

Standards for Chemical Substances in Products

**SEI Guidelines
for
Green Quality Purchases
Annex-I**

2012.07 Ver1.0

**SUMITOMO ELECTRIC
INDUSTRIES, LTD.**

Standards for Chemical Substances in Products

Sumitomo Electric Industries, LTD.

Safety and Environmental Dept.

As an annex for “SEI Green Quality Guidelines for Purchased Items”, this standards is providing, “prohibited substances⁽¹⁾”, “content-control substances⁽²⁾”, “substances to be eliminated from supplier’s manufacturing process⁽³⁾” and their compliance criteria as stated below.

- (1): Substances which shall not be contained in SEI’s purchasing goods with concentration above maximum value defined for each substance.
- (2): Substances which supplier shall declare their inclusion in SEI’s purchasing goods with concentration above maximum value defined for each substance.
- (3): Substances which shall be eliminated on supplier’s manufacturing process for SEI’s purchasing goods.

Table 1. Prohibited Substances

Table 2. Content-controlled Substances

Table 3. Substances to be eliminated from supplier’s manufacturing process

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Table 5. Lists of prohibited substances in products (R1-R18)

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Table 1. Prohibited Substances

| No. | Classification | Substance and substance group | Reference table |
|-----|-------------------------------|-----------------------------------------------------------------------------------------------------------------|------------------|
| R1 | Metals and metal compounds | Cadmium and cadmium compounds | Ref. Table 5-R1 |
| R2 | | Hexavalent chromium compounds | Ref. Table 5-R2 |
| R3 | | Lead and lead compounds | Ref. Table 5-R3 |
| R4 | | Mercury and mercury compounds | Ref. Table 5-R4 |
| R5 | | Bis(tri-n-butyltin) oxide (TBTO) | Ref. Table 5-R5 |
| R6 | | Certain tributyl tin (TBT) and triphenyl tin (TPT) compounds | Ref. Table 5-R6 |
| R7 | | Dibutyltin compounds | Ref. Table 5-R7 |
| R8 | Halogenated organic compounds | Polybrominated biphenyls (PBBs) | Ref. Table 5-R8 |
| R9 | | Polybrominated diphenyl ethers (PBDEs) | Ref. Table 5-R9 |
| R10 | | Polychlorinated biphenyls and terphenyls (PCBs, PCTs) | Ref. Table 5-R10 |
| R11 | | Polychloronaphthalenes (limited to compounds with number of chlorine atoms 3 or more) | Ref. Table 5-R11 |
| R12 | | Certain short-chain chlorinated paraffins (number of carbon atoms 10-13) | Ref. Table 5-R12 |
| R13 | | Perfluorooctane sulphonates (PFOS) and their salts | Ref. Table 5-R13 |
| R14 | Others | Asbestos | Ref. Table 5-R14 |
| R15 | | Certain azocolourants and azodyes (which form certain aromatic amines) in textile and leather applications only | Ref. Table 5-R15 |
| R16 | | Ozone depleting substances | Ref. Table 5-R16 |
| R17 | | Radioactive substances | Ref. Table 5-R17 |
| R18 | | Dimethylfumarate (DMF) | Ref. Table 5-R18 |

Table 2. Content-controlled Substances

| 対象 | 内容 | note |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| JAMP declarable substances *1 | Class I Specified Chemical Substances of Japanese Chemical Substances Control Law | Other than prohibited substances of this guidance |
| | Industrial Safety and Health Law: Prohibition of Manufacturing, etc. and Permission for Manufacturing (Includes information through to the amendment of the enforcement order dated September 7, 2007) | |
| | Poisonous and Deleterious Substances Control Law: Specified Poisonous Substances (This list collects a specified order of the promulgation revision on August 15, 2007) | |
| | Substances classified to CMR-Cat. 1 or 2 in ANNEX VI for EU CLP regulation, REGULATION (EC) No 1272/2008 | |
| | Substances listed in ANNEX XVII (Restricted substances) for EU REACH regulation, REGULATION (EC) No 1907/2006 (Other than EU CLP regulation Annex VI Table3.2 CMR-Cat.1,2) | |
| | Substances listed in candidate list for authorization of EU REACH regulation, REGULATION (EC) No 1907/2006 | |
| | Substances classified as PBT in ESIS, European chemical Substances Information System | |
| | Substances listed in GADSL, Global Automotive Declarable Substance List | |
| | Substances specified as 1-R in JIG-101 Ed.4.0, Joint Industry Guideline | |

Tbale 3. Substances to be eliminated from suppliers' manufacturing process (Substances to be eliminated of Montreal Protoco and Law concerning the Protection of the Ozone Layer through the Control of Specified Substances and Other MeasuresI)

| No. | Substance group | Substance grope of Montreal Protocol | Deadline for total elimination | Exemption |
|-----|----------------------------------|--------------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Chlorofluorocarbons (CFCs) | A-I | Immediately | <ul style="list-style-type: none"> Refrigerants for air conditioner, regrigeration etc, fire extinguisher Item exempted in Montreal Protocol (examples shown below) |
| 2 | Halons | A-II | | |
| 3 | Hydrobromofluorocarbons (HBFCs) | C-II | | |
| 4 | Carbon tetrachloride | B-II | | |
| 5 | 1,1,1- trichloroethane | B-III | | |
| 6 | Methyl bromide | C-III | | |
| 7 | Bromochloromethane | E-I | | |
| 8 | Hydrochlorofluorocarbons (HCFCs) | C-I | Year 2020 | |

Table 4. Criteria for judgment concerning the report on declarable substances (JAMP AIS-MSDSplus Practical Guide)*

| Legal threshold value (Note A) | Concentration (Note B) | Non-intentional inclusion (Note C) | Intentional addition (Note D) |
|--------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------|-------------------------------|
| Yes | Threshold value or higher | To be reported | To be reported |
| | Less than threshold value | Not necessary to be reported (However, it is necessary to report if any of condition shown Note E is met) | |
| No | 0.1wt% or higher | To be reported | |
| | Less than 0.1wt% | Not necessary to be reported (However, it is necessary to report if any of condition shown Note E is met) | |

Note A: The "Legal threshold value" refers to the concentration specified by the laws and regulations mentioned in connection with JAMP's declarable substances. For detail about threshold values refer to "JAMP AIS MSDSplus Practical Guide".

