic substances | | 500 ppm for mono- or 50 ppm for poly-halogenated aromatic substances. | N | N | | | |
| Halogenated diphenyl methanes | Any content (3) | Any content (3) | N | N | | | JIG-101 (PCB+PCT) includes CAS# 76253-60-6, CAS# 99688-47-8 and Ugilec121, Ugilec 21. |
| Brominated dioxins/furans and Chlorinated dioxins/furans | 10 ppb (1) | Any content (3) | N | N | | | ChemVerbotsV, information source "2008 GADSL Version 2.0" |
| Specific benzotriazole | Any content (3) | Any content (3) | N | N | | | Japan, Law Concerning the Examination and Regulation of Manufacture of Chemical Substances, Class I. |
| Organic tin compounds (excluding TBT, TPT, TBTO) | 1000 ppm (1) also JIG criteria 1 R. | NA | N | N | | | Including Dibutyltin compounds. See also TBT, TPT and TBTO in one of the previous tables of this document. |
| Certain Glycol Ethers see list in the end of this doc | use in manufacture of semiconductors, 1000 ppm (1) | 5 ppm (1) | N | N | | | EU-D 67/548/EEC, information source "2008 GADSL Version 2.0" |
| Dimethyl Fumarate (DMF) | JIG criteria 1 R: 0.00001% by weight (0.1 ppm) in a material *) | NA | N | N | | | CAS# 624-49-7. COMMISSION DECISION 2009/251/EC. note *) for Dibutyltin (DBT) compounds applies also for DMF. |
| Red phosphorous | Intentionally added (1) | 1000 ppm (1) | N | N | | | Red phosphorous CAS 7723-14-0 should not be used to substitute Brominated Flame Retardants due to historical industry experience with reliability concerns. |

Semiconductor industry voluntary banned the use of certain ethylene glycol ethers in manufacture of semiconductors.

| Certain Glycol Ethers | CAS Numbers |
|--------------------------------------------------------|-------------|
| 2-Ethoxyethanol (or Ethylene glycol monoethyl ether) | 110-80-5 |
| 2-Ethoxyethyl acetate | 111-15-9 |
| 2-Methoxyethanol (or Ethylene glycol monomethyl ether) | 109-86-4 |
| 2-Methoxyethyl acetate | 110-49-6 |
| Diethylene glycol dimethyl ether | 111-96-6 |

REACH List of Substances of Very High Concern (SVHC) – page 1 of 11
<https://echa.europa.eu/candidate-list-table>

Number of substances on the Candidate List: 191 (last updated: 27.06. 2018)

| Substance | Threshold Level | Above threshold level ? Y / N | If yes (Y), detailed information of contained substances | | |
|--------------------------------------------------------------------------|-----------------------------------------------------------------------|-------------------------------|----------------------------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | Weight [mg] | Content rate [ppm] | Additional information on material composition of products |
| Triethyl arsenate | 0.1 % Weight (2) | N | | | EC Number: 427-700-2, CAS Number: 15606-95-8. Article 57(a) of Regulation (EC) 1907/2006 (REACH). |
| Anthracene | 0.1 % Weight (2) | N | | | EC Number: 204-371-1 CAS Number: 120-12-7. PBT substance according to Article 57 (d) of Regulation (EC) No 1907/2006 (REACH). |
| 4,4'-Diaminodiphenylmethane (MDA) | 0.1 % Weight (2) | N | | | EC Number: 202-974-4 CAS number: 101-77-9. Article 57(a) of Regulation (EC) 1907/2006 (REACH). |
| Dibutyl phthalate (DBP) | 0.1 % Weight (1) (IEC 62474, 2015-12-17) | N | | | EC Number: 201-557-4 CAS number: 84-74-2. Article 57 (c) of Regulation (EC) 1907/2006 (REACH). |
| Cobalt dichloride | 0.1 % Weight (2) (also JIG criteria 1 R) | N | | | EC number: 231-589-4 CAS number: 7646-79-9. Carcinogenic and toxic for reproduction (articles 57 a and 57 c) |
| Diarsenic Pentaoxide | 0.1 % Weight (2) (also JIG criteria 1 R) | N | | | EC Number: 215-116-9 CAS number: 1303-28-2. Article 57 (a) of Regulation (EC) No 1907/2006 (REACH). |
| Diarsenic Trioxide | 0.1 % Weight (2) (also JIG criteria 1 R) | N | | | EC Number: 215-481-4 CAS number: 1327-53-3. Article 57 (a) of Regulation (EC) No 1907/2006 (REACH). |
| Sodium dichromate | 0.1 % Weight (2) | N | | | EC number: 234-190-3 CAS number: 10588-01-9 (anhydrous) 7789-12-0 (dihydrate). Article 57(a), (b) and (c) of Regulation (EC) 1907/2006 (REACH). |
| 5-tert-butyl – 2,4,6 – trinitro-m-xylene (musk xylene) | 0.1 % Weight (2) | N | | | EC Number: 201-329-4 CAS number: 81-15-2. Article 57(e) of Regulation (EC) No 1907/2006 (REACH). |
| Bis(2-ethylhexyl)phthalate (DEHP) | 0.1 % Weight (1) (IEC 62474, 2015-12-17) | N | | | EC Number: 204-211-0 CAS number: 117-81-7. Article 57 (c) of Regulation (EC) 1907/2006 (REACH). Equivalent level of concern having probable serious effects to the environment (Article 57 f); Toxic for reproduction (article 57c) (REACH updated 2014/12/17). |
| Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified | 0.1 % Weight (2), IEC 62474: Intentionally added or 0.01 % Weight (2) | N | | | EC Number: 221-695-9, 247-148-4 CAS number: 3194-55-6, 25637-99-4 Names of the major diastereoisomers identified: alpha-hexabromocyclododecane CAS No 134237-50-6 beta-hexabromocyclododecane CAS No 134237-51-7 gamma-hexabromocyclododecane CAS No 134237-52-8. Article 57 (d) of Regulation (EC) No 1907/2006 (REACH). |
| Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins) | 0.1 % Weight (2) | N | | | EC Number: 287-476-5 CAS number: 85535-84-8. Article 57 (d and e) of Regulation (EC) No 1907/2006 (REACH). |
| Bis(tributyltin) oxide (TBTO) | 0.1 % Weight (2) | N | | | EC Number: 200-268-0 CAS number: 56-35-9. Article 57 (d) of Regulation (EC) No 1907/2006 (REACH). |
| Lead hydrogen arsenate | 0.1 % Weight (2) | N | | | EC Number: 232-064-2 CAS number: 7784-40-9. Article 57 (a and c) of Regulation (EC) No 1907/2006 (REACH). |
| Benzyl butyl phthalate (BBP) | 0.1 % Weight (1) (IEC 62474, 2015-12-17) | N | | | EC Number: 201-622-7 CAS number: 85-68-7. Article 57 (c) of Regulation (EC) 1907/2006 (REACH). |
| 2,4-Dinitrotoluene | 0.1 % Weight (2) | N | | | EC number: 204-450-0 CAS# 121-14-2, Carcinogenic (article 57a) |
| Aluminosilicate Refractory Ceramic Fibres | 0.1 % Weight (2) (also JIG criteria 1 R) | N | | | Carcinogenic (article 57a). Aluminosilicate Refractory Ceramic Fibres are fibres covered by index number 650-017-00-8 in Annex VI, part 3, table 3.1 of Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, and fulfil the three following conditions: a) oxides of aluminium and silicon are the main components present (in the fibres) within variable concentration ranges b) fibres have a length weighted geometric mean diameter less two standard geometric errors of 6 or less micrometres (µm) c) alkaline oxide and alkali earth oxide (Na ₂ O+K ₂ O+CaO+MgO+BaO) content less or equal to 18% by weight. |

