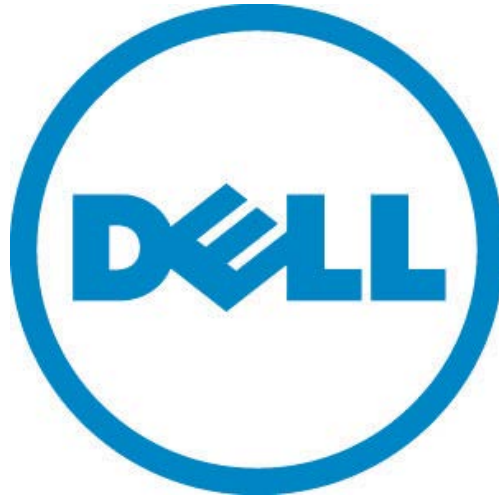


DELL CONTROLLED PRINT



Materials Restricted for Use

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Author: Markus Stutz
Owner: Markus Stutz

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Maureen Martinez	Maureen Martinez	A01-00	09/23/2015

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1. Revision History

Rev.	PCO #	Revision Description	Approved	Date
A00	PCO29189	Initial Release converted over from 6T198	Matt Marshall	May 2015
A01	PCO30586	Scope: Communication of compliance uses Agile PG&C instead of N6685. References: Added legal as well as ecolabel references Definitions: A definition of halogenated plastics has been re-introduced. Table 1 Dioctyltin (DOT) compounds: Reduced scope of restriction to align with EU REACH, HBCDD: Lowered threshold to 100ppm (proposed EU POPs regulation) Removed Perchlorate Added Red Phosphorous Table 2 and Table 3: Merged into a single table, requiring reporting of all substances at the homogeneous material level (following judgment by the European Court of Justice) Packaging restrictions: Removed restriction on expanded polystyrene (EPS foam). Added a restriction on free-rise polyurethane based foam-in-place Battery restrictions: Deleted Mercury exemption for button cell batteries Supplier declaration process: Communication of compliance uses Agile PG&C instead of N6685. Appendix A: Deleted exemptions 7(b) and 8(b).	Maureen Martinez	09/27/15

2. Introduction

Dell's vision is to avoid the use of substances in its products that could seriously harm the environment or human health and to ensure that we act responsibly and with caution. Dell material restrictions are based on consideration for legal requirements, international treaties and conventions, and specific market requirements.

This specification lists substances banned or restricted for use in Dell products and in the manufacture of Dell products. If restricted substances are introduced and/or detected in products, potential courses of action may include developing corrective actions to requalify parts to meet this specification, delaying the launch of products and/or removing non-compliant suppliers from the Dell Approved Vendor List (AVL).

2.1 Purpose

To communicate to Dell design teams and suppliers materials restrictions required for parts in all Dell-branded products. The specification should be used when selecting materials for product parts and packaging.

2.2 Scope

All parts in Dell-branded products that are supplied to Dell and/or designed by Dell Inc. must meet this specification. Compliance with this specification is communicated to Dell via Supplier Declaration of Conformity (SDoC) in the Agile P&C module. The scope includes all of the components, parts, assemblies, batteries and packaging of each product. The restricted substances cannot be contained in the product and its components above the designated thresholds for the controlled applications listed in Section 3. Some restrictions also apply to the manufacturing of components or products.

2.3 References

- Dell P/N ENV0199, Dell BFR/CFR/PVC-Free Specification (formerly "halogen-free")
- Dell P/N ENV0319, Dell Material Compliance Testing Specification
- Dell P/N 64MNT, Dell Regulatory Critical Components Peripheral Guide Sheets
- Dell P/N ENV0046, Dell Environmental Affairs Corrective Action Process
- Directive 2006/66/EC of the European Parliament and of the Council on Batteries and Accumulators and Waste Batteries and Accumulators, September 2006.
- Directive of the European Parliament and of the Council on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, 2011/65/EU, June 2011 (RoHS Directive)
- Directive of the European Parliament and of the Council on Packaging and Packaging waste, 94/62/EC, December 1994
- Regulation of the European Parliament and of the Council on the Registration, Evaluation, Authorization and Restriction of Chemicals, 1907/2006/EC, December 2006 (REACH Regulation)
- Regulation of the European Parliament and of the Council on certain fluorinated greenhouse gases, 862/2006, May 2006
- EPA Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)
- California Safe Drinking Water and Toxic Enforcement Act of 1986 (Section 25249.5-25249.13 of the California Health and Safety Code), commonly referred to as "California Proposition 65"
- Prohibition of Certain Toxic Substances Regulations, 2012 (Canada)
- Restriction of Hazardous Substances (RoHS) in Electrical and Electronic Equipment (EEE) in Singapore

- Regulating the permitted limits for a number of hazardous substances in electric and electronic products, in Circular 30/2011/TT-BCT (Vietnam RoHS)
- E-Waste (Management & Handling) Rules, Ministry of Environment & Forests, Government of India (India RoHS)
- Management Methods for Control of Pollution Caused by Electronic and Electrical Products in China (China RoHS)
- Technical Regulation on restrictions as to the use of some dangerous substances in electric and electronic devices (Ukraine RoHS)
- The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (Turkey RoHS)
- China CEC technical requirement for environmental labeling products for computers and displays
- IEC 62474 Material Declaration for Products of and for the Electrotechnical Industry

2.4 Definitions

- Antimicrobial: An agent that prevents or inhibits microorganisms
- Article: Object which during production is given a special shape, surface or design which determines its function to a greater degree than does its chemical composition (e.g. all Dell parts and products are classified as Articles).
- Assembly: An integrated set of components. A populated printed circuit board is an assembly and not a component because individually functioning components can be removed.
- CAS #: Chemical Abstract System numbers are assigned to chemicals for unique identification. The CAS numbering system is an international convention. For example, the CAS# for lead is 7439-92-1.
- Component: a combination of homogenous materials that have been formed into a single manufactured mechanical or electrical part. Examples of components may include microprocessors, plastic enclosures, coin cell batteries, capacitors, etc. Sub-assemblies and semi-finished goods are not considered components. Examples of sub-assemblies/semi-finished goods may include populated motherboards/daughter cards, power supplies and adaptors, hard drives, tape drives, mouse, etc.
- External cables: cables and cords that are likely to be accessible to the consumer during ordinary use
- Halogenated plastics: Plastics/polymers that contain or are treated with one or more of the following elements: fluorine, chlorine, bromine, iodine, and/or astatine. Examples include, but are not limited to, polyvinyl chloride (PVC) and tetrafluoroethylene (TFE, "Teflon").
- Homogenous material: one material of uniform composition throughout or a material, consisting of a combination of materials, that cannot be disjointed or separated into different materials by mechanical actions such as unscrewing, cutting, crushing, grinding and abrasive processes
- Mechanical plastic part: plastic parts that do not internally carry an electrical signal such as housings, brackets, bezels, latches, etc. that form the basic structure of the product and/or have mechanical functions. Plastic parts such as fans, connectors, printer fuser assemblies, etc. are not considered "mechanical plastic parts" in the context of this specification.
- Non-compliance: A failure to meet the requirements of the specification. Non-compliance requires corrective action.
- Non-electrical/Non-electronic parts and products (Dell Branded): Electricity is not required to operate these parts and products. Examples include, but not limited to, apparel products (e.g. shirts, pants, hats...), stationary products (e.g. pens, pencils, erasers, staplers,

