

REACH SVHC CANDIDATE LIST

ECHA released the first candidate list of 15 SVHCs for authorization in Aug. 2008, the second SVHC candidate list in Jan. 2010, the third candidate list in June 2010, the fourth candidate list in December 2010, the fifth candidate list in June 2011, the sixth candidate list in December 2011, the seventh candidate list in June 2012, the eighth candidate list in December 2012, the ninth candidate list in June 2013, the tenth candidate list in December 2013, the eleventh candidate list in June 2014, the twelfth candidate list in December 2014, the thirteenth list in June 15, 2015 and the fourteenth list in December 2015, the fifteenth list in June 2016, the sixteenth list in January 2017, the seventeenth list in July 2017, the eighteenth list in January 2018, the nineteenth list in June 2018, the twentieth list in January 2019, the twenty-first list in July 2019, the twenty-second list in January 2020, the twenty-third list in June 2020, the twenty-fourth list in January 2021, the twenty-fifth list in July 2021, the twenty-sixth list in January 2022, the twenty-seventh list in June 2022, the twenty-eighth list in January 2023, the twenty-ninth list in June 2023.

■ The Announcement of the First 15 SVHCs List

The European Chemical Agency (ECHA) has formally included 15 substances identified as Substances of Very High Concern (SVHC) in the candidate list of authorization on 28 October 2008.

The list of these 15 SVHCs and possible applications are shown below:

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
4,4'-Diaminodiphenylmethane (MDA)	101-77-9	202-974-4	Carcinogenic (Article 57a)	Curing agent for epoxy resin in PCB, preparation of PU, azo dyes in garments.
Benzyl butyl phthalate (BBP)	85-68-7	201-622-7	Toxic for reproduction (Article 57c) Endocrine disrupting properties (Article 57(f) - human health)	Plasticizer for resin, PVC, acrylics.
Bis (2-ethylhexyl) phthalate (DEHP)	117-81-7	204-211-0	Toxic for reproduction (Article 57c) Endocrine disrupting properties (Article 57(f) - environment) Endocrine disrupting properties (Article 57(f) - human health)	Plasticizer for resin, PVC, blister
Dibutyl phthalate (DBP)	84-74-2	201-557-4	Toxic for reproduction (Article 57c) Endocrine disrupting properties (Article 57(f) - human health)	Plasticizer, in adhesives and paper coatings; insect repellent for textiles.
Anthracene	120-12-7	204-371-1	PBT (Article 57d)	Source of dyestuff
5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene)	81-15-2	201-329-4	vPvB (Article 57e)	Cosmetics and soap perfumes.
Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	85535-84-8	287-476-5	PBT (Article 57d) vPvB (Article 57e)	Leather coating, plasticizer in PVC and chlorinated rubber, flame retardant in plastic & textiles.

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
Cobalt Dichloride	7646-79-9	231-589-4	Carcinogenic (Article 57a) Toxic for reproduction (Article 57c)	Moisture indicator in silica gel, absorbent.
Hexabromocyclododecane (HBCDD)	25637-99-4 3194-55-6 (134237-50-6) (134237-51-7) (134237-52-8)	247-148-4 and 221-695-9	PBT (Article 57d)	Flame retardant used in HIPS and textiles.
Sodium dichromate	7789-12-0 10588-01-9	234-190-3	Carcinogenic (Article 57a) Mutagenic (Article 57b) Toxic for reproduction (Article 57c)	Chrome-tanning of leather, corrosion inhibitor in paints, mordant in textile dyein.
Bis(tributyltin) oxide (TBTO)	56-35-9	200-268-0	PBT (Article 57d)	Pesticizer, fungicide in paint.
Diarsenic pentoxide	1303-28-2	215-116-9	Carcinogenic (Article 57a)	Insecticides, weed killer, wood preservatives, coloured glass, dyeing and printing.
Diarsenic trioxide	1327-53-3	215-481-4	Carcinogenic (Article 57a)	Weed killers, timber preservatives, manufacture of special glass.
Triethyl arsenate	15606-95-8	427-700-2	Carcinogenic (Article 57a)	Intermediates for semi-conductor.
Lead hydrogen arsenate	7784-40-9	232-064-2	Carcinogenic (Article 57a) Toxic for reproduction (Article 57c)	Insectides.

■ The Announcement of the Second 13 SVHCs List

The European Chemical Agency (ECHA) officially published the second SVHC candidate list which includes a total of 29 substances on January 13th, 2010.

