Carestream HEALTH

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Rev 1.0

Environmental Health, and Safety Specification for Articles and Chemical Products or their Components

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1.0 Purpose:

The purpose of this specification is to:

- communicate the chemical and article specification requirements to suppliers
- establish the process for exchanging chemical and material data between suppliers and Carestream Health to ensure the sale of regulatory compliant products worldwide

2.0 Scope:

This specification applies to:

- all Carestream Health articles and chemical products provided by the Supplier
- components and packaging-related product components the Supplier provides to Carestream Health, which Carestream Health uses to manufacture articles or chemical products

3.0 Definitions:

Articles – An 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. Examples of articles include film, paper and screens.

Articles also include Packaging-Related Product Components - A part or constituent of the sales unit that is essential to the use of the product for its intended purpose or application. Within an imaging system, it generally serves as an interface with an equipment product and may interface with internal manufacturing processes. The component may also be applied directly to a product. In this case, the principle function of the packaging-related product component should be to inform, not to protect or contain. The packaging-related product component may also assist in the manufacture and use of an otherwise packaged product. The component may be a robust item of long service life, shaped so as to offer specific accommodation to the relevant product for repeated placement or storage. Examples of a packaging-related product components include: film cassettes, film bags, labels, processing chemistry bottles..
Articles do not have power sources, which includes batteries. EHS specifications for batteries are detailed in the *Battery Data Form* and *Instructions*, which are located at: www.carestreamhealth.com/ehs-supplier-expectations.html.

Chemical Products - Products made of organic or inorganic substances with a distinct molecular composition, which can be a solid, liquid or gas. Products may be individual chemicals or chemical mixtures. Chemical products are typically consumed during use. Examples of chemical products include photochemicals, screen cleaners and imaging agents.

Components of Articles or Chemical Products - Raw materials used to manufacture articles and chemical products. Examples include film or paper base, solvents, lubricants, polymers and chemical raw materials.

4.0 Specification Requirements:

The Supplier must evaluate all constituents in the Article, Chemical Product or Product Component to ensure that the following EHS Product Specifications are met. Section 5.0 identifies the process that Suppliers must use to verify that their product meets these requirements.

4.1 Material Composition Requirements:
Appendix A identifies restricted materials and materials requiring declaration. Unless Carestream Health EHS has confirmed acceptability for use and provided written permission to a Supplier, Articles, Chemical Products or Product Components must not contain restricted materials above the prescribed thresholds. Some restricted materials cannot be used to manufacture an Article, Chemical Product or Product Component. For materials requiring declaration, the Supplier must declare their presence in a product when above the prescribed thresholds. Appendix B contains an expanded listing, which includes available Chemical Abstract Services (CAS) numbers.

4.2 Safety Data Sheets (SDS)/ Article Information Sheets (AIS) Requirements:
The Supplier is required to provide a SDS for chemicals, solutions or mixtures to the Carestream Health purchasing representative and to: ww-ehs@carestreamhealth.com. The SDS must comply with applicable provisions of the OSHA Hazard Communication Standard 1910.1200, or the comparable regulation for the country where the material is transported. The SDS must be provided in English, but may be required in other languages if the Supplier provides material to countries outside the US. For articles, the Supplier shall provide an AIS or equivalent if available.

4.3 Chemical and Product Registration Requirements:
The Supplier is required to confirm chemicals, solutions, mixtures or chemicals that may be released from articles during foreseeable use comply with all applicable chemical registration and premanufacture notification requirements in those countries that have enacted such requirements. Countries having chemical control regulations include, but are not limited to, Australia (AICS), Canada (CEPA), China (SEPA), Europe (REACH), Korea (ECL), Japan (METI), New Zealand, Philippines (PICCS), Province of Ontario, Switzerland and US (TSCA). The Supplier is required to confirm biocides/biostats/pesticides contained in articles and chemical products comply with all applicable requirements in those countries that have enacted such requirements. Countries having established biocide directives include, but are not limited to, Canada (PCA), European Union (Biocide Products Directive) and US (FIFRA).