- key chains, paper pads and notebooks ...), office equipment accessories (e.g. computer bags, locks, mouse pads...) and toys. Packaging materials are excluded from this definition.
- Not detectable: a substance in a part or homogenous material is not detected at the lowest detectable limit using standard analytical techniques.
 - Packaging: Materials used to protect products from damage due to storage or transportation (e.g., boxes, shipping supplies, cushioning & foam, bags, shrink wrap, tape/adhesives). Includes inks and dyes used to label packages.
 - PPM: parts per million, unit of measurement for weight percentage. 1 ppm = 1 mg/kg = 0.0001 % by weight.
 - Prolonged skin contact: Skin contact for longer than 30 seconds
 - RoHS substances: Those substances restricted under the European RoHS Directive (2011/65/EU) and other RoHS-type legislation (China, India, Turkey, Ukraine, etc.), including cadmium, chromium VI, lead, mercury, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE).
 - Solder (in reference to the RoHS exemption for lead in solders for servers, storage and networking products): alloys used to create metallurgical bonds between two or more metal surfaces to achieve an electrical and/or physical connection". In this context, the term 'solder' also includes all materials that become part of the final solder joint, including solder finishes on components or printed circuit boards.
 - Substance: a chemical element and its compounds in the natural state or obtained by any manufacturing process, including any additive necessary to preserve its stability and any impurity deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition
 - Threshold Limit: the maximum concentration at which a restricted substance can be present or above which a declarable substance needs to be reported.

3. Product Content Restrictions

3.1 Material Restriction Requirements

Table 1 lists substances that Dell has banned or restricted. For each listed substance, a threshold limit has been established to account for unavoidable impurities consistent with regulatory requirements. Table 1 also lists allowed exemptions and references to specific restricted substances and CAS numbers (Appendix B). Refer to Dell P/N ENV0319 for substance testing protocols and requirements. Compliance with this specification is communicated to Dell via Supplier Declaration of Conformity (SDoC,) in the Agile P&C module that will be obtained upon request during part qualification.

TABLE 1 - Banned or Restricted Substances

Substance	Threshold Limit (mg substance/ kg <i>homogenous material</i> =ppm)	Explanations / Exemptions / Effective dates	Reference Appendix B / CAS #
Cadmium and its compounds	100	See Appendix A for applicable RoHS exemptions	Table B
Chromium VI and its compounds	1000	Restriction applies to non-metallic application	Table D
	Not Detectable	Restriction applies to metallic applications.	
Mercury and its compounds	1000	See Appendix A for applicable RoHS exemptions	Table G
Polybrominated Biphenyls (PBB)	1000		Table I
Polybrominated Diphenyl Ethers (PBDE)	1000		Table I
Lead and its compounds	300	Restriction applies only to Lead and compounds in cable jacketing material of external cables	Table F
	1000	Restriction applies for all other applications. See Appendix A for applicable RoHS exemptions	
Alkanes C10-C13, chloro, Short Chained Chlorinated Paraffins (SCCP)	1000		Table S
Alkanes C14-C17, chloro, Medium Chain Chlorinated Paraffins (MCCPs)	1000		Table S
Antimony and its compounds	1000	Restriction applies to mechanical plastic parts above 25 grams	Table V
Asbestos and its compounds	Not detectable		Table A
Azocolorants and Azodyes	30	Restriction only applies to textile and leather articles that may come into direct and prolonged contact with the human skin or oral cavity	Table K

Benzenamine N-phenyl, reaction products with styrene and 2,4,4-trimethylpentene (BNST)	Not detectable		68921-45-9
Brominated/Chlorinated flame retardants (excluding PBB, PBDE)	1000	Restriction applies to mechanical plastic parts, plastic parts greater than 25 grams and products designated as Halogen Free or BFR/CFR-Free. Exemption applies to internal plastic components such as circuit boards, electronic components, fans, cables, printer fuser assembly and electrical assemblies contained in Dell products unless designated as Halogen Free or BFR/CFR-Free products	Table L
Diarsenic pentaoxide	1000	Semiconductors exempt	1303-28-2
Diarsenic trioxide	1000	Semiconductors exempt	1327-53-3
Dibutyltin (DBT) compounds	1000		Table T
Dioctyltin (DOT) compounds	1000	Restriction applies to (a) textile and leather articles intended to come into contact with the skin, (b) childcare articles, (c) two-component room temperature vulcanisation moulding kits (RTV-2 moulding kits)	Table T
Dimethyl Fumarate (DMF)	0.1		624-49-7
Fluorinated greenhouse gases (GHG) (HFC, PFC, SF6)	Not detectable	Restriction applies to both manufacturing processes and products	Table Q
Formaldehyde	Not detectable	Restriction only applies to wood products	50-00-0
Hexabromocyclododecane(HBCDD) and all major diastereoisomers	100		25637-99-4; 3194-55-6
Nickel and its compounds	1000	Metallic nickel or nickel alloy exempt in all applications except external chassis/case parts likely to result in prolonged skin exposure. No exemptions for organo-nickel compounds.	Table H
Ozone depleting substances (Class I & Class II CFCs and HCFCs)	Not detectable	Non-Class I or Class II ozone depleting substances. Restriction applies to both manufacturing processes and products.	Table C, E
Perfluorooctane sulfonates (PFOS), C8F17SO2X (X = OH, metal salt (O-M*)), halide, amide, and other derivatives including polymers)	Not detectable	Photoresists or anti-reflective coatings for photolithography processes, photographic coatings applied to films, papers or printing plates exempt.	Table O