ECHA added the substance "Acrylamide" back to the candidate list on March 30th.

ECHA comprised a consolidation of the entries of aluminosilicate refractory ceramic fibres (Al-RCF) and zirconia aluminosilicate refractory ceramic fibres (ZrAl-RCF) included in the List in January 2010 and December 2011 on June 18th, 2012.

The list of these 13 SVHCs and possible applications are shown below:

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
2,4-Dinitrotoluene	121-14-2	204-450-0	Carcinogenic (Article 57a)	2,4-dinitrotoluene is used in the production of toluene diisocyanate, which is used for the manufacture of flexible polyurethane foams. The substance is also used as gelatinizing-plasticizing agent
Anthracene oil	90640-80-5	292-602-7	Carcinogenic (Article 57a) PBT (Article 57d) vPvB (Article 57e)	The substances are mainly used in the manufacture of other substances such as anthracene and carbon black. They may

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
Anthracene oil, anthracene paste, distn.lights	91995-17-4	295-278-5	Carcinogenic (Article 57a) Mutagenic (Article 57b) PBT (Article 57d) vPvB (Article 57e)	also be used as reducing agents in blast furnaces, as components in bunker fuel, for impregnating, sealing and corrosion protection.
Anthracene oil, anthracene paste, anthracene fraction	91995-15-2	295-275-9	Carcinogenic (Article 57a) Mutagenic (Article 57b) PBT (Article 57d) vPvB (Article 57e)	
Anthracene oil, anthracene-low	90640-82-7	292-604-8	Carcinogenic (Article 57a) Mutagenic (Article 57b) PBT (Article 57d) vPvB (Article 57e)	
Anthracene oil, anthracene paste	90640-81-6	292-603-2	Carcinogenic (Article 57a) Mutagenic (Article 57b) PBT (Article 57d) vPvB (Article 57e)	
Diisobutyl phthalate (DIBP)	84-69-5	201-553-2	Toxic for reproduction (Article 57c) Endocrine disrupting properties (Article 57(f) - human health)	Diisobutyl phthalate is used as plasticiser for nitrocellulose, cellulose ether, polyacrylate and polyacetate dispersions, and as a gelling aid in combination with other plasticisers, which are widely used for plastics, lacquers, adhesives, explosive material and nail polish.
Lead chromate	7758-97-6	231-846-0	Carcinogenic (Article 57a) Toxic for reproduction (Article 57c)	Lead chromate is used for manufacturing pigments and dyes, and as a pigment or coating agent in industrial and maritime paint products or varnishes. Further potential uses may be associated with the formulation of detergents and bleaches, photosensitive materials, the manufacture of pyrotechnic powder or the embalming /restoring of art products.
Lead chromate molybdate sulphate red (C.I. Pigment Red 104)	12656-85-8	235-759-9	Carcinogenic (Article 57a) Toxic for reproduction (Article 57c)	Lead chromate molybdate sulphate red (C.I. Pigment Red 104) is used as a colouring, painting and coating agent in sectors such as the rubber, plastic and paints, coatings and varnishes industries. Applications comprise the production of agricultural equipment, vehicles and aircraft as well as road and airstrip painting.

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
Lead sulfochromate yellow (C.I. Pigment Yellow 34)	1344-37-2	215-693-7	Carcinogenic (Article 57a) Toxic for reproduction (Article 57c)	Lead sulfochromate yellow (C.I. Pigment Yellow 34) is used as a colouring, painting and coating agent in sectors such as the rubber, plastic and paints, coatings and varnishes industries. Applications comprise the production of agricultural equipment, vehicles and aircraft as well as road and airstrip painting. The substance is further used for camouflage or ammunition marking in the defence area.
Tris(2-chloroethyl)phosphate	115-96-8	204-118-5	Toxic for reproduction (Article 57c)	Tris(2-chloroethyl)phosphate is mainly used as an additive plasticiser and viscosity regulator with flame-retarding properties for acrylic resins, polyurethane, polyvinyl chloride and other polymers. Other fields of application are adhesives, coatings, flame resistant paints and varnishes. The main industrial branches to use TCEP are the furniture, the textile and the building industry.
Pitch, coal tar, high temp.	65996-93-2	266-028-2	Carcinogenic (Article 57a) PBT (Article 57d) vPvB (Article 57e)	Pitch, coal tar, high temp. is mainly used in the production of electrodes for Industrial applications. Smaller volumes are dedicated to specific uses such as heavy duty corrosion protection, special purpose paving, manufacture of other substances and the production of clay targets.
Acrylamide	79-06-1	201-173-7	Carcinogenic (Article 57a) Mutagenic (Article 57b)	Acrylamide is almost exclusively used for the synthesis of polyacrylamides, which are used in various applications, in particular in waste water treatment and paper processing. Minor uses of acrylamide comprise the preparation of polyacrylamide gels for research purposes and as a grouting agent in civil.