REACH List of Substances of Very High Concern (SVHC) – page 2 of 11

| Substance | Threshold Level | Above threshold level ? Y / N | If yes (Y), detailed information of contained substances | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------|----------------------------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | Weight [mg] | Content rate [ppm] | Additional information on material composition of products |
| Anthracene oil | 0.1 % Weight (2) | N | | | EC number: 292-602-7 CAS# 90640-80-5. Carcinogenic (see Detail 1) below), PBT and vPvB (articles 57a, 57d and 57e). |
| Anthracene oil, anthracene-low | 0.1 % Weight (2) | N | | | EC number:292-604-8 CAS# 90640-82-7. Carcinogenic (see Detail 2), mutagenic (see Detail 3 below), PBT and vPvB (articles 57a, 57b, 57d and 57e) |
| Anthracene oil, anthracene paste | 0.1 % Weight (2) | N | | | EC number:292-603-2 CAS# 90640-81-6. Carcinogenic (see Detail 2), mutagenic (see Detail 3 below), PBT and vPvB (articles 57a, 57b, 57d and 57e) |
| Anthracene oil, anthracene paste, anthracene fraction | 0.1 % Weight (2) | N | | | EC number: 295-275-9 CAS# 91995-15-2. Carcinogenic (see Detail 2), mutagenic (see Detail 3 below), PBT and vPvB (articles 57a, 57b, 57d and 57e) |
| Anthracene oil, anthracene paste, distn. Lights | 0.1 % Weight (2) | N | | | EC number: 295-278-5 CAS#91995-17-4. Carcinogenic (see Detail 2), mutagenic (see Detail 3 below), PBT and vPvB (articles 57a, 57b, 57d and 57e) |
| Detail 1) The substance does not meet the criteria for identification as a carcinogen in situations where it contains less than 0.005 % (w/w) benzo[a]pyrene (EINECS No 200-028-5) | | | | | |
| Detail 2) The substance does not meet the criteria for identification as a carcinogen in situations where it contains less than 0.005 % (w/w) benzo[a]pyrene (EINECS No 200-028-5) and less than 0,1 % w/w benzene (EINECS No 200-753-7). | | | | | |
| Detail 3) The substance does not meet the criteria for identification as a mutagen in situations where it contains less than 0,1 % w/w benzene (EINECS No 200-753-7). | | | | | |
| Diisobutyl phthalate (DIBP) | 0.1 % Weight (1) (IEC 62474, 2015-12-17) | N | | | EC number: 201-553-2 CAS# 84-69-5. Toxic for reproduction (article 57c) |
| Lead chromate | 0.1 % Weight (2) (also JIG criteria 1 R) | N | | | EC number: 231-846-0 CAS# 7758-97-6. Carcinogenic and toxic for reproduction (articles 57a and c) |
| Lead chromate molybdate sulphate red (C.I. Pigment Red 104) | 0.1 % Weight (2) (also JIG criteria 1 R) | N | | | EC number: 235-759-9 CAS# 12656-85-8. Carcinogenic and toxic for reproduction (articles 57a and c) |
| Lead sulfochromate yellow (C.I. Pigment Yellow 34) | 0.1 % Weight (2) (also JIG criteria 1 R) | N | | | EC number: 215-693-7 CAS# 1344-37-2. Carcinogenic and toxic for reproduction (articles 57a and c) |
| Pitch, coal tar, high temp. | 0.1 % Weight (2) | N | | | EC number: 266-028-2 CAS# 65996-93-2. Carcinogenic, PBT and vPvB (articles 57a, 57d and 57e) |
| Tris(2-chloroethyl)phosphate | 0.1 % Weight (2) | N | | | EC number: 204-118-5 CAS# 115-96-8. Toxic for reproduction (article 57c) |
| Zirconia Aluminosilicate Refractory Ceramic Fibres | 0.1 % Weight (2) (also JIG criteria 1 R) | N | | | Zirconia Aluminosilicate Refractory Ceramic Fibres - are fibres covered by index number 650-017-00-8 in Annex VI, part 3, table 3.1 of Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, and fulfil the three following conditions: a) oxides of aluminium, silicon and zirconium are the main components present (in the fibres) within variable concentration ranges b) fibres have a length weighted geometric mean diameter less two standard geometric errors of 6 or less micrometres (µm). c) alkaline oxide and alkali earth oxide (Na ₂ O+K ₂ O+CaO+MgO+BaO) content less or equal to 18% by weight . Carcinogenic (article 57 a) |
| Acrylamide | 0.1 % Weight (2) | N | | | EC number: 201-173-7 CAS# 79-06-1. Carcinogenic and mutagenic (articles 57 a and 57 b) |
| Trichloroethylene | 0.1 % Weight (2) | N | | | EC number: 201-167-4 CAS# 79-01-6. Carcinogenic (article 57 a) |
| Boric acid | 0.1 % Weight (2) (also JIG criteria 1 R) | N | | | EC number: 233-139-2 / 234-343-4 CAS# 10043-35-3 / 11113-50-1. Toxic for reproduction (article 57 c) |
| Disodium tetraborate, anhydrous | 0.1 % Weight (2) (also JIG criteria 1 R) | N | | | EC number: 215-540-4 CAS#1303-96-4/ 1330-43-4/ 12179-04-3. Toxic for reproduction (article 57 c) |
| Tetraboron disodium heptaoxide, hydrate | 0.1 % Weight (2) (also JIG criteria 1 R) | N | | | EC number: 235-541-3 CAS# 12267-73-1. Toxic for reproduction (article 57 c) |
| Potassium dichromate | 0.1 % Weight (2) | N | | | EC number: 231-906-6 CAS# 7778-50-9. Carcinogenic, mutagenic and toxic for reproduction (articles 57 a, 57 b and 57 c) |