Note B: The concentration is estimated with analytical and theoretical estimates as well as past control achievements.

Note C: "Non-intentional inclusion" refer to cases where chemical substances are "known to be contained" except those "intentionally added" as shown in Note 8.

Note D: "Intentional addition" refers to "cases where chemical substances are added (included) in order to give certain characteristics to the objects." The inclusion of "impurities, reactive by-products, decomposed materials, residual monomer in polymer, etc.," which are not supposed to be included intentionally, does not constitute intentional addition but non-intentional inclusion.

Note E: If any of certain conditions provided in "JAMP AIS MSDSplus practical guide" is met, the inclusion of declarable substances is to be reported. For detail about them refer to "JAMP AIS MSDSplus Practical Guide".

*: In case of using other material declaration tools, for example JAMA/JAPIA sheet, IMDS or JAMP AIS, criteria of those tools should be complied.

Table 5. Lists of prohibited substances in products (R1-R18)

(Following lists do not cover all the relevant substances and/or their information. Those list only typical substances and information. It is necessary to check original legislative provisions, especially for exemptions.)

Table. 5-R1 Cadmium and Cadmium compounds

| Legislative Requirement | | Major Legislation |
|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Regulation | Application | |
| Intentional use prohibited and less than 100ppm* ¹ | Packaging material | EU Directive 94/62/EC (EU Directive on Packaging and Packaging Waste) |
| Less than 20ppm | Portable batteries or accumulators | EU Directive 2006/66/EC (EU Battery Directive) |
| Intentional use prohibited and less than 100ppm | Resin(including rubber), paint, ink, pigment and dye | Act on the Promotion of Effective Utilization of Resources (J-Moss), EU RoHS Directive, ELV Directive , China RoHS, Korean RoHS |
| Exemption | Cadmium and its compounds in electrical contacts | EU RoHS Directive |
| | Cadmium and lead in filter glasses and glasses used for reflectance standards | |
| | Cadmium and cadmium oxide in thick film pastes used on aluminium bonded beryllium oxide | |
| | Cadmium in colour converting II-VI LEDs (< 10 µg Cd per mm ² of light-emitting area) for use in solid state illumination or display systems (Expires on 1 July 2014) | |
| | Cadmium in photoresistors for analogue opto-couplers applied in professional audio equipment (Expires on 31 December 2013) | |
| Substance name | | CAS No. |
| Cadmium | | 7440-43-9 |
| Cadmium oxide | | 1306-19-0 |
| Cadmium sulfide | | 1306-23-6 |
| Cadmium chloride | | 10108-64-2 |
| Cadmium sulfate | | 10124-36-4 |
| Other cadmium compounds | | - |

Table. 5-R2 Hexavalent Chromium Compounds

| Legislative Requirement | | Major Legislation |
|---------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Regulation | Application | |
| Intentional use prohibited and less than 100ppm* ¹ | Packaging material | EU Directive 94/62/EC(EU Directive on Packaging and Packaging Waste) |
| Intentional use prohibited and less than 1000ppm | Other than described above | Act on the Promotion of Effective Utilization of Resources (J-Moss), EU RoHS Directive, ELV Directive , China RoHS, Korean RoHS |
| Exemption | As an anti-corrosion agent of the carbon steel cooling system in absorption refrigerators in motorcaravans up to 0.75 weight % in the cooling solution | EU RoHS Directive, ELV Directive |
| Substance name | | EC No. |
| Chromium (VI) oxide | | 1333-82-0 |
| Barium chromate | | 10294-40-3 |
| Calcium chromate | | 13765-19-0 |
| Lead (II) chromate | | 231-846-0 |
| lead chromate molybdate sulfate | | 235-759-9 |
| C.I. Pigment yellow 34 (lead sulfochromate yellow) | | 215-693-7 |
| Sodium chromate | | 7775-11-3 |
| Sodium dichromate | | 10588-01-9 |
| Strontium chromate | | 7789-06-2 |
| Potassium dichromate | | 7778-50-9 |
| Potassium chromate | | 7789-00-6 |
| Zinc chromate | | 13530-65-9 |
| Other hexavalent chromium compounds | | - |

Table. 5-R3 Lead and Lead Compounds

| Legislative Requirement | | Major Legislation |
|---------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Regulation | Application | |
| Intentional use prohibited and less than 100ppm* ¹ | Packaging material | EU Directive 94/62/EC(EU Directive on Packaging and Packaging Waste) |
| Intentional use prohibited and less than 300ppm | Resin(including rubber), paint, ink, pigment and dye | US(CA)Proposition65 |
| Intentional use prohibited and less than 1000ppm | Other than described above | Act on the Promotion of Effective Utilization of Resources (J-Moss), EU RoHS Directive , ELV Directive, China RoHS, Korean RoHS |
| Exemption | Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0,35 % lead by weight | EU RoHS Directive, EU ELV Directive |
| | Lead as an alloying element in aluminum containing up to 0,4 % lead by weight | |
| | Copper alloy containing up to 4 % lead by weight | |
| | Lead in high melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead) | |
| | Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC (Expires on 1 January 2013 and after that date may be used in spare parts for EEE placed on the market before 1 January 2013) | |
| | Lead in PZT based dielectric ceramic materials for capacitors being part of integrated circuits or discrete semiconductors' | |
| | Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages | |
| | CRT | |
| | Lead in glass of fluorescent tubes not exceeding 0,2 % by weight | EU RoHS Directive |
| | Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission, and network management for telecommunications | |
| | Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound | |
| | Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher | |
| | Lead in white glasses used for optical applications. Lead in filter glasses and glasses used for reflectance standards | |
| | Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors | |
| | Lead oxide in surface conduction electron emitter displays (SED) used in structural elements, notably in the seal frit and frit ring | |
| | Lead in solders for the soldering of thin copper wires of 100 µm diameter and less in power transformers | |
| | Batteries | EU ELV Directive |
| | Bonding agents for elastomers in powertrain applications containing up to 0,5 % lead by weight | |
| | Lead in solders to attach electrical and electronic components to electronic circuit boards and lead in finishes on terminations of components other than electrolyte aluminium capacitors, on component pins and on electronic circuit boards (Vehicles type approved before 1 January 2016 and spare parts for these vehicles) | |
| | Lead in finishes on terminals of elec-trolyte aluminium capacitors (Vehicles type approved before 1 January 2013 and spare parts for these vehicles) | |
| | Lead used in soldering on glass in mass airflow sensors (Vehicles type approved before 1 January 2015 and spare parts of such vehicles) | |
| | Lead in compliant pin connector systems | |
| | Lead in solders for soldering in laminated glazing | |
| | Lead-containing thermoelectric materials in automotive electrical applications to reduce CO2 emissions by recuperation of exhaust heat (Vehicles type approved before 1 January 2019 and spare parts for these vehicles) | |
| | Continuously galvanised steel sheet containing up to 0,35 % lead by weight (Vehicles type approved before 1 January 2016 and spare parts for these vehicles) | |
| | | |