■ The Announcement of the Third 8 SVHCs List

The European Chemicals Agency (ECHA) has added 8 extra chemical Substances of Very High Concern (SVHC) to the Candidate List on 18th June 2010 on top of the 15 SVHC that had been regulated in October 2008, and 15 SVHC in January 2010.

The list of these 8 SVHCs and possible applications are shown below:

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
Trichloroethylene	79-01-6	201-167-4	Carcinogenic (Article 57a)	Trichloroethylene is mainly used as intermediate in the manufacture of chlorinated and fluorinated organic compounds. Other uses are for cleaning and degreasing of metal parts or as solvent in adhesives.
Boric acid	10043-35-3, 11113-50-1	233-139-2, 234-343-4	Toxic for reproduction (Article 57c)	Boric acid is widely used on account of its consistency-influencing, flame-retarding, antiseptic and preservative properties. It is a component of detergents and cleaners, adhesives, toys, industrial fluids, brake fluids, glass, ceramics, flame retardants, paints, disinfectants, cosmetics, food additives, fertilisers, insecticides and other products.
Disodium tetraborate, anhydrous	1330-43-4 12179-04-3 1303-96-4	215-540-4	Toxic for reproduction (Article 57c)	Disodium tetraborate and tetraboron disodium heptaoxide form the same compounds in aqueous solutions.
Tetraboron disodium heptaoxide, hydrate	12267-73-1	235-541-3	Toxic for reproduction (Article 57c)	Uses include a multitude of applications, e.g. in detergents and cleaners, in glass and glass fibres, ceramics, industrial fluids, metallurgy, adhesives, flame retardants, personal care products, biocides, fertilisers.
Sodium chromate	7775-11-3	231-889-5	Carcinogenic (Article 57a) Mutagenic (Article 57b) Toxic for reproduction (Article 57c)	Sodium chromate is mainly used as an intermediate in the manufacture of other chromium compounds as well as a laboratory analytical agent, but this use is limited. Other potential uses are mentioned in the literature but whether they occur in the EU is not clear.

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
Potassium chromate	7789-00-6	232-140-5	Carcinogenic (Article 57a) Mutagenic (Article 57b)	Potassium chromate is used as a corrosion inhibitor for treatment and coating of metals, for manufacture of reagents, chemicals and textiles, as a colouring agent in ceramics, in the manufacture of pigments/inks and in the laboratory as analytical agent.
Ammonium dichromate	7789-09-5	232-143-1	Carcinogenic (Article 57a) Mutagenic (Article 57b) Toxic for reproduction (Article 57c)	Ammonium dichromate is mainly used as an oxidising agent. Other known uses are in the manufacture of photosensitive screens and as mordant in the manufacture of textiles. Minor uses seem to comprise metal treatment and laboratory analytical agent.
Potassium dichromate	7778-50-9	231-906-6	Carcinogenic (Article 57a) Mutagenic (Article 57b) Toxic for reproduction (Article 57c)	Potassium dichromate is used for chrome metal manufacturing and as corrosion inhibitor for treatment and coating of metals. It is further used as textile mordant, as laboratory analytical agent, for cleaning of laboratory glassware, in the manufacture of other reagents and as oxidising agent in photolithography.

■ The Announcement of the Fourth 8 SVHCs List

The ECHA has added eight more chemical Substances of Very High Concern (SVHC) to the Candidate List on 15th December 2010.

The list of these 8 SVHCs and possible applications are shown below:

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
Cobalt(II) sulphate	10124-43-3	233-334-2	Carcinogenic (Article 57a) Toxic for reproduction (Article 57c)	Mainly used in the production of other chemicals. Further applications may include manufacture of catalysts and driers, surface treatments (such as electroplating), corrosion prevention, production of pigments, decolourising (in glass, pottery), batteries, animal food supplements, soil fertilizers, and others.