REACH List of Substances of Very High Concern (SVHC) – page 3 of 11

| Substance | Threshold Level | Above threshold level ? Y / N | If yes (Y), detailed information of contained substances | | |
|-------------------------------------------------------------------------------------|----------------------------------------|-------------------------------|----------------------------------------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| | | | Weight [mg] | Content rate [ppm] | Additional information on material composition of products |
| Ammonium dichromate | 0.1 % Weight (2) | N | | | EC number: 232-143-1 CAS# 7789-09-5. Carcinogenic, mutagenic and toxic for reproduction (articles 57 a, 57 b and 57 c) |
| Potassium chromate | 0.1 % Weight (2) | N | | | EC number: 232-140-5 CAS# 7789-00-6. Carcinogenic and mutagenic (articles 57 a and 57 b). |
| Sodium chromate | 0.1 % Weight (2) | N | | | EC number: 231-889-5 CAS# 7775-11-3. Carcinogenic, mutagenic and toxic for reproduction (articles 57 a, 57 b and 57 c) |
| Cobalt(II) sulphate | 0.1 % Weight (2) | N | | | EC number: 233-334-2 CAS# 10124-43-3. Carcinogenic and toxic for reproduction (articles 57 a and 57 c) |
| Cobalt(II) dinitrate | 0.1 % Weight (2) | N | | | EC number: 233-402-1 CAS# 10141-05-6 . Carcinogenic and toxic for reproduction (articles 57 a and 57 c) |
| Cobalt(II) carbonate | 0.1 % Weight (2) | N | | | EC number: 208-169-4 CAS# 513-79-1. Carcinogenic and toxic for reproduction (articles 57 a and 57 c) |
| Cobalt(II) diacetate | 0.1 % Weight (2) | N | | | EC number: 200-755-8 CAS# 71-48-7. Carcinogenic and toxic for reproduction (articles 57 a and 57 c) |
| 2-Methoxyethanol | 0.1 % Weight (2) | N | | | EC number: 203-713-7 CAS# 109-86-4. Toxic for reproduction (article 57c) |
| 2-Ethoxyethanol | 0.1 % Weight (2) | N | | | EC number: 203-804-1 CAS# 110-80-5. Toxic for reproduction (article 57c) |
| Chromium trioxide | 0.1 % Weight (2) | N | | | EC number: 215-607-8 CAS# 1333-82-0. Carcinogenic and mutagenic (articles 57 a and 57 b) |
| a) Chromic acid, b) Oligomers of chromic acid and dichromic acid, c) Dichromic acid | 0.1 % Weight (2) | N | | | EC number: a) 231-801-5 b) - c) 236-881-5 CAS# a) 7738-94-5 b) – c) 13530-68-2. Carcinogenic (article 57a) |
| 2-Ethoxyethyl acetate | 0.1 % Weight (2) | N | | | EC Number: 203-839-2 CAS number: 111-15-9. Toxic for reproduction (article 57c) |
| Strontium chromate | 0.1 % Weight (2) | N | | | EC Number: 232-142-6 CAS number: 7789-06-2. Carcinogenic (article 57a) |
| 1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP) | 0.1 % Weight (2) (also JIG criteria A) | N | | | EC Number: 271-084-6 CAS number: 68515-42-4. Toxic for reproduction (article 57c) |
| Hydrazine | 0.1 % Weight (2) | N | | | EC Number: 206-114-9 CAS number: 302-01-2 / 7803-57-8. Carcinogenic (article 57a) |
| 1-Methyl-2-pyrrolidone | 0.1 % Weight (2) | N | | | EC Number: 212-828-1 CAS number: 872-50-4. Toxic for reproduction (article 57c) |
| 1,2,3-Trichloropropane | 0.1 % Weight (2) | N | | | EC Number: 202-486-1 CAS number: 96-18-4. Carcinogenic and toxic for reproduction (articles 57 a and 57 c). |
| 1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP) | 0.1 % Weight (2) (also JIG criteria A) | N | | | EC Number: 276-158-1 CAS number: 71888-89-6. Toxic for reproduction (article 57c) |
| 4-(1,1,3,3-tetramethylbutyl)phenol | 0.1 % Weight (2) | N | | | EC Number: 205-426-2, CAS number: 140-66-9, Equivalent level of concern having probable serious effects to the environment (article 57 f) |
| N,N-dimethylacetamide | 0.1 % Weight (2) | N | | | EC Number: 204-826-4, CAS number: 127-19-5, Toxic for reproduction (article 57 c) |
| Phenolphthalein | 0.1 % Weight (2) | N | | | EC Number: 201-004-7, CAS number: 77-09-8, Carcinogenic (article 57 a) |
| Lead diazide, Lead azide | 0.1 % Weight (2) | N | | | EC Number: 236-542-1, CAS number: 13424-46-9, Toxic for reproduction (article 57 c), |
| Lead dipicrate | 0.1 % Weight (2) | N | | | EC Number: 229-335-2, CAS number: 6477-64-1, Toxic for reproduction (article 57 c) |
| 1,2-dichloroethane | 0.1 % Weight (2) | N | | | EC Number: 203-458-1, CAS number: 107-06-2, Carcinogenic (article 57 a) |
| Calcium arsenate | 0.1 % Weight (2) | N | | | EC Number: 231-904-5, CAS number: 7778-44-1, Carcinogenic (article 57 a) |
| Dichromium tris(chromate) | 0.1 % Weight (2) | N | | | EC Number: 246-356-2, CAS number: 24613-89-6, Carcinogenic (article 57 a) |
| 2-Methoxyaniline; o-Anisidine | 0.1 % Weight (2) | N | | | EC Number: 201-963-1, CAS number: 90-04-0, Carcinogenic (article 57 a) |

REACH List of Substances of Very High Concern (SVHC) – page 4 of 11

| Substance | Threshold Level | Above threshold level ? Y / N | If yes (Y), detailed information of contained substances | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------------------|----------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------|
| | | | Weight [mg] | Content rate [ppm] | Additional information on material composition of products |
| Pentazinc chromate octahydroxide | 0.1 % Weight (2) | N | | | EC Number: 256-418-0, CAS number: 49663-84-5, Carcinogenic (article 57 a) |
| Arsenic acid | 0.1 % Weight (2) | N | | | EC Number: 231-901-9, CAS number: 7778-39-4, Carcinogenic (article 57 a) |
| Potassium hydroxyoctaoxodizincate-dichromate | 0.1 % Weight (2) | N | | | EC Number: 234-329-8, CAS number: 11103-86-9, Carcinogenic (article 57 a) |
| Formaldehyde, oligomeric reaction products with aniline | 0.1 % Weight (2) | N | | | EC Number: 500-036-1, CAS number: 25214-70-4, Carcinogenic (article 57 a) |
| Lead styphnate | 0.1 % Weight (2) | N | | | EC Number: 239-290-0, CAS number: 15245-44-0, Toxic for reproduction (article 57 c) |
| Trilead diarsenate | 0.1 % Weight (2) | N | | | EC Number: 222-979-5, CAS number: 3687-31-8, Carcinogenic and toxic for reproduction (articles 57 a and 57 c) |
| Bis(2-methoxyethyl) phthalate | 0.1 % Weight (2) | N | | | EC Number: 204-212-6, CAS number: 117-82-8, Toxic for reproduction (article 57 c) |
| Bis(2-methoxyethyl) ether | 0.1 % Weight (2) | N | | | EC Number: 203-924-4, CAS number: 111-96-6, Toxic for reproduction (article 57 c) |
| 2,2'-dichloro-4,4'-methylenedianiline | 0.1 % Weight (2) | N | | | EC Number: 202-918-9, CAS number: 101-14-4, Carcinogenic (article 57 a) |
| α,α -Bis[4-(dimethylamino)phenyl]-4 (phenylamino)naphthalene-1-methanol (C.I. Solvent Blue 4) [with \geq 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)] | 0.1 % Weight (2) | N | | | EC Number: 229-851-8, CAS number: 6786-83-0, Carcinogenic (Article 57a) |
| N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler's base) | 0.1 % Weight (2) | N | | | EC Number: 202-959-2, CAS number: 101-61-1, Carcinogenic (Article 57a) |
| 1,3,5-tris[(2S and 2R)-2,3-epoxypropyl]-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione (β -TGIC) | 0.1 % Weight (2) | N | | | EC Number: 423-400-0, CAS number: 59653-74-6, Mutagenic (Article 57b) |
| Diboron trioxide | 0.1 % Weight (2) | N | | | EC Number: 215-125-8, CAS number: 1303-86-2, Toxic for reproduction (Article 57 c) |
| 1,2-bis(2-methoxyethoxy)ethane (TEGDME; triglyme) | 0.1 % Weight (2) | N | | | EC Number: 203-977-3, CAS number: 112-49-2, Toxic for reproduction (Article 57 c) |
| 4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol [with \geq 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)] | 0.1 % Weight (2) | N | | | EC Number: 209-218-2, CAS number: 561-41-1, Carcinogenic (Article 57a) |
| Lead(II) bis(methanesulfonate) | 0.1 % Weight (2) | N | | | EC Number: 401-750-5, CAS number: 17570-76-2, Toxic for reproduction (Article 57 c) |
| Formamide | 0.1 % Weight (2) | N | | | EC Number: 200-842-0, CAS number: 75-12-7, Toxic for reproduction (Article 57 c) |