Phenol,2-(2H-benzotriazol-2-yl)-4,6-bis(1,1-dimethylethyl)-	Not detectable		3846-71-7
Phthalate: Diisobutyl (DIBP)	1000		84-69-5
Phthalate: Bis (2-ethylhexyl)phthalate (DEHP)	1000		117-81-7
Phthalate: Benzyl butyl phthalate (BBP)	1000		85-68-7
Phthalate: Dibutyl phthalate (DBP)	1000		84-74-2
Phthalate: Di-n-octyl phthalate (DNOP)	1000		117-84-0
Phthalate: Diethyl phthalate (DEP)	1000	Restriction effective by January 1, 2016 for newly launched Dell parts and products and by January 1, 2017 for all sustaining products.	84-66-2
Polychlorinated Biphenyls (PCBs) and Terphenyls (PCTs)	Not detectable		Table J
Polychlorinated naphthalene (PCNs)	Not detectable		Table N
Polycyclic Aromatic Hydrocarbons (PAH)	10 PPM (Sum of 18 PAH) and 1 PPM each for Benzo[a]pyren, Benzo[e]pyrene, Benzo[a]anthracene, Chrysen, Benzo[b]fluoranthene, Benzo[j]fluoranthene, Benzo[k]fluoranthene, Dibenzo[a,h]anthracene	Restriction applies to external plastics and soft surfaces that can experience frequent skin contact. Refer to Dell specification 64MNT for additional details. Concentration limit is the sum of all 18 PAHs.	Table P
Polyvinyl chloride (PVC)	1000	Restriction applies to mechanical plastic parts, plastic parts greater than 25 grams and products designated as Halogen Free or PVC-free products. Cables, connectors, electronic components, battery trays, magnetic tape, and similar non-mechanical plastic parts are exempt unless designated as Halogen Free or PVC-Free products	9002-86-2
Radioactive substances	Not detectable		Table R
Red Phosphorous	1000		7723-14-0
Tributyl tin (TBT), Triphenyl tin (TPT) and Tributyl Tin Oxide (TBTO) compounds	Not detectable		Table M
Tri-o-cresyl phosphate or Tricresyl phosphate (TCP)	1000	Restriction applies to mechanical plastic parts above 25 grams. Exempted in PCB laminates, electronic components and cable insulations	78-30-8; 1330-78-5
Tris(2-chloroethyl)phosphate (TCEP)	1000	Restriction effective by July 1, 2015	115-96-8

3.2 Material Declaration Requirements

To encourage industry alignment with IEC 62474 “Material Declaration for Products of and for the Electrotechnical Industry”, Dell is requesting supplier disclosure of the list of substances (Table 2 below). **It is important to note that these substances are not currently banned or restricted in any application per this specification.**

TABLE 2 - Material Declaration Requirements at Homogeneous Material Level

Substance	Threshold Limit (mg substance/ kg homogeneous weight =ppm)	Examples of Use	Reference Appendix B / CAS #
Antimony and its compounds	1000	Pigment, paint, catalyst, lead free solder, stabilizer, n-type dopant, flame retardant catalyst	Table V
1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich	1000	Plasticizer, dye, pigment, paint, ink, adhesive, lubricant	71888-89-6
1,2-Benzenedicarboxylic acid, dipentylester, branched and linear	1000	Plasticizer in plastic materials in specialist applications, for example where high solvating plasticizers and stain resistance are required	84777-06-0
1,2-bis(2-methoxyethoxy)ethane (TEGDME; triglyme)	1000	Solvent may be used in battery electrolytes for lithium batteries. May be in found in printing inks.	112-49-2
1,2-Diethoxyethane	1000	Solvent used in electrolytes for lithium batteries.	629-14-1
1,2-dimethoxyethane; ethylene glycol dimethyl ether (EGDME)	1000	Solvent used in battery electrolytes for lithium batteries. May be in found in printing inks and paint strippers	110-71-4
4-(1,1,3,3-tetramethylbutyl)phenol	1000	Unreacted process chemical	140-66-9
4-Aminoazobenzene	1000	Used as yellow pigment and in inks, including inks for inkjet printers. It is also used as a dye for lacquer, varnish, wax products, oil stains and styrene resins.	60-09-3
4-Nonylphenol, branched and linear, ethoxylated	1000	Nonylphenol ethoxylates are used in paints, lacquers and varnishes in concentrations up to 10% w/w of the mixture.	-
Aluminosilicate Refractory Ceramic Fibers	1000	Thermal insulation for high temperature test	

		equipment	
Ammonium pentadecafluorooctanoate (APFO)	1000	APFO is used as an emulsion stabilizer to manufacture polyvinylidene fluoride (PVDF) and other fluorinated polymers and elastomers and can be found in concentrations up to 1% w/w in these plastics.	3825-26-1
Beryllium and its compounds	1000	ceramics, metal alloy, copper-beryllium alloy, catalyst, precipitation hardening alloy, copper-beryllium alloy for spring, solder	Table U
Bis(2-methoxyethyl) ether	1000	Electrolyte in lithium batteries	111-96-6
Bisphenol-A	1000	manufacture of polycarbonate resins (PC)	80-05-7
Boric acid	1000	In wood veneers/ pressed wooden panels as starch additive, flame retardant and stabilizer in aminoplastic resin, wood preservative, as flame retardant in wood, cotton and other plant derived material	10043-35-3, 11113-50-1
Brominated Flame Retardant (excl. PBB, PBDE, HBCDD and TBBPA)	1000	Flame retardant use on electrical and mechanical components	Table L
Chlorinated Flame Retardant	1000	Flame retardant use on electrical and mechanical components	Table L
Cobalt dichloride	1000	Pneumatic panels to indicate water contamination	7646-79-9
Diboron trioxide	1000	Found in wood veneers, glass/fiberoptics and ceramics - for industrial applications	1303-86-2
Dibutyltin dichloride (DBTC)	1000	Ingredient in some paint thinner and as heat stabilizer for PVC	683-18-1
Disodium tetraborate, anhydrous	1000	In wood veneers/ pressed wooden panels as starch additive, flame retardant and stabilizer in aminoplastic resin, wood preservative	1303-96-4, 1330-43-4, 12179-04-3
Hexahydromethylphthalic anhydride, Hexahydro-4-methylphthalic anhydride, Hexahydro-1-	1000	Primary use is as a hardner for epoxy resins.	25550-51-0, 19438-60-9, 48122-