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
Cobalt(II) dinitrate	10141-05-6	233-402-1	Carcinogenic (Article 57a) Toxic for reproduction (Article 57c)	Mainly used in the production of other chemicals and the manufacture of catalysts. Further applications may include surface treatment and batteries.
Cobalt(II) carbonate	513-79-1	208-169-4	Carcinogenic (Article 57a) Toxic for reproduction (Article 57c)	Mainly used in the manufacture of catalysts. Minor uses may include feed additive, production of other chemicals, production of pigments, and adhesion (in ground coat frit).
Cobalt(II) diacetate	71-48-7	200-755-8	Carcinogenic (Article 57a) Toxic for reproduction (Article 57c)	Mainly used in the manufacture of catalysts. Minor uses may include production of other chemicals, surface treatment, alloys, production of pigments, dyes, rubber adhesion, and feed additive.
2-Methoxyethanol	109-86-4	203-713-7	Toxic for reproduction (Article 57c)	Mainly used as solvent, intermediate and as an additive for fuel. Might also be used in textile finishing.
2-Ethoxyethanol	110-80-5	203-804-1	Toxic for reproduction (Article 57c)	Mainly used as solvent and chemical intermediate. Might also be used in textile finishing.
Chromium trioxide	1333-82-0	215-607-8	Carcinogenic (Article 57a) Mutagenic (Article 57b)	Used for metal finishing and as a fixing agent in waterborne wood preservatives.
Acids generated from chromium trioxide and their oligomers: Chromic acid Dichromic acid Oligomers of chromic acid and dichromic acid	7738-94-5, 13530-68-2	231-801-5 236-881-5	Carcinogenic (Article 57a)	These acids and their oligomers are generated when chromium trioxide is dissolved in water. Chromium trioxide is mainly used in the form of aqueous solutions. Consequently, the uses of these substances are the same as indicated for chromium trioxide.

■ The Announcement of the Fifth 7 SVHCs List

The ECHA has added seven more chemical Substances of Very High Concern (SVHC) to the Candidate List on 20th June 2011.

The list of these 7 SVHCs and possible applications are shown below:

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
2-ethoxyethyl acetate	111-15-9	203-839-2	Toxic for reproduction (Article 57c)	Solvent and intermediate, formulation of paints, lacquers and varnishes.
strontium chromate	7789-06-2	232-142-6	Carcinogenic (Article 57a)	Inhibitor, pigments, paints, varnishes, oil-colors, sealants, formulations in

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
				aeronautic/aerospace sector, coil coating sector of steel and aluminum and vehicle coating sector.
1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters	68515-42-4	271-084-6	Toxic for reproduction (Article 57c)	Adhesives and binding agents, paint, lacquers and varnishes, construction materials
Hydrazine	302-01-2, 7803-57-8	206-114-9	Carcinogenic (Article 57a)	Hydrazine derivatives in pharmaceuticals, agrochemicals, chemical blowing agents, paints, inks and organic dyes, reagents, monomer in polymerizations, corrosion inhibitor, reducing agent in the deposition metals and purification of chemical reagents, stabilizing agent, laboratory chemical reagent; Propellant for aerospace vehicles, fuel in military gas generators.
1-methyl-2-pyrrolidone (NMP)	872-50-4	212-828-1	Toxic for reproduction (Article 57c)	Coatings (paints, printing inks), cleaning products (polymer removers, paint strippers/cleaners), agrochemicals, electronic equipment manufacture, petrochemical processing, pharmaceuticals.
1,2,3-trichloropropane	96-18-4	202-486-1	Carcinogenic (Article 57a) Toxic for reproduction (Article 57c)	Pesticides, chlorinated solvents, polysulfide elastomers, hexafluoropropylene.
1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich	71888-89-6	276-158-1	Toxic for reproduction (Article 57c)	Plasticiser in PVC, plasticiser in sealants and printing inks, sealants and coatings, printing inks, oil additive.

■ The Announcement of the sixth 20 SVHCs List

The ECHA has added twenty more chemical Substances of Very High Concern (SVHC) to the Candidate List on 19th December 2011.

The list of these 20 SVHCs and possible applications are shown below:

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
Dichromium tris(chromate)	24613-89-6	246-356-2	Carcinogenic (Article 57a)	Mainly used in mixtures for metal surface treatment in the aeronautic/aerospace, steel and aluminium coating sectors.
Potassium hydroxyoctaoxodizincatedichromate	11103-86-9	234-329-8	Carcinogenic (Article 57a)	Mainly used in coatings in the aeronautic/aerospace, steel and aluminium coil coating and vehicle coating sectors.