| Substance name | EC No. | CAS No. |
|----------------------------------------------------|-----------|------------|
| Lead | — | 7439-92-1 |
| Lead(II) sulfate | — | 7446-14-2 |
| Lead(II) carbonate | — | 598-63-0 |
| Lead(II) chromate | 231-846-0 | 7758-97-6 |
| lead chromate molybdate sulfate | 235-759-9 | 12656-85-8 |
| Lead hydroxidcarbonate | — | 1319-46-6 |
| Lead acetate | — | 301-04-2 |
| Lead (II) acetate, trihydrate | — | 6080-56-4 |
| Lead phosphate | — | 7446-27-7 |
| Lead selenide | — | 12069-00-0 |
| Lead (IV) oxide | — | 1309-60-0 |
| Lead (II, IV) oxide | — | 1314-41-6 |
| Lead (II) sulfide | — | 1314-87-0 |
| Lead (II) oxide | — | 1317-36-8 |
| Lead(II) carbonate basic | — | 1319-46-6 |
| Lead hydroxidcarbonate | — | 1344-36-1 |
| Lead phosphate | — | 7446-27-7 |
| C.I. Pigment yellow 34 (lead sulfochromate yellow) | 215-693-7 | 1344-37-2 |
| Lead(II) titanate | — | 12060-00-3 |
| Lead sulfate, sulphuric acid, lead salt | — | 15739-80-7 |
| Lead sulphate,tribasic | — | 12202-17-4 |
| Lead stearate | — | 1072-35-1 |
| Other lead compounds | — | — |

Table. 5-R4 Mercury and Mercury Compounds

| Legislative Requirement | | Major Legislation |
|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Regulation | Application | |
| Intentional use prohibited and less than 100ppm* ¹ | Packaging material | EU Directive 94/62/EC(EU Directive on Packaging and Packaging Waste) |
| Less than 5ppm | All batteries or accumulators | EU Directive 2006/66/EC(EU Battery Directive) |
| Intentional use prohibited and less than 1000ppm | Other than described above | Act on the Promotion of Effective Utilization of Resources (J-Moss), EU RoHS Directive, China RoHS, Korean RoHS |
| Exemption | <p>Mercury in single capped (compact) fluor-escent lamps not exceeding (per burner):</p> <ul style="list-style-type: none"> •For general lighting purposes < 30 W: 5 mg: 3.5mg (until 31 December 2012; 2.5 mg shall be used per burner after 31 December 2012) •For general lighting purposes ≥ 30 W and < 50 W: 3.5 mg •For general lighting purposes ≥ 50 W and < 150 W: 5 mg •For general lighting purposes ≥ 150 W: 15 mg •For general lighting purposes with circular or square structural shape and tube diameter ≤ 17 mm •For special purposes: 5 mg | EU RoHS Directive |
| | <p>Mercury in double-capped linear fluorescent lamps for general lighting purposes not exceeding (per lamp)</p> <ul style="list-style-type: none"> •Tri-band phosphor with normal lifetime and a tube diameter < 9 mm (e.g. T2): 4 mg •Tri-band phosphor with normal lifetime and a tube diameter ≥ 9 mm and ≤ 17 mm (e.g. T5): 3 mg •Tri-band phosphor with normal lifetime and a tube diameter > 17 mm and ≤ 28 mm (e.g. T8): 3.5 mg •Tri-band phosphor with normal lifetime and a tube diameter > 28 mm (e.g. T12): 5 mg (Expires on 31 December 2012; 3.5 mg may be used per lamp after 31 December 2012) •Tri-band phosphor with long lifetime (≥ 25 000 h): 5 mg | |
| | <p>Mercury in other fluorescent lamps not exceeding (per lamp):【R:2(b)】</p> <ul style="list-style-type: none"> •Non-linear halophosphate lamps (all diameters): 15 mg (Expires on 13 April 2016) •Non-linear tri-band phosphor lamps with tube diameter > 17 mm (e.g. T9) : 15mmg •Lamps for other general lighting and special purposes (e.g. induction lamps) : 15mmg | |