methylphthalic anhydride, Hexahydro-3-methylphthalic anhydride			14-1, 57110-29-9
N,N-dimethylformamide	1000	Used as electrolyte in electrolytic capacitors rated for low temperature use to -55C.	68-12-2
Pentazinc chromate octahydroxide	1000	Colorant	49663-84-5
Perfluorooctanoic Acid (PFOA)	1000	Insulator for electric wires, planar etching of fused silica	335-67-1
Phthalate: 1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP)	1000	plasticizer, dye, pigment, paint, ink, adhesive, lubricant	68515-42-4
Phthalate: 1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear	1000	plasticizer, dye, pigment, paint, ink, adhesive, lubricant	68515-50-4
Phthalate: Di(methoxyethyl) phthalate (DMEP)	1000	plasticizer, dye, pigment, paint, ink, adhesive, lubricant	117-82-8
Phthalate: Dihexyl phthalate (DnHP)	1000	plasticizer, dye, pigment, paint, ink, adhesive, lubricant	84-75-3
Phthalate: Diisodecyl phthalate (DIDP)	1000	plasticizer, dye, pigment, paint, ink, adhesive, lubricant	26761-40-0
Phthalate: Diisooheptyl phthalate (DIHP)	1000	plasticizer, dye, pigment, paint, ink, adhesive, lubricant	71888-89-6
Phthalate: Diisononyl phthalate (DINP)	1000	plasticizer, dye, pigment, paint, ink, adhesive, lubricant	28553-12-0
Phthalate: Diisopentylphthalate (DIPP)	1000	plasticizer, dye, pigment, paint, ink, adhesive, lubricant	605-50-5
Phthalate: Dipentyl phthalate (DPP)	1000	plasticizer, dye, pigment, paint, ink, adhesive, lubricant	131-18-0
Phthalate: N-pentyl-isopentylphthalate (nPiPP)	1000	plasticizer, dye, pigment, paint, ink, adhesive, lubricant	776297-69-9
Polyvinyl Chloride (PVC)	1000	Cables, connectors, electronic components, battery trays, magnetic tape, and similar non-mechanical plastic parts	9002-86-2
Potassium hydroxyoctaoxidizincatedichromate	1000	Paint, anti-corrosion	11103-86-9
Tetrabromobisphenol A (TBBPA) additive and reactive	1000	Flame retardant used in PCB Laminates and other electrical components	30496-13-0
Zirconia Aluminosilicate Refractory	1000	Thermal insulation for high	

Ceramic Fiber		temperature test equipment	
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3.3 BFR/CFR/PVC-Free “Halogen Free” Requirements

All parts and/or products designed to satisfy “halogen-free” requirements must satisfy Dell’s BFR/CFR/PVC-Free Specification “Halogen-Free Specification”, p/n ENV0199 (in Agile) in addition to this specification. Parts and/or products without a “halogen-free” requirement are not required to comply with ENV0199.

4. Product Packaging Content Restrictions

Table 4 lists substances that Dell has banned or restricted in product packaging materials supplied to or designed by Dell Inc. These substances cannot be used in the manufacturing of or contained in product packaging materials supplied to or designed by Dell Inc. In some instances, a threshold limit has been established to account for unavoidable impurities. The material is acceptable if the restricted substances are present at a quantity below the threshold limit for a controlled application. For packaging recycle marking requirements (SPI marks and country-specific marks), please see Dell WW Packaging Recycle Marking Specification (ENV0427, in Agile).

Refer to Appendix B for a detailed list of CAS #'s for each substance below.

TABLE 4 – Packaging Content Restrictions

Substance	Threshold Limit (mg/kg=ppm)	Exemptions	Reference Appendix B
Cadmium, Chromium VI, Lead and Mercury compounds	100 (sum of concentrations)	None	Tables B, D, F, G
Ozone depleting substances (Class I & Class II CFCs and HCFCs)	Not detectable	None	Table C, E
Halogenated plastics or polymers (ex: PVC)	Not detectable	None	See Section 2.4 for definition

Use of elemental chlorine as a bleaching agent in packaging is prohibited. Printed documentation should be bleached in a chlorine-free process.

Dell restricts the use of free-rise polyurethane based foam-in-place.

5. Battery Content Restrictions

Table 5 lists substances that Dell has restricted in batteries supplied to or designed by Dell Inc. above the indicated threshold limit for unavoidable impurities. Battery technology used in Dell products cannot be based on lead**, mercury or cadmium.

Refer to Appendix B for a detailed list of CAS #'s for each substance below.

TABLE 5 – Battery Content Restrictions

Substance	Threshold Limit (mg/kg=ppm)	Exemptions	Reference Appendix B
Cadmium and its compounds	5	None	Table B
Lead and its compounds	40	Lead-acid batteries (UPS)**, solder used in battery packs	Table F
Mercury and its compounds	1	None	Table G

** Uninterruptible Power Supply (UPS) units may utilize lead-acid technology. Batteries for this application are subject to certain fees and material labeling requirements.

6. Antimicrobial & Biocidal Substance Restrictions

Antimicrobial and/or Biocidal substances as defined by US EPA FIFRA and EU Biocidal Products Regulation 528/2012 (BPR) are restricted for use in all Dell products, even if the antimicrobial/biocidal substance is approved for use by the US EPA or EU BPR.