REACH List of Substances of Very High Concern (SVHC) – page 5 of 11

| Substance | If yes (Y), detailed information of contained substances | | | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------|-------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Category Name | Threshold Level | Above threshold level ? Y / N | Weight [mg] | Content rate [ppm] |
| [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)] | 0.1 % Weight (2) (also JIG criteria A) | N | | | EC Number: 208-953-6, CAS number: 548-62-9, Carcinogenic (Article 57a) |
| 1,2-dimethoxyethane; ethylene glycol dimethyl ether (EGDME) | 0.1 % Weight (2) | N | | | EC Number: 203-794-9, CAS number: 110-71-4, Toxic for reproduction (Article 57 c) |
| [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)] | 0.1 % Weight (2) | N | | | EC Number: 219-943-6, CAS number: 2580-56-5, Carcinogenic (Article 57a) |
| 1,3,5-Tris(oxiran-2-ylmethyl)-1,3,5-triazinane-2,4,6-trione (TGIC) | 0.1 % Weight (2) | N | | | EC Number: 219-514-3, CAS number: 2451-62-9, Mutagenic (Article 57b) |
| 4,4'-bis(dimethylamino)benzophenone (Michler's ketone) | 0.1 % Weight (2) | N | | | EC Number: 202-027-5, CAS number: 90-94-8, Carcinogenic (Article 57a) |
| Date of inclusion to SVHC 19.12.2012 | | | | | |
| 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] | 0.1 % Weight (2) | N | | | EC Number: 247-094-1, 243-072-0, 256-356-4, 260-566-1, CAS number: 25550-51-0, 19438-60-9, 48122-14-1, 57110-29-9, Equivalent level of concern having probable serious effects to human health (Article 57 f) |
| 6-methoxy-m-toluidine (p-cresidine) | 0.1 % Weight (2) | N | | | EC Number: 204-419-1, CAS number: 120-71-8, Carcinogenic (Article 57a) |

REACH List of Substances of Very High Concern (SVHC) – page 6 of 11

| Substance | If yes (Y), detailed information of contained substances | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------|-------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Category Name | Threshold Level | Above threshold level ? Y / N | Weight [mg] | Content rate [ppm] |
| 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] | 0.1 % Weight (2) | N | | | EC Number: 201-604-9, 236-086-3, 238-009-9, CAS number: 85-42-7, 13149-00-3, 14166-21-3, Equivalent level of concern having probable serious effects to human health (Article 57 f) |
| Pyrochlore, antimony lead yellow | 0.1 % Weight (2) | N | | | EC Number: 232-382-1, CAS number: 8012-00-8, Toxic for reproduction (Article 57 c) |
| Henicosafuoroundecanoic acid | 0.1 % Weight (2) | N | | | EC Number: 218-165-4, CAS number: 2058-94-8, vPvB (Article 57 e) |
| 4-Aminoazobenzene | 0.1 % Weight (2) | N | | | EC Number: 200-453-6, CAS number: 60-09-3, Carcinogenic (Article 57 a) |
| Silicic acid, lead salt | 0.1 % Weight (2) | N | | | EC Number: 234-363-3, CAS number: 11120-22-2, Toxic for reproduction (Article 57 c) |
| Lead titanium zirconium oxide | 0.1 % Weight (2) | N | | | EC Number: 235-727-4, CAS number: 12626-81-2, Toxic for reproduction (Article 57 c) |
| Lead monoxide (lead oxide) | 0.1 % Weight (2) | N | | | EC Number: 215-267-0, CAS number: 1317-36-8, Toxic for reproduction (Article 57 c) |
| o-Toluidine | 0.1 % Weight (2) | N | | | EC Number: 202-429-0, CAS number: 95-53-4, Carcinogenic (Article 57a) |
| 3-ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine | 0.1 % Weight (2) | N | | | EC Number: 421-150-7, CAS number: 143860-04-2, Toxic for reproduction (Article 57 c) |
| Dibutyltin dichloride (DBTC) | 0.1 % Weight (2) | N | | | EC Number: 211-670-0, CAS number: 683-18-1, Toxic for reproduction (Article 57 c) |
| Lead bis(tetrafluoroborate) | 0.1 % Weight (2) | N | | | EC Number: 237-486-0, CAS number: 13814-96-5, Toxic for reproduction (Article 57 c) |
| Lead dinitrate | 0.1 % Weight (2) | N | | | EC Number: 233-245-9, CAS number: 10099-74-8, Toxic for reproduction (Article 57 c) |
| Silicic acid (H ₂ Si ₂ O ₅), barium salt (1:1), lead-doped [with lead (Pb) content above the applicable generic concentration limit for 'toxicity for reproduction' Repr. 1A (CLP) or category 1 (DSD); the substance is a member of the group entry of lead compounds, with index number 082-001-00-6 in Regulation (EC) No 1272/2008] | 0.1 % Weight (2) | N | | | EC Number: 272-271-5, CAS number: 68784-75-8, Toxic for reproduction (Article 57 c) |
| Trilead bis(carbonate)dihydroxide | 0.1 % Weight (2) | N | | | EC Number: 215-290-6, CAS number: 1319-46-6, Toxic for reproduction (Article 57 c) |
| 4,4'-methylenedi-o-toluidine | 0.1 % Weight (2) | N | | | EC Number: 212-658-8, CAS number: 838-88-0, Carcinogenic (Article 57a) |
| Diethyl sulphate | 0.1 % Weight (2) | N | | | EC Number: 200-589-6, CAS number: 64-67-5, Carcinogenic (Article 57a); Mutagenic (Article 57b) |
| Dimethyl sulphate | 0.1 % Weight (2) | N | | | EC Number: 201-058-1, CAS number: 77-78-1, Carcinogenic (Article 57a) |
| N,N-dimethylformamide | 0.1 % Weight (2) | N | | | EC Number: 200-679-5, CAS number: 68-12-2, Toxic for reproduction (Article 57 c) |
| 4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated [covering well-defined substances and UVCB substances, polymers and homologues] | 0.1 % Weight (2) | N | | | Equivalent level of concern having probable serious effects to the environment (Article 57 f) |