4.4 Pulp and Paper:
Paper products must be manufactured using renewable pulps derived from managed natural regeneration forests and plantations. Suppliers should declare any chain-of-custody or third-party certification of the origin of pulp and paper (e.g. Forest Stewardship Council or Programme for the Endorsement of Forest Certification).

4.5 Emissions from Products:
The Supplier must identify airborne emissions that may be generated/emitted during normal conditions of use or foreseeable misuse (e.g., volatile organic compounds, carbon black, ozone, styrene, objectionable odors and dust).

4.6 Composite Wood:
Products and some packaging materials constructed of hardwood plywood, particleboard, and medium density fiberboard must be tested, certified, and labeled as required to demonstrate compliance with the formaldehyde emissions standards, as specified in the California Air Resource Bureau (CARB) Airborne Toxic Control Measure to Reduce Formaldehyde Emissions From Composite Wood Products. The list of mills that have been identified by a CARB-approved Third Party Certifier as producers of CARB compliant composite wood products can be found at: http://www.arb.ca.gov/toxics/compwood/tpc/listofmills.htm . Imported wood packaging should meet the applicable regulatory standards, e.g. ISPM No. 15.

4.7 Product Safety (PS):
Articles must conform to all applicable Product Safety (PS) standards appropriate for intended markets such as Flammability (UL-94). Upon request, certificates, test reports and supporting documentation must be provided for all countries in which the Supplier has approval to market.

4.8 Marking of Plastics:
Plastic parts with a mass greater than 25 grams must be marked per ISO Standard 11469 (Plastics - Generic identification and marking of plastics products). Exceptions include when plastic parts have dimensions that make marking impractical (e.g., long, thin parts that lack adequate surface area to create a legible mark) or for applications where marking will interfere with functionality.

4.9 Other Required Information:
The Supplier is required to provide the following information when available or obtain the information if specified by Carestream Health in the Product Requirements Document (PRD) or similar document.

4.9.1 For Articles and Chemical Products

4.9.1.1 Mutagenicity Test Data (e.g., Ames Assay) on individual chemical(s) or on components of articles or chemical products

4.9.1.2 Waste classification for product disposal and basis of classification

4.9.1.3 Evidence of compliance with ISO 10993 for medical device biocompatibility.

4.9.2 For Articles

4.9.2.1 Support Material Identification (e.g., paper, fabric, polyethylene film and high impact polystyrene cartridges)

4.9.2.2 Recycled Content in Paper and Plastic Products

4.9.3 For Chemicals, Solutions or Mixtures

4.9.3.1 pH

4.9.3.2 Worldwide transportation classification (e.g., US Department of Transportation (DOT) or International Air Transport Association (IATA))

4.10 Manufacturing Requirements:

The Supplier must obtain and maintain any necessary approvals and authorizations from regulatory agencies and other government organizations to manufacture in and export from their country of manufacture.

4.11 Product Packaging Requirements:

The Supplier must ensure that packaging materials for Articles, Chemical Products and Product Components meet Carestream Health EHS Product Specifications for Packaging and Packaging Components see *Packaging Supplier Declaration* and *Instructions* which are located at: www.carestreamhealth.com/ehs-supplier-expectations.html.

5.0 Supplier Verification Requirements:

The Supplier is expected to verify conformance and/or document any exceptions to EHS Specifications outlined in Section 4.0 using a Declaration Form (DF). Upon entering into an agreement with Carestream Health to supply an Article, Chemical Product or Product Component, the Supplier must go to Carestream Health's website at: www.carestreamhealth.com/ehs-supplier-expectations.html to initiate the DF. If the Supplier has not initiated a DF, then the Supplier must respond within 10 business days to Carestream Health's direct request for the DF. The Supplier is responsible for contacting their suppliers to ensure accurate and complete information is provided to Carestream Health. Documentation and/or test data, including documentation and data from the Supplier's supply chain, which is the basis of Supplier's DF, must be kept on file and made available upon request by Carestream Health EHS. Once the Supplier provides a DF for an Article, Chemical Product or Product Component, the Supplier must ensure that future changes continue to meet EHS Specifications. The Supplier must notify Carestream Health EHS whenever product, process, or material changes result in changes to the DF.