7. Non-Electrical/Non-Electronic Parts and Products Requirements

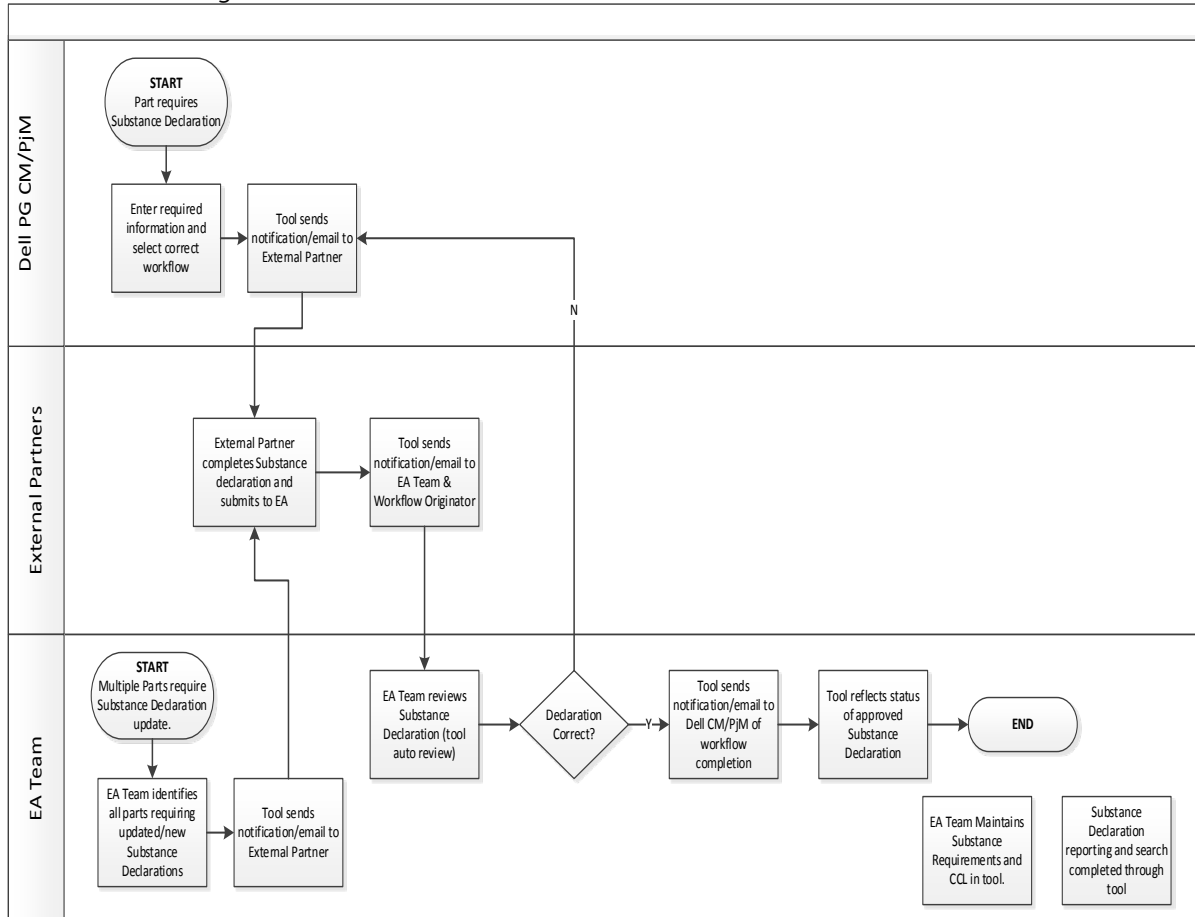
All Dell branded non-electrical and non-electronic parts and/or products must satisfy the minimum requirements below (this list may not be comprehensive and suppliers should comply with local laws and regulations where the products are sold):

TABLE 6 – Non-Electrical/Non-Electronic Parts and Products Content Restrictions

Substance	Threshold Limit (mg/kg=ppm)
Lead and its compounds (Pb)	90 PPM
Cadmium and its compounds (Cd)	100 PPM
Mercury and its compounds (Hg)	Not Detectable
Hexavalent Chromium and its compounds (Cr+6)	Not Detectable
Phthalate DEHP, BBP, DBP, DINP, DIDP, DNOP, DIBP and all other phthalates	1000 PPM for each phthalate
Nickel and its compounds	1000 PPM on all surfaces with expected direct and prolonged skin exposure
Additional requirements for textiles, toys and apparels only (e.g. shirts, pants, coats, hats, gloves, shoes...)	Adhere to the latest requirements from the American Apparel & Footwear Association (AAFA) Restricted Substance List (RSL)

8. Supplier Declaration Process

Compliance to this specification is communicated to Dell via Supplier Declaration of Conformity (SDoC) in the Agile PG&C module. An SDoC must be completed in Agile PG&C module on each applicable part in Dell's Bill of Materials. Environmental Affairs will review the SDoC during ECO/MCO routing.



Change Notification

If the material, component, assembly or product being supplied to Dell does not meet one or more of the applicable requirements of this specification, the supplier must immediately notify Dell. This notification also applies if the supplier or a subcontractor(s) makes changes in their operations that will cause a material, component, assembly or product to no longer comply with this specification.

9. Non-compliance Resolution

If a restricted substance is used in a nonexempt application above the threshold limit, the following actions may be required to resolve any deviations from this specification:

1. Qualification of parts to comply with specification/ phase out and replacement of use, which may result in removal of non-compliant suppliers from the Dell AVL
2. Delay of product launch
3. Stop ship of product to affected regions

Dell Environmental Affairs Corrective Action Process (ENV0046) should be referenced in non-compliance resolution.

Appendix A: Applicable RoHS Exemptions

Only the following RoHS exemptions can be used on Dell parts.

Exemption Number	Exemption	Scope and dates of applicability
3(a)	Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes not exceeding (per lamp) short length (< 500mm)	Max 3.5 mg per lamp
3(b)	Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes not exceeding (per lamp) medium length (>500mm and <1,500mm)	Max 5.0 mg per lamp
3(c)	Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes not exceeding (per lamp) long length (>1500mm)	Max 13.0 mg per lamp
4(a)	Mercury in other low pressure discharge lamps (per lamp)	Max 15.0 mg per lamp
4(b)-I	Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index Ra > 60: P < 155W	Max 30.0 mg per lamp
4(b)-II	Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index Ra > 60: 155W < P < 405W	Max 40.0 mg per lamp
4(b)-III	Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index Ra > 60: P > 405W	Max 40.0 mg per lamp
4(c)-I	Mercury in other High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) P < 155W	Max 25.0 mg per lamp
4(c)-II	Mercury in other High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) 155W < P < 405W	Max 30.0 mg per lamp
4(c)-III	Mercury in other High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) P > 405W	Max 40.0 mg per lamp
4(e)	Mercury in metal halide lamps (MH)	
4(f)	Mercury in other discharge lamps for special purposes not specifically mentioned in this Annex	
5(a)	Lead in glass of cathode ray tubes	
5(b)	Lead in glass of fluorescent tubes not exceeding 0,2 % by weight	
6(a)	Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0,35 % lead by weight	
6(b)	Lead as an alloying element in aluminum containing up to 0,4 % lead by weight	
6(c)	Copper alloy containing up to 4 % lead by weight	
7(a)	Lead in high melting temperature type solders (i.e. lead- based alloys containing 85 % by weight or more lead)	
7(c)-I	Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound	
7(c)-II	Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher	
13(a)	Lead in white glasses used for optical applications	
13(b)	Cadmium and lead in filter glasses and glasses used for reflectance standards	
15	Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages	

All RoHS exemptions will technically sunset 21. July 2016 if they have not been renewed. It is expected that apart from exemption 7(b) and 8(b) all exemptions outlined above will be renewed.