REACH List of Substances of Very High Concern (SVHC) – page 7 of 11

| Substance | Threshold Level | Above threshold level ? Y / N | If yes (Y), detailed information of contained substances | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------------------|----------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------------|
| | | | Weight [mg] | Content rate [ppm] | Additional information on material composition of products |
| 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] | 0.1 % Weight (2) | N | | | Equivalent level of concern having probable serious effects to the environment (Article 57 f) |
| Furan | 0.1 % Weight (2) | N | | | EC Number: 203-727-3, CAS number: 110-00-9, Carcinogenic (Article 57a) |
| Lead oxide sulfate | 0.1 % Weight (2) | N | | | EC Number: 234-853-7, CAS number: 12036-76-9, Toxic for reproduction (Article 57 c) |
| Lead titanium trioxide | 0.1 % Weight (2) | N | | | EC Number: 235-038-9, CAS number: 12060-00-3, Toxic for reproduction (Article 57 c) |
| Bis(pentabromophenyl) ether (decabromodiphenyl ether; DecaBDE) | 0.1 % Weight (2) | N | | | EC Number: 214-604-9, CAS number: 1163-19-5, PBT (Article 57 d); vPvB (Article 57 e) |
| Dinoseb (6-sec-butyl-2,4-dinitrophenol) | 0.1 % Weight (2) | N | | | EC Number: 201-861-7, CAS number: 88-85-7, Toxic for reproduction (Article 57 c) |
| 1,2-Diethoxyethane | 0.1 % Weight (2) | N | | | EC Number: 211-076-1, CAS number: 629-14-1, Toxic for reproduction (Article 57 c) |
| N-methylacetamide | 0.1 % Weight (2) | N | | | EC Number: 201-182-6, CAS number: 79-16-3, Toxic for reproduction (Article 57 c) |
| Tetralead trioxide sulphate | 0.1 % Weight (2) | N | | | EC Number: 235-380-9, CAS number: 12202-17-4, Toxic for reproduction (Article 57 c) |
| Acetic acid, lead salt, basic | 0.1 % Weight (2) | N | | | EC Number: 257-175-3, CAS number: 51404-69-4, Toxic for reproduction (Article 57 c) |
| [Phthalato(2-)]dioxotrilead | 0.1 % Weight (2) | N | | | EC Number: 273-688-5, CAS number: 69011-06-9, Toxic for reproduction (Article 57 c) |
| Tetraethyllead | 0.1 % Weight (2) | N | | | EC Number: 201-075-4, CAS number: 78-00-2, Toxic for reproduction (Article 57 c) |
| N-pentyl-isopentylphthalate | 0.1 % Weight (2) | N | | | CAS number: 776297-69-9, Toxic for reproduction (Article 57 c) |
| Pentalead tetraoxide sulphate | 0.1 % Weight (2) | N | | | EC Number: 235-067-7, CAS number: 12065-90-6, Toxic for reproduction (Article 57 c) |
| Heptacosafuorotetradecanoic acid | 0.1 % Weight (2) | N | | | EC Number: 206-803-4, CAS number: 376-06-7, vPvB (Article 57 e) |
| Tricosafuorododecanoic acid | 0.1 % Weight (2) | N | | | EC Number: 206-203-2, CAS number: 307-55-1, vPvB (Article 57 e) |
| 1-bromopropane (n-propyl bromide) | 0.1 % Weight (2) | N | | | EC Number: 203-445-0, CAS number: 106-94-5, Toxic for reproduction (Article 57 c) |
| Dioxobis(stearato)trilead | 0.1 % Weight (2) | N | | | EC Number: 235-702-8, CAS number: 12578-12-0, Toxic for reproduction (Article 57 c) |
| Pentacosafuorotridecanoic acid | 0.1 % Weight (2) | N | | | EC Number: 276-745-2, CAS number: 72629-94-8, vPvB (Article 57 e) |
| Methoxyacetic acid | 0.1 % Weight (2) | N | | | EC Number: 210-894-6, CAS number: 625-45-6, Toxic for reproduction (Article 57 c) |
| Methyloxirane (Propylene oxide) | 0.1 % Weight (2) | N | | | EC Number: 200-879-2, CAS number: 75-56-9, Carcinogenic (Article 57a); Mutagenic (Article 57b) |
| Trilead dioxide phosphonate | 0.1 % Weight (2) | N | | | EC Number: 235-252-2, CAS number: 12141-20-7, Toxic for reproduction (Article 57 c) |
| o-aminoazotoluene | 0.1 % Weight (2) | N | | | EC Number: 202-591-2, CAS number: 97-56-3, Carcinogenic (Article 57a) |
| 4-methyl-m-phenylenediamine (toluene-2,4-diamine) | 0.1 % Weight (2) | N | | | EC Number: 202-453-1, CAS number: 95-80-7, Carcinogenic (Article 57a) |
| Diisopentylphthalate | 0.1 % Weight (2) | N | | | EC Number: 210-088-4, CAS number: 605-50-5, Toxic for reproduction (Article 57 c) |
| 1,2-Benzenedicarboxylic acid, dipentylester, branched and linear | 0.1 % Weight (2) | N | | | EC Number: 284-032-2, CAS number: 84777-06-0, Toxic for reproduction (Article 57 c) |

REACH List of Substances of Very High Concern (SVHC) – page 8 of 11

| Substance | Threshold Level | Above threshold level ? Y / N | If yes (Y), detailed information of contained substances | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------------------|----------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | Weight [mg] | Content rate [ppm] | Additional information on material composition of products |
| Biphenyl-4-ylamine | 0.1 % Weight (2) | N | | | EC Number: 202-177-1, CAS number: 92-67-1, Carcinogenic (Article 57a) |
| Fatty acids, C16-18, lead salts | 0.1 % Weight (2) | N | | | EC Number: 292-966-7, CAS number: 91031-62-8, Toxic for reproduction (Article 57 c) |
| Orange lead (lead tetroxide) | 0.1 % Weight (2) | N | | | EC Number: 215-235-6, CAS number: 1314-41-6, Toxic for reproduction (Article 57 c) |
| 4,4'-oxydianiline and its salts | 0.1 % Weight (2) | N | | | EC Number: 202-977-0, CAS number: 101-80-4, Carcinogenic (Article 57a); Mutagenic (Article 57b) |
| Diazene-1,2-dicarboxamide (C,C'-azodi(formamide)) | 0.1 % Weight (2) | N | | | EC Number: 204-650-8, CAS number: 123-77-3, Equivalent level of concern having probable serious effects to human health (Article 57 f) |
| Sulfurous acid, lead salt, dibasic | 0.1 % Weight (2) | N | | | EC Number: 263-467-1, CAS number: 62229-08-7, Toxic for reproduction (Article 57 c) |
| Lead cyanamidate | 0.1 % Weight (2) | N | | | EC Number: 244-073-9, CAS number: 20837-86-9, Toxic for reproduction (Article 57 c) |
| Date of inclusion to SVHC 20.6.2013 | | | | | |
| Cadmium | 0.1 % Weight (2) | N | | | EC Number: 231-152-8, CAS Number: 7440-43-9, Carcinogenic (Article 57a); Equivalent level of concern having probable serious effects to human health (Article 57 f) |
| Ammonium pentadecafluorooctanoate (APFO) | 0.1 % Weight (2) | N | | | EC Number: 223-320-4, CAS Number: 3825-26-1, Toxic for reproduction (Article 57 c); PBT (Article 57 d) |
| 4-Nonylphenol, branched and linear, ethoxylated | 0.1 % Weight (2) | N | | | 4-Nonylphenol, branched and linear, ethoxylated [substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, ethoxylated covering UVCB- and well-defined substances, polymers and homologues, which include any of the individual isomers and/or combinations thereof], Equivalent level of concern having probable serious effects to the environment (Article 57 f) |
| Pentadecafluorooctanoic acid (PFOA) | 0.1 % Weight (2) | N | | | EC Number: 206-397-9, CAS Number: 335-67-1, Toxic for reproduction (Article 57 c); PBT (Article 57 d) |
| Dipentyl phthalate (DPP) | 0.1 % Weight (2) | N | | | EC Number: 205-017-9, CAS Number: 131-18-0, Toxic for reproduction (Article 57 c); |
| Cadmium oxide | 0.1 % Weight (2) | N | | | EC Number: 215-146-2, CAS Number: 1306-19-0, Carcinogenic (Article 57a); Equivalent level of concern having probable serious effects to human health (Article 57 f) |
| Date of inclusion to SVHC 16.12.2013 | | | | | |
| Cadmium sulphide | 0.1 % Weight (2) | N | | | EC Number: 215-147-8, CAS Number: 1306-23-6, Carcinogenic (Article 57a); Equivalent level of concern having probable serious effects to human health (Article 57 f) |
| 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) | 0.1 % Weight (2) | N | | | EC Number: 217-710-3, CAS Number: 1937-37-7, Carcinogenic (Article 57a); |
| Dihexyl phthalate (DnHP) | 0.1 % Weight (2) | N | | | EC Number: 201-559-5, CAS Number: 84-75-3, Toxic for reproduction (Article 57 c). |
| Imidazolidine-2-thione; (2-imidazoline-2-thiol) | 0.1 % Weight (2) | N | | | EC Number: 202-506-9, CAS Number: 96-45-7, Toxic for reproduction (Article 57 c). |
| Trixylyl phosphate | 0.1 % Weight (2) | N | | | EC Number: 246-677-8, CAS Number: 25155-23-1, Toxic for reproduction (Article 57 c). |
| Disodium 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(azo)]bis(4-aminonaphthalene-1-sulphonate) (C.I. Direct Red 28) | 0.1 % Weight (2) | N | | | EC Number: 209-358-4, CAS Number: 573-58-0, Carcinogenic (Article 57a); |
| Lead di(acetate) | 0.1 % Weight (2) | N | | | EC Number: 206-104-4, CAS Number: 301-04-2, Toxic for reproduction (Article 57 c). |