| | | |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| | Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes not exceeding (per lamp): 【R:3】 •Short length (≤ 500 mm):3.5mg •Medium length (> 500 mm and ≤ 1 500 mm):5mg •Long length (> 1 500 mm):13mg | |
| | •Mercury in other low pressure discharge lamps : 15mmg (per lamp) 【R:4(a)】 | |
| | Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index Ra > 60: 【R:4(b)】 •P ≤ 155 W:30mg •155 W < P ≤ 405 W:40mg •P > 405 W:40mg | |
| | Mercury in other High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner): 【R:4(c)】 •P ≤ 155 W:25mg •155 W < P ≤ 405 W:30mg •P > 405 W:40mg | |
| | Mercury in High Pressure Mercury (vapour) lamps (HPMV) (Expires on 13 April 2015) 【R:4(d)】 | |
| | Mercury in metal halide lamps (MH) 【R:4(e)】 | |
| | Mercury in other discharge lamps for special purposes not specifically mentioned in this Annex 【R:4(f)】 | |
| | Discharge lamps for headlight application(Vehicles type approved before 1 July 2012 and spare parts for these vehicles) 【E:15(a)】 | EU ELV Directive |
| | Fluorescent tubes used in instrument panel displays (Vehicles type approved before 1 July 2012 and spare parts for these vehicles) 【E:15(b)】 | |
| Substance name | | CAS No. |
| Mercury | | 7439-97-6 |
| Mercuric chloride | | 33631-63-9 |
| Mercury (II) chloride | | 7487-94-7 |
| Mercuric sulfate | | 7783-35-9 |
| Mercuric nitrate | | 10045-94-0 |
| Mercuric (II) oxide | | 21908-53-2 |
| Mercuric sulfide | | 1344-48-5 |
| Other mercury compounds | | - |

Table. 5-R5 Bis(tri-n-butyltin) oxide

| | | |
|--------------------------------------------------------------------------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Legislative Requirement | | Major Legislation |
| Intentional use prohibited and less than 1000ppm* ² in any products | | Class 1 specified chemical substances of act on the evaluation of chemical substances and regulation of their manufacture, etc. EU REACH REGULATION ANNEX XVII (RESTRICTED SUBSTANCE) |
| Substance name | EC No. | CAS No. |
| Bis(tri-n-butyltin) oxide | 200-268-0 | 56-35-9 |

Table. 5-R6 Certain Tributyltin Compounds (TBTs) and Triphenyltin Compounds (TPTs)

| | | |
|--------------------------------------------------------------------------------|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Legislative Requirement | | Major Legislation |
| Intentional use prohibited and less than 1000ppm* ² in any products | | Class 2 specified chemical substances of act on the evaluation of chemical substances and regulation of their manufacture, etc. EU REACH REGULATION ANNEX XVII (RESTRICTED SUBSTANCE) |
| Substance name | CAS No. | |
| Triphenyltin=N, N-dimethyldithiocarbamate | 1803-12-9 | |
| Triphenyltinfluoride | 379-52-2 | |
| Triphenyltinacetate | 900-95-8 | |
| Triphenyltinchloride | 639-58-7 | |
| Triphenyltinhydroxide | 76-87-9 | |
| Triphenyltin fattyacid((9-11)salt) | 18380-71-7,18380-72-8,47672-31-1,94850-90-5 | |
| Triphenyltinchloroacetate | 7094-94-2 | |

| | |
|-----------------------------------------------------------------------------------------------------------------|----------------------|
| Tributyltinmethacrylate | 2155-70-6 |
| Bis (tributyltin) fumalate | 6454-35-9 |
| Tributyltinfluoride | 1983-10-4 |
| Bis (tributyltin) 2, 3-dibromosuccinate | 31732-71-5 |
| Tributyltinacetate | 56-36-0 |
| Tributyltinlaurate | 3090-36-6 |
| Bis (tributyltin) phthalate | 4782-29-0 |
| Copolymer of alkyl (c=8) acrylate, methyl methacrylate and tributyltin methacrylate | 67772-01-4 |
| Tributyltinsulfamate | 6517-25-5 |
| Bis (tributyltin) maleate | 14275-57-1 |
| Tributyltinchloride | 1461-22-9, 7342-38-3 |
| Tributyltin cyclopentane carbonate=mixture | 85409-17-2 |
| Tributyltin-1, 2, 3, 4, 4a, 4b, 5, 6, 10, 10a-decahydro-7-isopropyl-1, 4a-dimethyl-1-phenanthrenecarboxylatemix | 26239-64-5 |
| Other trisubstituted organotin compounds | — |

Table. 5-R7 Dibutyltin Compounds

| Legislative Requirement | Major Legislation |
|--------------------------------------------------------------------|-------------------------------------------------------|
| Intentional use prohibited and less than 1000ppm*2 in any products | EU REACH REGULATION ANNEX XVII (RESTRICTED SUBSTANCE) |
| Substance name | CAS No. |
| Dibutyltin oxide | 818-08-6 |
| Dibutyltin diacetate | 1067-33-0 |
| Dibutyltindilaurate | 77-58-7 |
| Di-n-butyl(maleate)tin | 78-04-6 |
| Other dibutyltin compounds | — |

Table. 5-R8 Polybrominated Biphenyls (PBBs)

| Legislative Requirement | Major Legislation |
|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Intentional use prohibited and less than 1000ppm in any products | Act on the Promotion of Effective Utilization of Resources (J-Moss), EU RoHS Directive, China RoHS, Korean RoHS |
| Substance name | CAS No. |
| Polybrominated Biphenyls | 59536-65-1 |
| Dibromobiphenyl | 92-86-4 |
| 2-Bromobiphenyl | 2052-07-5 |
| 3-Bromobiphenyl | 2113-57-7 |
| 4-Bromobiphenyl | 92-66-0 |
| Tribromobiphenyl | 59080-34-1 |
| Tetrabromobiphenyl | 40088-45-7 |
| Pentabromobiphenyl | 56307-79-0 |
| Hexabromobiphenyl | 59080-40-9 |
| hexabromo-1,1-biphenyl | 36355-01-8 |
| Firemaster FF-1 | 67774-32-7 |
| Heptabromobiphenyl | 35194-78-6 |
| Octabromobiphenyl | 61288-13-9 |
| Nonabiphenyl | 27753-52-2 |
| Decabromobiphenyl | 13654-09-6 |