Appendix B: List of CAS Numbers

Table A - Asbestos and its Compounds

Example compounds and CAS Numbers

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 B - Cadmium and its Compounds

Example compounds and CAS Numbers

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 C – Chlorofluorocarbons (CFC's)

Example compounds and CAS Numbers

Trichlorofluoromethane	75-69-4
Dichlorodifluoromethane (CFC12)	75-71-8
Chlorotrifluoromethane (CFC 13)	75-72-9
Pentachlorofluoroethane (CFC 111)	354-56-3
Tetrachlorodifluoroethane (CFC 112)	76-12-0
Trichlorotrifluoroethane (CFC 113)	354-58-5
1,1,2 Trichloro-1,2,2 trifluoroethane	76-13-1
Dichlorotetrafluoroethane (CFC 114)	76-14-2
Monochloropentafluoroethane (CFC 115)	76-15-3
Heptachlorofluoropropane (CFC 211)	422-78-6
	135401-87-5
Hexachlorodifluoropropane (CFC 212)	3182-26-1
Pentachlorotrifluoropropane (CFC 213)	2354-06-5
	134237-31-3
Tetrachlorotetrafluoropropane (CFC 214)	29255-31-0
1,1,1,3-Tetrachlorotetrafluoropropane	2268-46-4
Trichloropentafluoropropane (CFC 215)	1599-41-3
1,1,1-Trichloropentafluoropropane	4259-43-2
1,2,3-Trichloropentafluoropropane	76-17-5
Dichlorohexafluoropropane (CFC 216)	661-97-2
Monochloroheptafluoropropane (CFC 217)	422-86-6
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
Bromodifluoromethane and isomers (HBFC's)	1511-62-2

Table D - Chromium VI and its Compounds

Example compounds and CAS Numbers

Chromium (VI) oxide	1333-82-0
Barium chromate	10294-40-3
Calcium chromate	13765-19-0
Chromic acetate	1066-30-4
Chromium trioxide	1333-82-0
Lead (II) chromate	7758-97-6
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 E – Hydrochlorofluorocarbons (HCFC's)

Example compounds and CAS Numbers

Dichlorofluoromethane (HCFC 21)	75-43-4
Chlorodifluoromethane (HCFC 22)	75-45-6
Chlorofluoromethane (HCFC 31)	593-70-4
Tetrachlorofluoroethane (HCFC 121)	134237-32-4
1,1,1,2-tetrachloro-2-fluoroethane (HCFC 121a)	354-11-0
1,1,2,2-tetrachloro-1-fluoroethane	354-14-3
Trichlorodifluoroethane (HCFC 122)	41834-16-6
1,2,2-trichloro-1,1-difluoroethane	354-21-2
Dichlorotrifluoroethane(HCFC 123)	34077-87-7
Dichloro-1,1,2-trifluoroethane	90454-18-5
2,2-dichloro-1,1,1-trifluoroethane	306-83-2
1,2-dichloro-1,1,2-trifluoroethane (HCFC-123a)	354-23-4
1,1-dichloro-1,2,2-trifluoroethane (HCFC-123b)	812-04-4
2,2-dichloro-1,1,2-trifluoroethane (HCFC-123b)	812-04-4
Chlorotetrafluoroethane (HCFC 124)	63938-10-3
2-chloro-1,1,1,2-tetrafluoroethane	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-Fluoro-1,2,2-trichloroethane	359-28-4
1,1,1-trichloro-2-fluoroethane (HCFC131b)	811-95-0
Dichlorodifluoroethane (HCFC 132)	25915-78-0
1,2-dichloro-1,1-difluoroethane (HCFC 132b)	1649-08-7
1,1-dichloro-1,2-difluoroethane (HFCF 132c)	1842-05-3
1,1-dichloro-2,2-difluoroethane	471-43-2
1,2-dichloro-1,2-difluoroethane	431-06-1
Chlorotrifluoroethane (HCFC 133)	1330-45-6
1-chloro-1,2,2-trifluoroethane	1330-45-6
2-chloro-1,1,1-trifluoroethane (HCFC-133a)	75-88-7
Dichlorofluoroethane(HCFC 141)	1717-00-6; (25167-88-8)
1,1-dichloro-1-fluoroethane (HCFC-141b)	1717-00-6
1,2-dichloro-1-fluoroethane	430-57-9
Chlorodifluoroethane (HCFC 142)	25497-29-4
1-chloro-1,1-difluoroethane (HCFC142b)	75-68-3
1-chloro-1,2-difluoroethane (HCFC142a)	25497-29-4
Hexachlorofluoropropane (HCFC 221)	134237-35-7
Pentachlorodifluoropropane (HCFC 222)	134237-36-8
Tetrachlorotrifluoropropane (HCFC 223)	134237-37-9
Trichlorotetrafluoropropane (HCFC 224)	134237-38-0
Dichloropentafluoropropane, (Ethyne, fluoro-) (HCFC 225)	127564-92-5; (2713-09-9)
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
Pentachlorofluoropropane (HCFC 231)	134190-48-0
Tetrachlorodifluoropropane (HCFC 232)	134237-39-1
Trichlorotrifluoropropane (HCFC 233)	134237-40-4
1,1,1-Trichloro-3,3,3-trifluoropropane	7125-83-9
Dichlorotetrafluoropropane (HCFC 234)	127564-83-4
Chloropentafluoropropane (HCFC 235)	134237-41-5
1-Chloro-1,1,3,3,3-pentafluoropropane	460-92-4
Tetrachlorofluoropropane (HCFC 241)	134190-49-1
Trichlorodifluoropropane (HCFC 242)	134237-42-6
Dichlorotrifluoropropane (HCFC 243)	134237-43-7
1,1-dichloro-1,2,2-trifluoropropane	7125-99-7
2,3-dichloro-1,1,1-trifluoropropane	338-75-0
3,3-Dichloro-1,1,1-trifluoropropane	460-69-5
Chlorotetrafluoropropane (HCFC 244)	134190-50-4
3-chloro-1,1,2,2-tetrafluoropropane	679-85-6
Trichlorofluoropropane (HCFC 251)	134190-51-5
1,1,3-trichloro-1-fluoropropane	818-99-5
Dichlorodifluoropropane (HCFC 252)	134190-52-6
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	7799-56-6
Chlorodifluoropropane (HCFC 262)	134190-53-7
2-chloro-1,3-difluoropropane	102738-79-4
Chlorofluoropropane (HCFC 271)	134190-54-8
2-chloro-2-fluoropropane	420-44-0

Table F - Lead and its Compounds

Example compounds and CAS Numbers

Lead	7439-92-1
Lead (II) sulfate	7446-14-2
Lead (II) carbonate	598-63-0
Lead hydrocarbonate	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 (II) phosphate	7446-27-2
Lead (II) chromate	7758-97-6
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 G - Mercury and its Compounds

Example compounds and CAS Numbers

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 H - Nickel and its Compounds