6.0 Product Changes, Discontinuance, Recalls or Non-Conformance:

The Supplier is obligated to communicate in writing to Carestream Health EHS at: ww-ehs@carestreamhealth.com, any changes that could impact the safety, health or environmental performance of a Carestream Health product (including the discontinuance or recalls of products or components). If potential safety, health, environmental or regulatory issues are discovered by Carestream Health or Carestream Health's customers, which are determined to be the Supplier's responsibility, the Supplier will be notified in writing. The Supplier must respond in writing within 10 business days to all such notifications. For Contract Manufacturers, this includes taking immediate steps to address the issue for any work-in-process.

7.0 Document History

Revision	Section	Reason for Change	Date

Appendix A - Material Composition Requirements

Unless Carestream Health EHS has confirmed acceptability for use and provided written permission to a Supplier; Articles, Chemical Products or Product Components must not contain restricted materials above the prescribed thresholds. Some restricted materials cannot be used to manufacture an Article, Chemical Product or Product Component. For materials requiring declaration, the Supplier must declare their presence in a product when above the prescribed thresholds.

See Appendix B for an expanded chemical list with Chemical Abstract Services (CAS) numbers. Appendix B was current as of the document revision date and should be used as a general guide. The most current information should be obtained by consulting the different regulatory lists. Links to the various websites are provided when available.

MATERIAL	REQUIREMENT	Threshold Level (Minimal Reporting Level)
Azo Colorants which form certain aromatic amines	Restricted	Intentionally added
Bisphenol A	Requires Declaration	Report any level
Cadmium/Cadmium Compounds	Restricted	75 ppm or Intentionally added
Hexavalent Chromium/Hexavalent Chromium Compounds (Cr^{+6})	Restricted	1000 ppm or Intentionally added
Lead/Lead Compounds	Restricted	1000 ppm or Intentionally added
Lead/Lead Compounds in surface coatings	Restricted	Report any level
Mercury/Mercury Compounds	Restricted	1000 ppm or Intentionally added
Formaldehyde	Restricted	Report any level
Natural Rubber Latex	Restricted	Report any level
Certain Phthalates	Restricted	Report any level
Ozone Depleting Substances-Class I CRCs, HBFCs	Restricted	Intentionally added and no use in manufacturing
Ozone Depleting Substances-Clas II HCFCs	Restricted	Intentionally added and no use in manufacturing
Polybrominated biphenyls (PBBs)	Restricted	Report any level
Polybrominated diphenyl ethers (PBDE)	Restricted	Report any level
Brominated Flame Retardants (other than PBB or PBDE)	Restricted	1000 ppm or Intentionally added

MATERIAL (continued)	REQUIREMENT	Threshold Level (Minimal Reporting Level)
Polyvinyl Chloride (PVC) and Polyvinylidene dichloride (PVDC)	Restricted	1000 ppm
Perfluorooctane sulfonate (PFOS), PFOS-related substances ($C_8F_{17}SO_2X$ where X = OH, metal salt, halide, amide, and other derivatives including polymers), perfluorooctanoic acid (PFOA), or PFOA salts.	Restricted	0 ppm in product and no use in manufacturing
Other known, probable or potential human carcinogens, mutagens or reproductive toxicants that are recognized/listed by regulatory agencies, e.g., U.S. Environmental Protection Agency (USEPA), or other authoritative bodies, e.g., International Agency for Research on Cancer (IARC).	Restricted (known or probable) Requires Declaration (potential)	Report any level
Other materials that may cause significant adverse health effects	Restricted	Report any level
Materials that meet criteria established for Substances of Very High Concern (SVHC) as defined by the Regulation (EC) No. 1907/2006 of the European Parliament and of the Council of 18 December 2006 (European REACH)**	Requires Declaration	Report any level
Materials that are known human sensitizers, which produce sensitization at low exposure levels	Requires Declaration	Report any level
Materials that meet the criteria for being persistent, bioaccumulative, and toxic (PBT), very persistent and very bioaccumulative (vPvB), or a persistent organic pollutant (POP) as defined by regulatory agencies, e.g., USEPA Sustainable Futures Guidance, European Union REACH Directive Stockholm Convention.	Requires Declaration	Report any level
Materials with high aquatic toxicity, i.e., acute LC/EC_{50} values ≤ 1 mg/L, to the environment.	Requires Declaration	Report any level
Intentionally manufactured particles that have at least one dimension of 1 to 100 nanometers	Requires Declaration	Report any level
Solids, liquids, or gases that spontaneously emit any form (alpha, beta, neutron particles or gamma radiation) of ionizing radiation.	Requires Declaration	Report any level