Table. 5-R9 Polybromodiphenyl Ethers (PBDEs)

| Legislative Requirement | Major Legislation |
|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Intentional use prohibited and less than 1000ppm in any products | Act on the Promotion of Effective Utilization of Resources (J-Moss), EU RoSH Directive, China RoSH, Korean RoSH |
| Substance name | CAS No. |
| Bromodiphenyl ether | 101-55-3 |
| Dibromodiphenyl ethers | 2050-47-7 |
| Tribromodiphenyl ether | 49690-94-0 |
| Tetrabromodiphenyl ethers | 40088-47-9 |
| Pentabromodiphenyl ether (note: Commercially available PeBDPO is a complex reaction mixture containing a variety of brominated diphenyloxides.) | 32534-81-9 (CAS No. used for Commercial grades of PeBDPO) |
| Hexabromodiphenyl ether | 36483-60-0 |

| | |
|-------------------------|------------|
| Heptabromodiphenylether | 68928-80-3 |
| Octabromodiphenyl ether | 32536-52-0 |
| Nonabromodiphenylether | 63936-56-1 |
| Decabromodiphenyl ether | 1163-19-5 |

Table. 5-R10 Polychlorinated Biphenyls (PCB) and Polychlorinated Terphenyls (PCT)

| Legislative Requirement | Major Legislation |
|--------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Intentional use prohibited and less than 1000ppm* ³ in any products | Class 1 specified chemical substances of act on the evaluation of chemical substances and regulation of their manufacture, etc. Act on Special Measures concerning Promotion of Proper Treatment of PCB Wastes EU REACH REGULATION ANNEX XVII (RESTRICTED SUBSTANCE) |
| Substance name | CAS No. |
| Polychlorinated Biphenyls | 1336-36-3 |
| Monomethyl-tetrachloro-diphenyl methane (Ugilec 141) | 76253-60-6 |
| Monomethyl-dichloro-diphenyl methane (Ugilec 121, Ugilec 21) | 81161-70-8 |
| Monomethyl-dibromo-diphenyl methane (DBBT) | 99688-47-8 |
| Polychlorinated Terphenyls | 61788-33-8 |

Table. 5-R11 Polychlorinated Naphthalenes (containing 3 or more chlorides)

| Legislative Requirement | Major Legislation |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Intentional use prohibited in any products | Class 1 specified chemical substances of act on the evaluation of chemical substances and regulation of their manufacture, etc. |
| Substance name | CAS No. |
| Polychlorinated Naphthalenes | 70776-03-3 |
| Other polychlorinated Naphthalenes | — |

Table. 5-R12 Short Chain Chlorinated Paraffins (SCCPs, C10-C13)

| Legislative Requirement | | Major Legislation |
|----------------------------------------------------------|-----------|------------------------------------------------------|
| Intentional use prohibited* ² in any products | | EU REACH Regulation Annex XVII(Restricted substance) |
| Substance name | EC No. | CAS No. |
| Chlorinated paraffins (C10-13) | 287-476-5 | 85535-84-8 |
| Chlorinated paraffins (C10-12) | — | 108171-26-2 |
| Chlorinated paraffins (C12-13) | — | 71011-12-6 |
| Chlorinated paraffins | — | 61788-76-9 |
| Other short-chain Chlorinated paraffins | — | — |

Table. 5-R13 Perfluorooctane Sulfonates (PFOS) and their salt

| Legislative Requirement | | Major Legislation |
|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Regulation | Application | |
| Intentional use prohibited | any products | Class 1 specified chemical substances of act on the evaluation of chemical substances and regulation of their manufacture, etc. Stockholm Convention on Persistent Organic Pollutants. |
| Exemption | Photoresists, etching agents for semiconductor production or coating agents for photo films for professional use | |
| Substance name | | CAS No. |
| Perfluorooctane sulfonates (PFOS) C8F17SO2X (X=—OR, —NR or other derivatives) | | — |

Table. 5-R14 Asbestos

| Legislative Requirement | Major Legislation |
|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Intentional use prohibited and less than 1000ppm* ² in any products | Air Pollution Control Act(Specified dust), Industrial Safety and Health Law: Prohibition of Manufacturing, etc. and Permission for Manufacturing, EU REACH REGULATION ANNEX XVII (RESTRICTED SUBSTANCE) |
| Substance name | CAS No. |
| Asbestos | 1332-21-4 |

| | |
|---------------------|------------|
| Actinolite | 77536-66-4 |
| Amosite (Grunerite) | 12172-73-5 |
| Anthophyllite | 77536-67-5 |
| Chrysotile | 12001-29-5 |
| Crocidolite | 12001-28-4 |
| Tremolite | 77536-68-6 |

Table. 5-R15 Azocolourants and azodyes which form certain aromatic amines (only for textile and leather)

| Legislative Requirement | Major Legislation |
|------------------------------------------------------------|-------------------------------------------------------|
| Less than 1000ppm (as amine)* ² in any products | EU REACH REGULATION ANNEX XVII (RESTRICTED SUBSTANCE) |
| Substance name | CAS No. |
| biphenyl-4-ylamine | 92-67-1 |
| Benzidine | 92-87-5 |
| 4-chloro-o-toluidine | 95-69-2 |
| 2-naphthylamine | 91-59-8 |
| o-aminoazotoluene | 97-56-3 |
| 5-nitro-o-toluidine | 99-55-8 |
| 4-chloroaniline | 106-47-8 |
| 4-methoxy-m-phenylenediamine | 615-05-4 |
| 4, 4'-methylenedianiline | 101-77-9 |
| 3, 3'-dichlorobenzidine | 91-94-1 |
| 3, 3'-dimethoxybenzidine | 119-90-4 |
| 3, 3'-dimethylbenzidine | 119-93-7 |
| 4, 4'-methylenedi-o-toluidine | 838-88-0 |
| 6-methoxy-m-toluidine | 120-71-8 |
| 4, 4'-methylene-bis (2-chloroaniline) | 101-14-4 |
| 4,4'-oxydianiline | 101-80-4 |
| 4, 4'-thiodianiline | 139-65-1 |
| o-toluidine | 95-53-4 |
| 4-methyl-m-phenylenediamine | 95-80-7 |
| 2, 4, 5-trimethylaniline | 137-17-7 |
| o-anisidine | 90-04-0 |
| 4-amino azobenzene | 60-09-3 |

Note: The European Community's ban applies to azocolourants and azodyes that by reductive cleavage of azo groups may release one of the above 22 aromatic amines.