Example compounds and CAS Numbers

Nickel	7440-02-0
Nickel acetate	373-02-4
Nickel carbonate	3333-67-3
Nickel carbonyl	13463-39-3
Nickel hydroxide	12054-48-7 or 11113-74-9
Nickelocene	1271-28-9
Nickel oxide	1313-99-1
Nickel subsulfide	12035-72-2
Other nickel compounds	-

Table I – Polybrominated Biphenyls (PBBs) and their Ethers/ Oxides (PBDEs)

Example compounds and CAS Numbers

Bromobiphenyl and its ethers	2052-07-5 (2-Bromobiphenyl) 2113-57-7 (3-Bromobiphenyl) 92-66-0 (4-Bromobiphenyl) 101-55-3 (ether)
Decabromobiphenyl and its ethers	13654-09-6 1163-19-5 (ether)
Dibromobiphenyl and its ethers	92-86-4 2050-47-7 (ether)
Heptabromobiphenylether	68928-80-3
Hexabromobiphenyl and its ethers	59080-40-9 36355-01-8 (hexabromo-1,1'-biphenyl) 67774-32-7 (Firemaster FF-1) 36483-60-0 (ether)
Nonabromobiphenylether	63936-56-1
Octabromobiphenyl and its ethers	61288-13-9 32536-52-0 (ether)
Pentabromobidphenyl ether (note: Commercially available PeBDPO is a complex reaction mixture containing a variety of brominated diphenyloxides.	32534-81-9 (CAS number used for commercial grades of PeBDPO)
Polybrominated Biphenyls	59536-65-1
Tetrabromobiphenyl and its ethers	40088-45-7 40088-47-9 (ether)
Tribromobiphenyl ether	49690-94-0

Table J - Polychlorinated Biphenyls (PCBs) and Terphenyls (PCTs)

Example compounds and CAS Numbers

Polychlorinated Biphenyls	1336-36-3
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Aroclor	12767-79-2
Chlorodiphenyl (Aroclor 1260)	11096-82-5
Kanechlor 500	27323-18-8
Aroclor 1254	11097-69-1
Terphenyls	26140-60-3

Table K – Azo colorants (aromatic amines that may be formed by azo dyes)

Example compounds and CAS Numbers

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	

Table L – Brominated/Chlorinated flame retardants/additives (other than PBBs or PBDEs)

Example compounds and CAS Numbers

Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(14) [Aliphatic/alicyclic brominated compounds]	-
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(15) [Aliphatic/alicyclic brominated compounds in combination with antimony compounds]	-
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(16) [Aromatic brominated compounds excluding brominated diphenyl ether and biphenyls]	-
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(17) [Aromatic brominated compounds excluding brominated diphenyl ether and biphenyls) in combination with antimony compounds]	-
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(22) [Aliphatic/alicyclic chlorinated and brominated compounds]	-
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(42) [Brominated organic phosphorus compounds]	-
Poly(2,6-dibromo-phenylene oxide)	69882-11-7
Tetra-decabromo-diphenoxy-benzene	58965-66-5
1,2-Bis(2,4,6-tribromo-phenoxy) ethane	37853-59-1

3,5,3',5'-Tetrabromo-bisphenol A (TBBA)	79-94-7
TBBA, unspecified	30496-13-0
TBBA-epichlorhydrin oligomer	40039-93-8
TBBA-TBBA-diglycidyl-ether oligomer	70682-74-5
TBBA carbonate oligomer	28906-13-0
TBBA carbonate oligomer, phenoxy end capped	94334-64-2
TBBA carbonate oligomer, 2,4,6-tribromo-phenol terminated	71342-77-3
TBBA-bisphenol A-phosgene polymer	32844-27-2
Brominated epoxy resin end-capped with tribromophenol	139638-58-7
Brominated epoxy resin end-capped with tribromophenol	135229-48-0
TBBA-(2,3-dibromo-propyl-ether)	21850-44-2
TBBA bis-(2-hydroxy-ethyl-ether)	4162-45-2
TBBA-bis-(allyl-ether)	25327-89-3
TBBA-dimethyl-ether	37853-61-5
Tetrabromo-bisphenol S	39635-79-5
TBBS-bis-(2,3-dibromo-propyl-ether)	42757-55-1
2,4-Dibromo-phenol	615-58-7
2,4,6-tribromo-phenol	118-79-6
Pentabromo-phenol	608-71-9
2,4,6-Tribromo-phenyl-alltl-ether	3278-89-5
Tribromo-phenyl-allyl-ether, unspecified	26762-91-4
Bis(methyl)tetrabromo-phtalate	55481-60-2
Bis(2-ethylhexyl)tetrabromo-phtalate	26040-51-7
2-Hydroxy-propyl-2-(2-hydroxy-ethoxy)-ethyl-TBP	20566-35-2
TBPA, glycol-and propylene-oxide esters	75790-69-1
N,N'-Ethylene -bis-(tetrabromo-phthalimide)	32588-76-4
Ethylene-bis85,6-dibromo-norbornane-2,3-dicarboximide)	52907-07-0
2,3-Dibromo-2-butene-1,4-diol	3234-02-4
Dibromo-neopentyl-glycol	3296-90-0
Dibromo-propanol	96-13-9
Tribromo-neopentyl-alcohol	36483-57-5
Poly tribromo-styrene	57137-10-7
Tribromo-styrene	61368-34-1
Dibromo-styrene grafted PP	171091-06-8
Poly-dibromo-styrene	31780-26-4
Bromo-/Chloro-paraffins	68955-41-9
Bromo-/Chloro-alpha-olefin	82600-56-4
Vinylbromide	593-60-2
Tris-(2,3-dibromo-propyl)-isocyanurate	52434-90-9
Tris(2,4-Dibromo-phenyl) phosphate	49690-63-3
Tris(tribromo-neopentyl) phosphate	19186-97-1
Chlorinated and brominated phosphate ester	125997-20-8
Pentabromo-toluene	87-83-2
Pentabromo-benzyl bromide	38521-51-6
1,3-Butadiene homopolymer,brominated	68441-46-3
Pentabromo-benzyl-acrylate, monomer	59447-55-1
Pentabromo-benzyl-acrylate, polymer	59447-57-3
Decabromo-diphenyl-ethane	84852-53-9
Tribromo-bisphenyl-maleinimide	59789-51-4
Brominated trimethylphenyl-lindane	59789-51-4
Other Brominated Flame Retardants	-
Hexabromo-cyclo-dodecane (HBCD), unspecified	3194-55-6
Tetrabromo-chyclo-octane	31454-48-5
1,2-Dibromo-4-(1,2 dibromo-methyl)-cyclo-hexane	3322-93-8
TBPA Na salt	25357-79-3
Hexabromocyclododecane (HBCDD)	25637-99-4
Tetrabromo phthalic anhydride	632-79-1