REACH List of Substances of Very High Concern (SVHC) – page 9 of 11

| Substance | Threshold Level | Above threshold level ? Y / N | If yes (Y), detailed information of contained substances | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------------------------------|----------------------------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | Weight [mg] | Content rate [ppm] | Additional information on material composition of products |
| | | | Date of inclusion to SVHC 16.6.2014 | | |
| Cadmium chloride | 0.1 % Weight (2) | N | | | EC Number: 233-296-7, CAS Number: 10108-64-2, Carcinogenic (Article 57a); Mutagenic (Article 57b); Toxic for reproduction (Article 57c); Equivalent level of concern having probable serious effects to human health (Article 57 f) |
| Sodium peroxometaborate | 0.1 % Weight (2) | N | | | EC Number: 231-556-4, CAS Number: 7632-04-4, Toxic for reproduction (Article 57 c). |
| Sodium perborate; perboric acid, sodium salt | 0.1 % Weight (2) | N | | | EC Number: 239-172-9; 234-390-0, Toxic for reproduction (Article 57 c). |
| 1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear | 0.1 % Weight (2) | N | | | EC Number: 271-093-5, CAS Number: 68515-50-4, Toxic for reproduction (Article 57 c). |
| | | | Date of inclusion to SVHC 17.12.2014 | | |
| 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) | 0.1 % Weight (2) | N | | | Toxic for reproduction (Article 57 c). |
| Cadmium sulphate | 0.1 % Weight (2) | N | | | EC Number: 233-331-6, CAS number: 10124-36-4 and 31119-53-6 ,Carcinogenic (Article 57 a); Mutagenic (Article 57 b); Toxic for reproduction (Article 57 c); Equivalent level of concern having probable serious effects to human health (Article 57 f). |
| Cadmium fluoride | 0.1 % Weight (2) | N | | | EC Number: 232-222-0, CAS number: 7790-79-6, Carcinogenic (Article 57 a); Mutagenic (Article 57 b); Toxic for reproduction (Article 57 c); Equivalent level of concern having probable serious effects to human health (Article 57 f). |
| 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE) | 0.1 % Weight (2) | N | | | EC Number: 239-622-4, CAS number: 15571-58-1, Toxic for reproduction (Article 57 c). |
| 2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320) | Intentionally added or 0.1 % Weight (2) | N | | | EC Number: 223-346-6, CAS number: 3846-71-7, PBT (Article 57 d); vPvB (Article 57 e), Japan (Law Concerning the Examination and Regulation of Manufacture); Candidate list for European REACH Regulation No. 1907/2006/EC. |
| 2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328) | 0.1 % Weight (2) | N | | | EC Number: 247-384-8, CAS number: 25973-55-1 ,PBT (Article 57 d); vPvB (Article 57 e) |
| | | | Date of inclusion to SVHC 15.6.2015 | | |
| 5-sec-butyl-2-(2,4-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [1], 5-sec-butyl-2-(4,6-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [2] [covering any of the individual stereoisomers of [1] and [2] or any combination thereof] | 0.1 % Weight (2) | N | | | vPvB (Article 57 e) |

REACH List of Substances of Very High Concern (SVHC) – page 10 of 11

| Substance | Threshold Level | Above threshold level ? Y / N | If yes (Y), detailed information of contained substances | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------------------------------|----------------------------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | Weight [mg] | Content rate [ppm] | Additional information on material composition of products |
| 1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters; 1,2-benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters with ≥ 0.3% of dihexyl phthalate (EC No. 201-559-5) | 0.1 % Weight (2) | N | | | EC Numbers: 271-094-0 / 272-013-1, CAS numbers: 68515-51-5 / 68648-93-1, Toxic for reproduction (Article 57 c) |
| Date of inclusion to SVHC 17.12.2015 | | | | | |
| Perfluorononan-1-oic-acid and its sodium and ammonium salts | 0.1 % Weight (2) | N | | | EC Number: 206-801-3, CAS Number: 375-95-1, 21049-39-8, 4149-60-4, Toxic for reproduction (Article 57 c) PBT (Article 57 d) |
| Nitrobenzene | 0.1 % Weight (2) | N | | | EC Number: 202-716-0, CAS Number: 98-95-3 , Toxic for reproduction (Article 57 c) |
| 2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV-350) | 0.1 % Weight (2) | N | | | EC Number: 253-037-1, CAS Number: 36437-37-3, vPvB (Article 57 e) |
| 2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol (UV-327) | 0.1 % Weight (2) | N | | | EC Number: 223-383-8, CAS Number: 3864-99-1, vPvB (Article 57 e) |
| 1,3-propanesultone | 0.1 % Weight (2) | N | | | EC Number: 214-317-9, CAS Number: 1120-71-4, Carcinogenic (Article 57 a) |
| Date of inclusion to SVHC 20.6.2016 | | | | | |
| Benzo[def]chrysene (Benzo[a]pyrene) | 0.1 % Weight (2) | N | | | EC Number: 200-028-5, CAS Number: 50-32-8, Carcinogenic (Article 57a) Mutagenic (Article 57b) Toxic for reproduction (Article 57c) PBT (Article 57 d) vPvB (Article 57 e). |
| Date of inclusion to SVHC 12.1.2017 | | | | | |
| 4,4'-isopropylidenediphenol | 0.1 % Weight (2) or Intentionally added | N | | | EC Number: 201-245-8, CAS Number: 80-05-7, Common synonyms: BPA, Bisphenol A. IEC 62474 (http://std.iec.ch/iec62474) threshold level: Intentionally added or 0.1 mass% of article. Toxic for reproduction (Article 57c). |
| 4-Heptylphenol, branched and linear | 0.1 % Weight (2) | N | | | Substances with a linear and/or branched alkyl chain with a carbon number of 7 covalently bound predominantly in position 4 to phenol, covering also UVCB- and well-defined substances which include any of the individual isomers or a combination thereof. Equivalent level of concern having probable serious effects to environment (Article 57 f) |
| Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts | 0.1 % Weight (2) | N | | | Nonadecafluorodecanoic acid (EC no.: 206-400-3, CAS no.: 335-76-2), Ammonium nonadecafluorodecanoate (EC no.: 221-470-5, CAS no.: 3108-42-7), Decanoic acid, nonadecafluoro-, sodium salt (CAS no.: 3830-45-3). Toxic for reproduction (Article 57c) PBT (Article 57 d). |
| p-(1,1-dimethylpropyl)phenol | 0.1 % Weight (2) | N | | | EC Number: 201-280-9, CAS Number: 80-46-6, Equivalent level of concern having probable serious effects to environment (Article 57 f). |
| Date of inclusion to SVHC 7.7.2017 | | | | | |
| Perfluorohexane-1-sulphonic acid and its salts (PFHxS) | 0.1 % Weight (2) | N | | | vPvB (Article 57e) |
| Date of inclusion to SVHC 15.1.2018 | | | | | |
| Reaction products of 1,3,4-thiadiazolidine-2,5-dithione, formaldehyde and 4-heptylphenol, branched and linear (RP-HP) with ≥0.1% w/w 4-heptylphenol, branched and linear (4-HPbl) | 0.1 % Weight (2) | N | | | Endocrine disrupting properties (Article 57(f) - environment) |