Table. 5–R16 Ozone Depleting Substances**Chlorofluorocarbons (CFC), Halons, Hydrobromofluorocarbons (HBFC), Hydrochlorofluorocarbons (HCFC) and others**

| Legislative Requirement | Major Legislation |
|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Intentional use prohibited in any products | Act for Protection of the Ozone Layer through Regulation of Designated Substances, etc. Montreal Protocol |
| Substance name | CAS No. |
| Trichlorofluoromethane (CFC-11) | 75-69-4 |
| Dichlorodifluoromethane (CFC-12) | 75-71-8 |
| Chlorotrifluoromethane (CFC-13) | 75-72-9 |
| Pentachlorofluoroethane (CFC-111) | 354-56-3 |
| Tetrachlorodifluoroethane (CFC-112) | 76-12-0 |
| 1,1,2,2-Tetrachloro-1,2-difluoroethane (CFC-112) | 76-12-0 |
| 1,1,1,2-Tetrachloro-2,2-difluoroethane (CFC-112a) | 76-11-9 |
| Trichlorotrifluoroethane (CFC-113) | 76-13-1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane (CFC-113) | 76-13-1 |
| 1,1,1-Trichloro-2,2,2-trifluoroethane (CFC-113a) | 354-58-5 |
| Dichlorotetrafluoroethane (CFC-114) | 76-14-2 |
| Monochloropentafluoroethane (CFC-115) | 76-15-3 |
| Heptachlorofluoropropane (CFC-211) | 422-78-6, 135401-87-5 |
| 1,1,1,2,2,3,3-Heptachloro-3-fluoropropane (CFC-211aa) | 422-78-6 |
| 1,1,1,2,3,3,3-Heptachloro-2-fluoropropane (CFC-211ba) | 422-81-1 |
| Hexachlorodifluoropropane (CFC-212) | 3182-26-1 |
| Pentachlorotrifluoropropane (CFC-213) | 2354-06-5, 134237-31-3 |
| Tetrachlorotetrafluoropropane (CFC-214) | 29255-31-0 |
| 1,2,2,3-Tetrachloro-1,1,3,3-tetrafluoropropane (CFC-214aa) | 2268-46-4 |
| 1,1,1,3-Tetrachloro-2,2,3,3-tetrafluoropropane (CFC-214cb) | - |
| Trichloropentafluoropropane (CFC-215) | 1599-41-3 |
| 1,2,2-Trichloropentafluoropropane (CFC-215aa) | 1599-41-3 |
| 1,2,3-Trichloropentafluoropropane (CFC-215ba) | 76-17-5 |
| 1,1,2-Trichloropentafluoropropane (CFC-215bb) | - |
| 1,1,3-Trichloropentafluoropropane (CFC-215ca) | - |
| 1,1,1-Trichloropentafluoropropane (CFC-215cb) | 4259-43-2 |
| Dichlorohexafluoropropane (CFC-216) | 661-97-2 |
| Monochloroheptafluoropropane (CFC-217) | 422-86-6 |
| Bromochloromethane (Halon 1011) | 74-97-5 |
| Dibromodifluoromethane (Halon-1202) | 75-61-6 |
| Bromochlorodifluoromethane (Halon-1211) | 353-59-3 |
| Bromotrifluoromethane (Halon-1301) | 75-63-8 |
| Dibromotetrafluoroethane (Halon-2402) | 124-73-2 |
| Carbon Tetrachloride (Tetrachloromethane) | 56-23-5 |
| 1, 1, 1, - Trichloroethane (methyl chloroform) and its isomers except 1, 1, 2-trichloroethane | 71-55-6 |
| Bromomethane (Methyl Bromide) | 74-83-9 |
| Bromoethane | 74-96-4 |
| 1-Bromopropane (n-Propyl bromide) | 106-94-5 |
| Iodotrifluoromethane (Trifluoromethyl iodide) | 2314-97-8 |
| Chloromethane (Methyl chloride) | 74-87-3 |
| Dibromofluoromethane (HBFC-21 B2) | 1868-53-7 |
| Bromodifluoromethane (HBFC-22B1) | 1511-62-2 |
| Bromofluoromethane (HBFC-31 B1) | 373-52-4 |
| Tetrabromofluoroethane (HBFC-121 B4) | 306-80-9 |
| Tribromodifluoroethane (HBFC-122 B3) | - |
| Dibromotrifluoroethane (HBFC-123 B2) | 354-04-1 |
| Bromotetrafluoroethane (HBFC-124 B1) | 124-72-1 |
| Tribromofluoroethane (HBFC-131 B3) | - |
| Dibromodifluoroethane (HBFC-132 B2) | 75-82-1 |
| Bromotrifluoroethane (HBFC-133 B1) | 421-06-7 |
| Dibromofluoroethane (HBFC-141 B2) | 358-97-4 |
| Bromodifluoroethane (HBFC-142 B1) | 420-47-3 |
| Bromofluoroethane (HBFC-151 B1) | 762-49-2 |
| Hexabromofluoropropane (HBFC-221 B6) | - |
| Pentabromodifluoropropane (HBFC-222 B5) | - |
| Tetrabromotrifluoropropane (HBFC-223 B4) | - |