Table M – Tributyl tin (TBT), Triphenyl tin (TPT) and Triphenyl tin oxide (TPTO)

Example compounds and CAS Numbers

Tributyl tin bromide	1461-23-0
Tributyl tin oxide	56-35-9
Tributyl tin acetate	56-36-0
Tributyl tin laurate	3090-36-6
Tributyl tin fluoride	1983-10-4
Triphenyl tin	668-34-8
Triphenyl tin chloride	639-58-7
Triphenyl tin hydroxide	76-87-9
Triphenyl tin acetate	900-95-8
Triphenyl tin fluoride	1983-10-4

Table N – Polychlorinated Naphthalene (PCN)

Example compounds and CAS Numbers

Trichloronaphthalene	1321-65-9
Tetrachloronaphthalene	1335-88-2
Pentachloronaphthalene	1321-64-8
Octachloronaphthalene	2234-13-1

Table O – Perfluorooctane sulfonates (PFOS)

Example compounds and CAS Numbers

Perfluorooctanesulfonyl fluoride	307-35-7
2-Propenoic acid, 2-methyl-, 2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino] ethyl ester	376-14-7
2-Propenoic acid, 2-[butyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl ester	383-07-3
2-Propenoic acid, 2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl ester	423-82-5
N-allylheptadecafluorooctanesulphonamide	423-86-9
heptadecafluorooctanesulphonamide	754-91-6
1-Propanaminium, 3-[[heptadecafluorooctyl)sulfonyl]amino]-N,N,N-trimethyl-, iodide	1652-63-7

Table P – Polycyclic Aromatic Hydrocarbons (PAHs)

Example compounds and CAS Numbers

Acenaphthen	82-32-9
Acenaphthylen	208-96-8
Anthracen	120-12-7
Benzo[a]anthracen	56-55-3
Benzo[b]fluoranthen	205-99-2
Benzo[j]fluoranthen	205-82-3
Benzo[k]fluoranthen	207-08-9
Benzo[ghi]perylen	191-24-2
Benzo[a]pyren	50-32-8
Benzo[e]pyren	192-97-2
Chrysen	218-01-9
Dibenzo[a,h]anthracen	53-70-3
Fluoranthen	206-44-0
Fluoren	86-73-7
Indeno[1,2,3-cd]pyren	193-39-5
Naphthalin	91-20-3
Phenanthren	85-01-8

Pyren	129-00-0
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Table Q – Fluorinated Greenhouse Gases

Example compounds and CAS Numbers

Carbon tetrafluoride (Perfluoromethane)	75-73-0
Perfluoroethane (Hexafluoroethane)	76-16-4
Perfluoropropane (Octafluoropropane)	76-19-7
Perfluorobutane (Decafluorobutane)	355-25-9
Perfluoropentane (Dodecafluoropentane)	678-26-2
Perfluorohexane (Tetradecafluorohexane)	355-42-0
Perfluorocyclobutane	115-25-3
Sulfur Hexafluoride (SF6)	2551-62-4
HFC-23 CHF3	75-46-7
HFC-32 CH2F2	75-10-5
HFC-41 CH3F	593-35-3
HFC-43-10mee C5H2F10	138495-42-8
HFC-125 C2HF5	354-33-6
HFC-134 C2H2F4	359-35-3
HFC-134a CH2FCF3	811-97-2
HFC-152a C2H4F2	75-37-6
HFC-143 C2H3F3	430-66-0
HFC-143a C2H3F3	420-46-2
HFC-227ea C3HF7	431-89-0
HFC-236cb CH2FCF2CF3	677-56-5
HFC-236ea CHF2CHF3	431-63-0
HFC-236fa C3H2F6	690-39-1
HFC-245ca C3H3F5	679-86-7
HFC-245fa CHF2CH2CF3	460-73-1
HFC-365mfc CF3CH2CF2CH3	406-58-6

Table R – Radioactive Substances

Example compounds and CAS Numbers

Uranium-238	7440-61-1
Radon	10043-92-2
Americium-241	14596-10-2
Thorium-232	7440-29-1
Cesium (Radioactive Isotopes only)	7440-46-2 (Cs-137 010045-97-3)
Strontium (Radioactive Isotopes only)	(elemental 7440-29-6) (Sr-90 10098-97-2)
Other radioactive substances	-

Table S – Alkanes, Short Chain Chlorinated Paraffins C₁₀₋₁₃ (SCCPs) and Medium Chain Chlorinated Paraffins C₁₄₋₁₇ (SCCPs)

Example compounds and CAS Numbers

Alkanes, C10-13, chloro	85535-84-8
Alkanes, C10-12, chloro	108171-26-2
Alkanes, C12-13, chloro	71011-12-6
Alkanes, C14-17, chloro	85535-85-9
Alkanes, chloro	61788-76-9
Chlorinated polyethylene	64754-90-1
Other Short Chain Chlorinated Paraffins	-

Table T – Dibutyltin (DBT) and Dioctyltin (DOT) Compounds

Example compounds and CAS Numbers

Dibutyltin oxide	818-08-6
Dibutyltin diacetate	1067-33-0
Dibutyltin dilaurate	77-58-7
Dibutyltin maleate	78-04-6
Other dibutyltin compounds	-
Diocetyl Tin Oxide	870-08-6
Diocetyl tin dilaurate	3648-18-8
Other Diocetyl tin compounds	-

Table U – Beryllium and compounds

Example compounds and CAS Numbers

Beryllium metal	7440-41-7
Beryllium-aluminium alloy	12770-50-2
Beryllium-copper alloy	11133-98-5
Beryl	1302-52-9
Beryllium chloride	7787-47-5
Beryllium fluoride	7787-49-7
Beryllium hydroxide	13327-32-7
Beryllium sulfate	13510-49-1
Beryllium sulfate tetrahydrate	7787-56-6
Beryllium oxide	1304-56-9
Beryllium carbonate basic	1319-43-3
Beryllium nitrate	13597-99-4
Beryllium nitrate trihydrate	7787-55-5
Beryllium nitrate tetrahydrate	13510-48-0
Beryllium phosphate	13598-15-7
Beryllium silicate	13598-00-0
Zinc beryllium silicate	39413-47-3

Table V – Antimony and its compounds

Example compounds and CAS Numbers

Antimony	7440-36-0
Antimony Trioxide	1309-64-4
Antimony Pentoxide	1314-60-9