**SVHC list is found at the European Chemical Agency website http://echa.europa.eu/chem_data/candidate_list_table_en.asp

Appendix B – Expanded chemical lists with CAS numbers

Azo Colorants*	**CAS Numbers**
4-aminobiphenyl	92-67-1
benzidine	92-87-5
4-chloro-o-toluidine	95-69-2
2-naphthylamine	91-59-8
0-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’-diaminodiphenylmethane	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
o-cresidine	120-71-8
4,4’-methylene-bis-(2-chloro-aniline)	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

***Please note**: The azo colorant restriction applies to certain azo colorants that by reduction cleavage of azo groups may release one of the listed 22 aromatic amines.

Bisphenol A	**CAS Numbers**
Bisphenol A	80-05-7

Cadmium/Cadmium Compounds	**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	-

Chromium VI and its Compounds	CAS Numbers
Ammonium dichromate	-
Barium chromate	10294-40-3
Calcium chromate	13765-19-0
Chromic acetate	1066-30-4
Chromate acid	-
Chromium	7440-47-3
Chromium (VI) oxide	1333-82-0
Chromium carbonate	-
Chromium trioxide	1333-82-0
Lead chromate	7758-97-6
Lead chromate oxide	-
Potassium chromate	7789-00-6
Potassium dichromate	7758-50-9
Sodium chromate	7775-11-3
Sodium dichromate	10588-01-9
Strontium chromate	7789-06-2
Zinc chromate	13530-65-9

Lead/Lead Compounds	CAS Numbers
Lead	7439-92-1
Lead (II) sulfate	7446-27-7
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 hydroxide carbonate	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 state	1072-35-1
Other lead compounds	-

Mercury/Mercury Compounds	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	-

Formaldehyde	CAS Numbers
Formaldehyde	50-00-0

Phthalates	CAS Numbers
diisonyl phthalate (DINP)	28553-12-0
Bis(2-ethylhexyl)phthalate (DEHP)	117-81-7
Dibutyl phthalate (DBP)	84-74-2
Diisodecyl phthalate (DIDP)	26761-40-0
Bis(n-octyl) phthalate (DNOP)	117-84-0
Butylbenzyl phthalate (BBP)	85-68-7

Ozone Depleting Substances/Isomers* Class I ODS	CAS Numbers
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
Trichlorotrifluoroethane (CFC 113) 1,1,2-trichloro-1,2,2-trifluoroethane	354-58-5 76-13-1
Dichlorotetrafluoroethane (CFC114)	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) 1,1,1,3-tetrachlorotetrafluoropropane	29255-31-0 2268-46-4
Trichloropentafluoropropane (CFC 215) 1,1,1-trichloropentafluoropropane 1,2,3-trichloropentafluoropropane	1599-41-3 4259-43-2 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

Ozone Depleting Substances/Isomers* **Class I ODS (continued)**	**CAS Numbers**
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

***Please note**: These materials may contain isomers that are not listed here. Isomers with CAS numbers have been included when available.