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| Tribromotetrafluoropropane (HBFC-224 B3) | - |
| Dibromopentafluoropropane (HBFC-225 B2) | 431-78-7 |
| Bromohexafluoropropane (HBFC-226 B1) | 2252-78-0 |
| Pentabromofluoropropane (HBFC-231 B5) | - |
| Tetrabromodifluoropropane (HBFC-232 B4) | - |
| Tribromotrifluoropropane (HBFC-233 B3) | - |
| Dibromotetrafluoropropane (HBFC-234 B2) | - |
| Bromopentafluoropropane (HBFC-235 B1) | 460-88-8 |
| Tetrabromofluoropropane (HBFC-241 B4) | - |
| Tribromodifluoropropane (HBFC-242 B3) | 70192-80-2 |
| Dibromotrifluoropropane (HBFC-243 B2) | 431-21-0 |
| Bromotetrafluoropropane (HBFC-244 B1) | 679-84-5 |
| Tribromofluoropropane (HBFC-251 B3) | 75372-14-4 |
| Dibromodifluoropropane (HBFC-252 B2) | 460-25-3 |
| Bromotrifluoropropane (HBFC-253 B1) | 421-46-5 |
| Dibromofluoropropane (HBFC-261 B2) | 51584-26-0 |
| Bromodifluoropropane (HBFC-262 B1) | - |
| Bromofluoropropane (HBFC-271 B1) | 1871-72-3 |
| Dichlorofluoromethane (HCFC-21) | 75-43-4 |
| Chlorodifluoromethane (HCFC-22) | 75-45-6 |
| Chlorofluoromethane (HCFC31) | 593-70-4 |
| Tetrachlorofluoroethane (HCFC 121) | 134237-32-4 |
| 1,1,2,2-Tetrachloro-1-fluoroethane (HCFC-121) | 354-14-3 |
| 1,1,1,2-tetrachloro-2-fluoroethane (HCFC-121a) | 354-11-0 |
| Trichlorodifluoroethane (HCFC-122) | 41834-16-6 |
| 1,2,2-trichloro-1,1-difluoroethane (HCFC-122) | 354-21-2 |
| 1,1,2-trichloro-1,2-difluoroethane (HCFC-122a) | 354-15-4 |
| 1,1,1-trichloro-2,2-difluoroethane (HCFC-122b) | 354-12-1 |
| Dichlorotrifluoroethane (HCFC-123) | 34077-87-7 |
| 1,1-Dichloro-2,2,2-trifluoroethane (HCFC-123) | 306-83-2 |
| 1,2-Dichloro-1,1,2-trifluoroethane (HCFC-123a) | 354-23-4、90454-18-5 |
| 1,1-Dichloro-1,2,2-trifluoroethane (HCFC-123b) | 812-04-4 |
| Chlorotetrafluoroethane (HCFC-124) | 63938-10-3 |
| 2-Chloro-1,1,1,2-tetrafluoroethane (HCFC-124) | 2837-89-0 |
| 1-Chloro-1,1,2,2-tetrafluoroethane (HCFC-124a) | 354-25-6 |
| Trichlorofluoroethane (HCFC-131) | 27154-33-2、(134237-34-6) |
| 1,1,2-Trichloro-2-fluoroethane (HCFC-131) | 359-28-4 |
| 1,1,2-Trichloro-1-fluoroethane (HCFC-131a) | 811-95-0 |
| 1,1,1-Trichloro-2-fluoroethane (HCFC-131b) | 2366-36-1 |
| Dichlorodifluoroethane (HCFC-132) | 25915-78-0 |
| 1,2-Dichloro-1,2-difluoroethane (HCFC-132) | 431-06-1 |
| 1,1-Dichloro-2,2-difluoroethane (HCFC-132a) | 471-43-2 |
| 1,2-Dichloro-1,1-difluoroethane (HCFC-132b) | 1649-08-7 |
| 1,1-Dichloro-1,2-difluoroethane (HCFC-132c) | 1842-05-3 |
| Chlorotrifluoroethane (HCFC-133) | 1330-45-6、431-07-2 |
| 1-Chloro-1,2,2-trifluoroethane (HCFC-133) | 1330-45-6 |
| 2-Chloro-1,1,1-trifluoroethane (HCFC-133a) | 75-88-7 |
| 1-Chloro-1,1,2-trifluoroethane (HCFC-133b) | 421-04-5 |
| Dichlorofluoroethane (HCFC-141) | 1717-00-6、(25167-88-8) |
| 1,2-Dichloro-1-fluoroethane (HCFC-141) | 430-57-9 |
| 1,1-Dichloro-2-fluoroethane (HCFC-141a) | 430-53-5 |
| 1,1-Dichloro-1-fluoroethane (HCFC-141b) | 1717-00-6 |
| Chlorodifluoroethane (HCFC-142) | 25497-29-4 |
| 2-Chloro-1,1-difluoroethane (HCFC-142) | 338-65-8 |
| 1-Chloro-1,1-difluoroethane (HCFC-142b) | 75-68-3 |
| 1-Chloro-1,2-difluoroethane (HCFC-142a) | 338-64-7 |
| Chlorofluoroethane (HCFC-151) | 110587-14-9 |
| 1-Chloro-2-fluoroethane (HCFC-151) | 762-50-5 |
| 1-Chloro-1-fluoroethane (HCFC-151a) | 1615-75-4 |
| Hexachlorofluoropropane (HCFC-221) | 134237-35-7、29470-94-8 |
| 1,1,1,2,2,3-Hexachloro-3-fluoropropane (HCFC-221ab) | 422-26-4 |
| Pentachlorodifluoropropane (HCFC- 222) | 134237-36-8 |
| 1,1,1,3,3-Pentachloro-2,2-difluoropropane (HCFC- 222ca) | 422-49-1 |
| 1,2,2,3,3-Pentachloro-1,1-difluoropropane (HCFC-222aa) | 422-30-0 |
| Tetrachlorotrifluoropropane (HCFC-223) | 134237-37-9 |