REACH List of Substances of Very High Concern (SVHC) – page 11 of 11

| Substance | Threshold Level | Above threshold level ? Y / N | If yes (Y), detailed information of contained substances | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------------------|----------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | Weight [mg] | Content rate [ppm] | Additional information on material composition of products |
| Chrysene, other name: Chrysen (CHR) | 0.1 % Weight (2) | N | | | EC Number: 205-923-4, CAS no.: 218-01-9, 1719-03-5, IUPAC names: 1,2,5,6-Dibenzonaphthalen, Benzo[a]phenanthrene, Chrysene. Member of Polycyclic-aromatic hydrocarbons (PAH). Carcinogenic (Article 57a) PBT (Article 57d) vPvB (Article 57e) |
| Cadmium nitrate | 0.1 % Weight (2) | N | | | EC Number: 233-710-6, CAS no.: 10022-68-1, 10325-94-7, Carcinogenic (Article 57a) Mutagenic (Article 57b) Specific target organ toxicity after repeated exposure (Article 57(f) - human health). |
| Cadmium hydroxide | 0.1 % Weight (2) | N | | | EC number: 244-168-5, CAS no.: 21041-95-2, Carcinogenic (Article 57a) Mutagenic (Article 57b) Specific target organ toxicity after repeated exposure (Article 57(f) - human health) |
| Cadmium carbonate | 0.1 % Weight (2) | N | | | EC Number: 208-168-9, CAS no.: 513-78-0, Carcinogenic (Article 57a) Mutagenic (Article 57b) Specific target organ toxicity after repeated exposure (Article 57(f) - human health) |
| Benz[a]anthracene | 0.1 % Weight (2) | N | | | EC Number: 200-280-6, CAS no.: 56-55-3, 1718-53-2, IUPAC names: Benz(a)anthracene, benzo[a]anthracene, Benz[a]anthracene, tetraphene. Member of Polycyclic-aromatic hydrocarbons (PAH) group. Carcinogenic (Article 57a) PBT (Article 57d) vPvB (Article 57e) |
| 1,6,7,8,9,14,15,16,17,17,18,18-Dodecachloropentacyclo[12.2.1.1 6,9.02,13.05,10]octadeca-7,15-diene ("Dechlorane Plus" TM) covering any of its individual anti- and syn-isomers or any combination thereof | 0.1 % Weight (2) | N | | | vPvB (Article 57e) |
| Date of inclusion to SVHC 27.6.2018 | | | | | |
| Terphenyl, hydrogenated | 0.1 % Weight (2) | N | | | EC Number: 262-967-7, CAS no.: 61788-32-7, vPvB (Article 57e) |
| Octamethylcyclotetrasiloxane, D4 | 0.1 % Weight (2) | N | | | EC Number: 209-136-7, CAS no.: 556-67-2, PBT (Article 57d) vPvB (Article 57e) |
| Lead | 0.1 % Weight (2) | N | | | EC Number: 231-100-4, CAS no.: 7439-92-1, Toxic for reproduction (Article 57c) |
| Ethylenediamine, EDA | 0.1 % Weight (2) | N | | | EC Number: 203-468-6, CAS no.: 107-15-3, Respiratory sensitising properties (Article 57(f) - human health) |
| Dodecamethylcyclohexasiloxane, D6 | 0.1 % Weight (2) | N | | | EC Number: 208-762-8, CAS no.: 540-97-6, PBT (Article 57d) vPvB (Article 57e) |
| Disodium octaborate | 0.1 % Weight (2) | N | | | EC Number: 234-541-0, CAS no.: 12008-41-2, Toxic for reproduction (Article 57c) |
| Dicyclohexyl phthalate, DCHP | 0.1 % Weight (2) | N | | | EC Number: 201-545-9, CAS no.: 84-61-7, Toxic for reproduction (Article 57c) Endocrine disrupting properties (Article 57(f) - human health) |
| Decamethylcyclopentasiloxane, D5 | 0.1 % Weight (2) | N | | | EC Number: 208-764-9, CAS no.: 541-02-6, PBT (Article 57d) vPvB (Article 57e) |
| Benzo[ghi]perylene | 0.1 % Weight (2) | N | | | EC Number: 205-883-8, CAS no.: 191-24-2, PBT (Article 57d) vPvB (Article 57e) |
| Benzene-1,2,4-tricarboxylic acid 1,2 anhydride, trimellitic anhydride; TMA | 0.1 % Weight (2) | N | | | EC Number: 209-008-0, CAS no.: 552-30-7, Respiratory sensitising properties (Article 57(f) - human health) |

| REVISION HISTORY: | | |
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| REV: | Date: | Description: |
| 1.4 | 17.3.2010 | <p>A) Changes due to JIG–101 Ed 2.0:</p> <ul style="list-style-type: none"> - LEVEL A and B replaced by criteria 1 – R Regulated (R), criteria 2 – A (for assesment only) and criteria 3 – I (for information only) - Minor changes: JIG Asbestos, threshold level changed from "Any content (2 and 3)" to "Intentionally added". <ul style="list-style-type: none"> JIG: Beryllium and Beryllium compounds, only Beryllium Oxide included. Cust.A and Cust.B requirements include all Beryllium and Beryllium compounds. JIG: Brominated flame retradants exclude Hexabromocyclododecane(HBCDD), because it is separated to SVHC list. JIG: requirement of Arsenic/Arsenic compaunds covers only Diarsenic Pentaoxide and Diarsenic Trioxide JIG: Cadmium threshold level changed from 75ppm to 100ppm, 5ppm threshold level added for battery. JIG: requirements for Formaldehyde added. JIG: new requirements for Lead/lead compounds. JIG: Mercury/mercury compounds, requirement added for battery. JIG: Nickel, threshold level changed form "0.5 micrograms/sq cm/week" to "Intentionally added" JIG: Ozone Depleting Substances, threshold level changed from "Any content (2 and 3)" to " Intentionally added" JIG: requirements for PFOS added. JIG: requirements for Certain Phthalates more detailed (see Phthalates) JIG: extra requirement for Deca-BDE (see PBDE) JIG: Shortchain Chlorinated Paraffins (C10 – C13), threshold level changed from "1000 ppm or Intentionally Added (1)" to "1000 ppm (2)" JIG: Tributyl Tin Oxide (TBTO), threshold level changed from "Intentionally Added (2)" to "1000 ppm or Intentionally Added (2)" JIG: Antimony, Bismuth and Selenium requirements removed from JIG. - Added new substances: JIG: Fluorinated greenhouse gases <ul style="list-style-type: none"> JIG: Perchlorates JIG: Phenol,2-(2H-benzotriazol-2-yl)-4,6-bis(1, 1-dimethylethyl) CAS# 3846-71-7 JIG: Tris (2-chloroethyl) phosphate (TCEP) <p>B) Changes due list of SVHC 13.1.2010: 14 substances added (last 14 on the table)</p> <p>C) No changes to cust.A and cust.B requirements.</p> <p>D) Lead/lead compounds RoHS exemption items removed.</p> |
| 1.5 | 22.3.2011 | <p>A) Changes due to JIG–101: no changes.</p> <p>B) Changes due list of SVHC 15.12.2010: 17 substances added (last 17 on the table)</p> <p>C) No changes to cust.A and cust.B requirements.</p> |
| 1.6 | 24.5.2011 | <p>A) Changes to "Additional Material and Substance Declarations" table:</p> <p>Comment added for Organic tin compunds: "Including Dibutyltin compounds."</p> <p>New regulated substance added "Dimethyl fumarate (DMF)"</p> |
| 1.7 | 8.8.2011 | <p>A) Changes due to JIG–101: no changes.</p> <p>B) Changes due list of SVHC 20.6.2011: 7 substances added (last 7 on the table) and more details added for Cobalt Dichloride.</p> <p>C) No changes to cust.A and cust.B requirements.</p> |
| 1.8 | 12.9.2012 | <p>A) Changes due to JIG–101 Ed. 4.0</p> <p>B) Changes due list of SVHC 19.12.2011 and 18.6.2012: substances added (last 20+13 = 33 on the table).</p> <p>C) No changes to cust.A and cust.B requirements.</p> |
| 1.9 | 28.11.2013 | <p>A) Changes due to JIG–101 Ed.4.1: Addresses publication of JS709 that defines "low halogen", see "Brominated Flame Retardants", "Polyvinyl Chloride (PVC) and PVC Copolymers" and "Chlorinated flame retardants".</p> <p>B) Changes due list of SVHC 19.12.2012: substances added (54 rows on the table), SVHC 20.6.2013 substances added (6 rows), Description of Aluminosilicate Refractory Ceramic Fibres and Zirconia Aluminosilicate Refractory Ceramic Fibres updated according to latest version.</p> <p>C) No changes to cust.A and cust.B requirements.</p> |