Hydrochlorofluorocarbons/Isomers* **Class II ODS**	**CAS Numbers**
Dichlorofluoromethane (HCFC 21)	75-43-4
Chlorodifluoromethane (HCFC 22)	75-45-6
Chlorofluoromethane (HCFC 31)	593-70-4
Tetrachlorofluoroethane (HCFC 121) 1,1,1,2-tetrachloro-2-fluoroethane (HCFC 121a) 1,1,2,2-tetrachloro-1-fluroethane	134237-32-4 354-11-0 354-14-3
Trichlorodifluoroethane (HCFC 122) 1,2,2-trichloro-1,1-difluoroethane	41834-16-6 354-21-2
Dichlorotribluoroethane (HCFC 123) Dichloro-1,1,2-trifluoroethane 2,2,-dichloro-1,1,1-trifluoroethane 1,2-dichloro-1,1,2-trifluoroethane (HCFC123a) 1,1-dichloro-1,2,2-trifluoroethane (HCFC123b) 2,2-dichloro-1,1,2-trifluoroethane (HCFC123b)	34077-87-7 90454-18-5 306-83-2 354-23-4 812-04-4 812-04-4
Chlorothetrafluoroehtane (HCFC 124) 2-chloro-1,1,1,2-tetrafluoroethane 1-chloro-1,1,2,2-tetrafluoroethane (HCFC 124a)	63938-10-3 2837-89-0 354-25-6
Trichlorofluoroethane (HCFC 131) 1-fluoro-1,2,2-trichloroethane 1,1,1-trichloro-2-fluoroethane (HCFC 131b)	27154-33-2 (134237-34-6) 359-28-4 811-95-0
Dichlorodifluoroethane (HCFC 132) 1,2-dichloro-1,1-difluoroethane (HCFC 132b) 1,1-dichloro-1,2-difluoroethane (HCFC 132c) 1,1-dichloro-2,2-difluoroethane 1,2-dichloro-1,2-difluoroethane	25915-78-0 1649-08-7 1842-05-3 471-43-2 431-06-1
Chlorofluoroethane (HCFC 133) 1-chloro-1,2,2-trifluoroethane 2-chloro-1,1,1-trifluoroethane (HCFC 133a)	1330-45-6 1330-45-6 75-88-7
Dichlorofluoroethane (HCFC 141) 1,1-dichloro-1-fluoroethane (HCFC 141b) 1,2-dichloro-1-fluoroethane	1717-00-6 (25167-88-8) 1717-00-6 430-57-9
Chlorodifluoroethane (HCFC 142) 1-chloro-1,1-difluoroethane (HCFC 142b) 1-chloro-1,2-difluoroethane (HCFC 142a)	25497-29-4 75-68-3 25497-29-4
Hexachlorofluoropropane (HCFC 221)	134237-35-7

Hydrochlorofluorocarbons/Isomers* **Class II ODS (continued)**	**CAS Numbers**
Pentachlorodifluoropropane (HCFC 222)	134237-36-8
Tetrachlorotrifluoropropane (HCFC 223)	134237-37-9
Trichlorotetrafluoropropane (HCFC 224)	134237-38-0
Dichloropentafluoroprapane, (ethyne, fluoro-) (HCFC 225) 2,2-dichloro-1,1,1,3,3-pentafluoropropane (HCFC 225aa) 2,3-dichloro-1,1,1,2,3-pentafluoropropane (HCFC 225ba) 1,2-dichloro-1,1,2,3,3-pentafluoropropane (HCFC 225bb) 3,3-dichloro-1,1,1,2,2-pentafluoropropane (HCFC 225ca) 1,3-dichloro-1,1,2,2,3-pentafluoropropane (HCFC 225cb) 1,1-dichloro-1,2,2,3,3-pentafluoropropane (HCFC 225cc) 1,2-dichloro-1,1,3,3,3-pentafluoropropane (HCFC 225da) 2,3-dichloro-1,1,2,3,3-pentafluoropropane (HCFC 225ea) 1,1-dichloro-1,2,3,3,3-pentafluoropropane (HCFC 225eb)	127564-92-5 (2713-09-9) 128903-21-9 422-48-0 422-44-6 422-56-0 507-55-1 13474-88-9 431-86-7 136013-79-1 111512-56-2
Chlorohexafluoropropane (HCFC 226)	134308-72-8
Pentachlorofluoropropane (HCFC 231)	134190-48-0
Tetrachlorodifluoropropane (HCFC 232)	134237-39-1
Trichlorotrifluoropropane (HCFC 233) 1,1,1-trichloro-3,3,3-trifluoropropane	134237-40-4 7125-83-9
Dichlorotetrafluoropropane (HCFC 234)	127564-83-4
Chloropentafluoropropane (HCFC 235) 1-chloro-1,1,3,3,3-pentafluoropropane	134237-41-5 460-92-4
Tetrachlorofluoropropane (HCFC 241)	134190-49-1