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| 1,1,3,3-Tetrachloro-1,2,2-trifluoropropane (HCFC-223ca) | 422-52-6 |
| 1,1,1,3-Tetrachloro-2,2,3-trifluoropropane (HCFC-223cb) | 422-50-4 |
| Trichlorotetrafluoropropane (HCFC- 224) | 134237-38-0 |
| 1,3,3-Trichloro-1,1,2,2-tetrafluoropropane (HCFC- 224ca) | 422-54-8 |
| 1,1,3-Trichloro-1,2,2,3-tetrafluoropropane (HCFC-224cb) | 422-53-7 |
| 1,1,1-Trichloro-2,2,3,3-tetrafluoropropane (HCFC-224cc) | 422-51-7 |
| Dichloropentafluoropropane (HCFC-225) | 127564-92-5 |
| 2,2-Dichloro-1,1,1,3,3-pentafluoropropane (HCFC-225aa) | 128903-21-9 |
| 2,3-Dichloro-1,1,1,2,3-pentafluoropropane (HCFC-225ba) | 422-48-0 |
| 1,2-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC-225bb) | 422-44-6 |
| 3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca) | 422-56-0 |
| 1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb) | 507-55-1 |
| 1,1-Dichloro-1,2,2,3,3-pentafluoropropane (HCFC-225cc) | 13474-88-9 |
| 1,2-Dichloro-1,1,3,3,3-pentafluoropropane (HCFC-225da) | 431-86-7 |
| 1,3-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC-225ea) | 136013-79-1 |
| 1,1-Dichloro-1,2,3,3,3-pentafluoropropane (HCFC-225eb) | 111512-56-2 |
| Chlorohexafluoropropane (HCFC-226) | 134308-72-8 |
| 2-Chloro-1,1,1,3,3,3-hexafluoropropane (HCFC-226da) | 431-87-8 |
| Pentachlorofluoropropane (HCFC- 231) | 134190-48-0 |
| 1,1,1,2,3-Pentachloro-2-fluoropropane (HCFC-231bb) | 421-94-3 |
| Tetrachlorodifluoropropane (HCFC-232) | 134237-39-1 |
| 1,1,1,3-Tetrachloro-3,3-difluoropropane (HCFC-232fc) | 460-89-9 |
| Trichlorotrifluoropropane (HCFC-233) | 134237-40-4 |
| 1,1,1-Trichloro-3,3,3-trifluoropropane (HCFC-233fb) | 7125-83-9 |
| Dichlorotetrafluoropropane (HCFC-234) | 127564-83-4 |
| 1,2-Dichloro-1,2,3,3-tetrafluoropropane (HCFC-234db) | 425-94-5 |
| Chloropentafluoropropane (HCFC-235) | 134237-41-5 |
| 1-Chloro-1,1,3,3,3-pentafluoropropane (HCFC-235fa) | 460-92-4 |
| Tetrachlorofluoropropane (HCFC-241) | 134190-49-1 |
| 1,1,2,3-Tetrachloro-1-fluoropropane (HCFC-241db) | 666-27-3 |
| Trichlorodifluoropropane (HCFC-242) | 134237-42-6 |
| 1,3,3-Trichloro-1,1-difluoropropane (HCFC-242fa) | 460-63-9 |
| Dichlorotrifluoropropane (HCFC-243) | 134237-43-7 |
| 1,1-Dichloro-1,2,2-trifluoropropane (HCFC-243cc) | 7125-99-7 |
| 2,3-Dichloro-1,1,1-trifluoropropane (HCFC-243db) | 338-75-0 |
| 3,3-Dichloro-1,1,1-otrifluoropropane (HCFC-243fa) | 460-69-5 |
| Chlorotetrafluoropropane (HCFC-244) | 134190-50-4 |
| 3-Chloro-1,1,2,2-tetrafluoropropane (HCFC-244ca) | 679-85-6 |
| 1-Chloro-1,1,2,2-tetrafluoropropane (HCFC-244cc) | 421-75-0 |
| Trichlorofluoropropane (HCFC-251) | 134190-51-5 |
| 1,1,3-Trichloro-1-fluoropropane (HCFC-251fb) | 818-99-5 |
| 1,1,2-Trichloro-1-fluoropropane (HCFC-251dc) | 421-41-0 |
| Dichlorodifluoropropane (HCFC-252) | 134190-52-6 |
| 1,3-Dichloro-1,1-difluoropropane (HCFC-252fb) | 819-00-1 |
| Chlorotrifluoropropane (HCFC-253) | 134237-44-8 |
| 3-Chloro-1,1,1-trifluoropropane (HCFC-253fb) | 460-35-5 |
| Dichlorofluoropropane (HCFC-261) | 134237-45-9 |
| 1,1-Dichloro-1-fluoropropane (HCFC-261fc) | 7799-56-6 |
| 1,2-Dichloro-2-fluoropropane (HCFC-261ba) | 420-97-3 |
| Chlorodifluoropropane (HCFC-262) | 134190-53-7 |
| 1-Chloro-2,2-difluoropropane (HCFC-262ca) | 420-99-5 |
| 2-Chloro-1,3-difluoropropane (HCFC-262da) | 102738-79-4 |
| 1-Chloro-1,1-difluoropropane (HCFC-262fc) | 421-02-3 |
| Chlorofluoropropane (HCFC-271) | 134190-54-8 |
| 2-Chloro-2-fluoropropane (HCFC-271ba) | 420-44-0 |
| 1-Chloro-1-fluoropropane (HCFC-271fb) | 430-55-7 |

Note:Table.5 dose not include all the isomer of each substance. The isomer will be included to this table after its CAS No. registered.

Table. 5-R17 Radioactive Substances (Radioactive Isotope)

| Legislative Requirement | Major Legislation |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Intentional use prohibited in any products | Nuclear power plant regulations, Laws Concerning the Prevention from Radiation Hazards due to Radioisotopes and Others |
| Substance name | CAS No. |
| Uranium-238 | 7440-61-1 |
| Radon | 10043-92-2 |
| Americium-241 | 14596-10-2 |
| Thorium-232 | 7440-29-1 |
| Cesium-137 | 10045-97-3 |
| Strontium-90 | 10098-97-2 |
| Other radioactive substances | - |

Table. 5-R18 Dimethylfumarate (DMF)

| Legislative Requirement | Major Legislation |
|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Intentional use prohibited and less than 0.1ppm in any products | EU COMMISSION DECISION 2009/251/EC, EU REACH REGULATION ANNEX XVIII (RESTRICTED SUBSTANCE) |
| Substance name | CAS No. |
| Dimethylfumarate (DMF) | 624-49-7 |