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| 2.0 | 15.5.2014 | A) Changes due to JIG–101: no changes. B) Changes due list of SVHC 16.12.2013: substances added (7 rows on the table) C) No changes to cust.A and cust.B requirements. |
| 2.1 | 27.11.2014 | A) JIG–101 Ed.4.1 is old and will be replaced by IEC 62474 (http://std.iec.ch/iec62474). Updates due to IEC 62474: - Added: Brominated flame retardants (other than PBBs, PBDEs, or HBCDD) : 0.09 mass% total bromine content in laminate - Added: Chlorinated Flame Retardants (CFR): 0.09 mass% total chlorine content in laminate - Added: Perfluorooctanoic acid (PFOA) and individual salts and esters of PFOA - Minor change to descriptions and threshold limit of Perchlorates - Change the threshold of Lead/Lead Compounds (0.01 mass%, products designed or intended primarily for children 12). - Minor change to threshold of Mercury / Mercury compounds (Batteries): add "Intentionally added or ..." - Added: thresholds to rubber or plastic parts that come into direct, prolonged or repetitive skin or oral cavity contact, CAS No: 50-32-8, 192-97-2, 56-55-3, 218-01-9, 205-99-2, 205-82-3, 207-08-9 and 53-70-3. B) Changes due list of SVHC 16.6.2014: substances added (4 rows on the table) C) No changes to cust.A and cust.B requirements. |
| 2.2 | 23.3.2015 | A) IEC 62474 (http://std.iec.ch/iec62474). No changes. B) Changes due list of SVHC 17.12.2014: substances added (6 rows on the table), 1 updated (DEHP: Reason for inclusion updated). C) No changes to cust.A and cust.B requirements. |
| 2.3 | 6.8.2015 | A) IEC 62474 (http://std.iec.ch/iec62474), updates 8.4. and 15.7.2015: updated CAS No: 3846-71-7, Alkanes, C10-13, Hexabromocyclododecane (HBCDD), Added: CAS No: 68921-45-9 and Canadian regulation for mercury: SOR/2014-254 (0.0005 mass% of total Hg in homogenous material of battery). B) Changes due list of SVHC 15.6.2015: substances added (2 rows on the table). Added threshold level to HBCDD (IEC 62474: Intentionally added or 0.1 mass%). C) No changes to cust.A and cust.B requirements. |
| 2.4 | 12.1.2016 | A) IEC 62474 (http://std.iec.ch/iec62474), updates 2015-12-17: Hexavalent Chromium / Hexavalent Chromium Compounds, "BasicDescription" added to "Additional information..."column. Threshold levels 0.1 mass% in homogenous material – added to SVHC list for: Bis(2-ethylhexyl)phthalate (DEHP), Dibutyl phthalate (DBP), Benzyl butyl phthalate (BBP). Diisobutyl phthalate (DIBP). B) Changes due list of SVHC 17.12.2015: substances added (5 rows on the table). Threshold levels for 4 materials listed in A). C) No changes to cust.A and cust.B requirements. |
| 2.5 | 23.8.2016 | A) IEC 62474 (http://std.iec.ch/iec62474). Reporting level added for: Lead 0.03 mass% of surface coating material - Cables/cords with thermoset or thermoplastic coatings. 2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320) Intentionally added (SVHC-list page 7). Minor additions: clarifications to some substance names. B) Changes due list of SVHC 20.6.2016: one substance added (EC Number: 200-028-5). C) No changes to cust.A and cust.B requirements. |
| 2.6 | 16.1.2017 | A) IEC 62474 (http://std.iec.ch/iec62474). 12.1. 2017 added: Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts (CAS No: 335-76-2, 3830-45-3 and 3108-42-7) and 4,4'-isopropylidenediphenol (CAS No: 80-05-7). All these are also added 12.1.2017 to SVHC list, so these were added only to SVHC-list. B) Changes due list of SVHC 12.1.2017: 4 substance added. C) No changes to cust.A and cust.B requirements. |
| 2.7 | 27.7.2017 | A) IEC 62474 (http://std.iec.ch/iec62474). No changes. B) Changes due list of SVHC 7.7.2017: one substance added (PFHxS). C) No changes to cust.A and cust.B requirements. |
| 2.81 | 31.8.2018 | A) IEC 62474 (http://std.iec.ch/iec62474). September 3. 2017 minor update to Nickel group (already in this document), added: Perfluorohexane-1-sulphonic acid and its salts. (see 7.7.2017 SVHC list). Jan. 15. 2018 details added to Boric Acid (already in SVHC list), threshold level of HBCDD updated (see SVHC list), details added: Zirconia Aluminosilicate Refractory Ceramic Fibres (already in SVHC list), details added: Silicic acid (H2Si2O5) (already in SVHC list), details added: Hexahydromethylphthalic anhydride (already in SVHC list), details added: 4-Nonylphenol, branched and linear (already in SVHC list), Benzo[a]anthracene / Benz[a]anthracene (see also 15.1.2018 SVHC list), Chrysen / Chrysene (see also 15.1.2018 SVHC list), details added: CAS No: 68515-51-5, 68648-93-1 (see 15.6.2015 SVHC list), details added: CAS No: 80-05-7 (see 12.1.2017 SVHC list), added: Cas No: 21041-95-2 and Dechlorane Plus™ (see 15.1. 2018 SVHC list), details added: PCB, July 8. 2018 added: DHCP, Lead and CAS No: 191-24-2, 556-67-2, 541-02-6, 540-97-6, 12008-41-2 and 61788-32-7 (see 27.6. 2018 SVHC list) B) Changes due list of SVHC 15.1.2018: 7 substances added and 27.6.2018: 10 substances added. Due to IEC 62474 threshold level of HBCDD updated (Intentionally added or 0.01 mass % of article) Added: make more clear the location and naming of REACH list of SVHC. C) No changes to cust.A and cust.B requirements. |

REACH = 191 substances