Hydrochlorofluorocarbons/Isomers* **Class II ODS (continued)**	**CAS Numbers**
Trichlorodifluoropropane (HCFC 242)	134237-42-6
Dichlorotrifluoropropane (HCFC 243) 1,1-dichloro-1,2,2-trifluoropropane 2,3-dichloro-1,1,1-trifluoropropane 3,3-dichloro-1,1,1-trifluoropropane	134237-43-7 7125-99-7 338-75-0 460-69-5
Chlorotetrafluoropropane (HCFC 244) 3-chloro-1,1,2,2-tetrafluoropropane	134190-50-4 679-85-6
Trichlorofluoropropane (HCFC 251) 1,1,3-trichloro-1-fluoropropane	134190-51-5 818-99-5
Dichlorodifluoropropane (HCFC 252)	134190-52-6
Chlorotrifluoropropane (HCFC 253) 3-chloro-1,1,1-trifluoropropane (HCFC 253fb)	134237-44-8 460-35-5
Dichlorofluoropropane (HCFC 261) 1,1-dichloro-1-fluoropropane	134237-45-9 7799-56-6
Chlorodifluoropropane (HCFC 262) 2-chloro-1,3-difluoropropane	134190-53-7 102738-79-4
Chlorofluoropropane (HCFC 271) 2-chloro-2-fluoropropane	134190-54-8 420-44-0

***Please note**: These materials may contain isomers that are not listed here. Isomers with CAS numbers have been included when available.

Polybrominate Biphenyls (PBBs) and Polybrominated Diphenyls (PBDEs)	**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)
Heptabromobiphenyl ether	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)
Nonabromobiphenyl and its ethers	63936-56-1
Octabromobrphenyl and its ethers	61288-13-9 32536-52-0 (ether)
Pentabromodiphenyl 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
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(14)[alphatic/alcyclic brominated compounds]	-
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(15)[alphatic/alcyclic brominated compounds in combination with antimony compounds]	-
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(16)[alphatic/alcyclic brominated compounds excluding brominated diphenyl ether and biphenyls]	-
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(17)[alphatic/alcyclic 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)[alphatic/alcyclic 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-dibromophenylene oxide)	69882-11-7
Tetra-decabromodiphenoxybenzene	58965-66-5
1,2-bis(2,4,6-tribromophenoxy)ethane	37853-59-1
3,5,3',5'-tetrabromo-bisphenol A (TBBA)	79-94-7
TBBA, unspecified	30496-13-0

Brominated Flame Retardants (other than PBBs or PBBEs) **(continued)**	**CAS Numbers**
TBBA-epichlorohydrin oligomer	40039-93-8
TBBA-TBBA-diglycidal-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 terminate	71342-77-3
TBBA-bisphenol A-phosgene polymer	32844-27-2
Brominated epoxy resin end-capped with tribromophenol	139638-58-7 135229-48-0
TBBA-(2,3-dibromopropylether)	21850-44-2
TBBA bis (2-hydroxyethyl-ther)	4162-45-2
TBBA-bis-(allylether)	25327-89-3
TBBA-dimethylether	37853-61-5
Tetrabromo-bisphenol S	39635-79-5
TBBS-bis(2,3-dibromopropylether)	42757-55-1
2,4-Dibromophenol	615-58-7
2,4,6-tribromophenol	118-79-6
Pentabromophenol	608-71-9
2,4,6-Tribromophenylallylether	3278-89-5
Tribromophenylallylether, unspecified	26762-91-4
Bis(methyl)tetrabromophthalate	55481-60-2
Bis(ethylhexyl)tetrabromophthalate	26040-51-7
2-hydroxypropyl-2-(2-hydroxyethoxy)ethyl TBP	20566-35-2
TBPA, glycol and propylene oxide esters	75790-69-1
N,N’-ethylene-bis(tetrabromophthalimide)	32588-76-4
Ethylenebis(5,6-dibromonorbornane-2,3-dicarboximide)	52907-07-0
2,3-dibromo-2-butene-1,4-diol	3234-02-4
Dibromoneopentyl glycol	96-13-9
Dibromopropanol	36483-57-5
Tribromoneopentyl alcohol	57137-10-7
Polytribromo styrene	61368-34-1
Dibromo styrene grafted PP	171091-06-8
Polydibromo styrene	31780-26-4
Bromo-/chloro- parrafins	68955-41-9
Bromo-/chloro-alpha-olefin	82600-56-4
Vinylbromide	593-60-2
Tris(2,3-dibromopropyl)-isocyanate	52434-90-9
Tris(2,4-dibromophenyl) phosphate	49690-63-3
Tris(tribromoneopentyl) phosphate	19186-97-1
Chlorinated and brominate phosphate ester	125997-20-8
Pentabromotoluene	87-83-2
Pentabromobenzyl bromide	38521-51-6
1,3-butadiene homopolymer, Brominated	68441-46-3
Pentabromobenzyl acrylate, monomer	59447-55-1
Pentabromobenzyl acrylate, polymer	59447-57-3
Decabromodiphenylethane	61262-53-1

Brominated Flame Retardants (other than PBBs or PBBEs) **(continued)**	**CAS Numbers**
N-(2,4,6-Tribromophenyl)maleimide Brominated trimethylphenyl lindane	59789-51-4
Other brominated flame retardants	-
Hexabromocyclododecane (HBCD), unspecified	3194-55-6
Tetrabromocyclooctane1,2-dibromo-4(1,2-dibromomethyl) cyclohexane	31454-48-5
1,2-dibromo-4-(1,2-dibromomethyl)cyclohexane	3322-93-8
TBPA Na salt	25357-79-3
Tetrabromophthalic anhydride	632-79-1

Chlorinated Polymers	**CAS Number**
Vinyl chloride polymer (PVC)	9002-86-2

Substances of Very High Concern (SVHC)	**CAS Number**
Triethyl arsenate	15606-95-8
Anthracene	120-12-7
4,4'- Diaminodiphenylmethane (MDA)	101-77-9
Dibutyl phthalate (DBP)	84-74-2
Cobalt dichloride	7646-79-9
Diarsenic pentaoxide	1303-28-2
Diarsenic trioxide	1327-53-3
Sodium dichromate	10588-01-9 (anhydrous) 7789-12-0 (dihydrate)
5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene)	81-15-2
Bis (2-ethylhexyl)phthalate (DEHP)	117-81-7
Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified: alpha-hexabromocyclododecane beta-hexabromocyclododecane gamma-hexabromocyclododecane	25637-99-4; 3194-55-6 134237-50-6 134237-51-7 134237-52-8
Alpha-hexabromocyclododecane Beta-hexabromocyclododecane Gamma-hexabromocyclododecane	134237-50-6 134237-51-7 134237-52-8
Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	85535-84-8
Bis(tributyltin)oxide (TBTO)	56-35-9
Lead hydrogen arsenate	7784-40-9
Benzyl butyl phthalate (BBP)	85-68-7