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
Pentazinc chromate octahydroxide	49663-84-5	256-418-0	Carcinogenic (Article 57a)	Mainly used in coatings in the vehicle coating and aeronautic / aerospace sectors.
Zirconia Aluminosilicate Refractory Ceramic Fibres ¹	-	-	Carcinogenic (Article 57a)	Refractory ceramic fibres are used for high-temperature insulation, almost exclusively in industrial applications (insulation of industrial furnaces and equipment, equipment for the automotive and aircraft/aerospace industry) and in fire protection (buildings and industrial process equipment).
Aluminosilicate Refractory Ceramic Fibres	-	-	Carcinogenic (Article 57a)	Refractory ceramic fibres are used for high-temperature insulation, almost exclusively in industrial applications (insulation of industrial furnaces and equipment, equipment for the automotive and aircraft/aerospace industry) and in fire protection (buildings and industrial process equipment).
Formaldehyde, oligomeric reaction products with aniline (technical MDA)	25214-70-4	500-036-1	Carcinogenic (Article 57a)	Mainly used for manufacture of other substances. Minor uses are as hardener for epoxy resins, e.g. for the production of rolls, pipes and moulds, and as well for adhesives.
Bis(2-methoxyethyl) phthalate	117-82-8	204-212-6	Toxic for reproduction (Article 57c)	No registration for this phthalate compound has been submitted to ECHA. Hence, the substance seems not to be manufactured in or imported to the EU in quantities above 1 t/y. Main uses in the past were as plasticiser in polymeric materials and paints, lacquers and varnishes, including printing inks.
2-Methoxyaniline; o-Anisidine	90-04-0	201-963-1	Carcinogenic (Article 57a)	Mainly used in the manufacture of dyes for tattooing and coloration of paper, polymers and aluminium foil.
4-(1,1,3,3-tetramethylbutyl) phenol	140-66-9	205-426-2	Endocrine disrupting properties (Article 57(f) - environment)	Mainly used in the manufacture of polymer preparations and of ethoxylates. Further used as a component in adhesives, coatings, inks and rubber articles.

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
1,2-Dichloroethane	107-06-2	203-458-1	Carcinogenic (Article 57a)	Mainly used for manufacture of other substances. Minor uses as solvent in the chemical and pharmaceutical industry.
Bis(2-methoxyethyl) ether	111-96-6	203-924-4	Toxic for reproduction (Article 57c)	Used primarily as a reaction solvent or process chemical in a wide variety of applications. Used also as solvent for battery electrolytes, and possibly in other products such as sealants, adhesives, fuels and automotive care products.
Arsenic acid	7778-39-4	231-901-9	Carcinogenic (Article 57a)	Mainly used to remove gas bubbles from ceramic glass melt and in the production of laminated printed circuit boards
Calcium arsenate	7778-44-1	231-904-5	Carcinogenic (Article 57a)	Calcium arsenate is present in complex raw materials imported for manufacture of copper, lead and a range of precious metals. It appears mainly to be used as precipitating agent in copper smelting and to manufacture diarsenic trioxide. However, most of the substance seems to be disposed of as waste.
Trilead diarsenate	3687-31-8	222-979-5	Carcinogenic (Article 57a) Toxic for reproduction (Article 57c)	Trilead diarsenate is present in complex raw materials imported for manufacture of copper, lead and a range of precious metals. The trilead diarsenate contained in the raw materials is in the metallurgical refinement process transformed to calcium arsenate and diarsenic trioxide. Whereas most of the calcium arsenate appears to be disposed of as waste the diarsenic trioxide is used further.
N,N-dimethylacetamide (DMAC)	127-19-5	204-826-4	Toxic for reproduction (Article 57c)	Used as solvent, mainly in the manufacture of various substances and in the production of fibres for clothing and other applications. Also used as reagent, and in products such as industrial coatings, polyimide films, paint strippers and ink removers.

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
2,2'-dichloro-4,4'-methylene dianiline (MOCA)	101-14-4	202-918-9	Carcinogenic (Article 57a)	Mainly used as curing agent in resins and in the production of polymer articles and also for manufacture of other substances. The substance may further be used in construction and arts.
Phenolphthalein	77-09-8	201-004-7	Carcinogenic (Article 57a)	Mainly used as laboratory agent (in pH indicator solutions), for the production of pH-indicator paper and in medicinal products.
Lead azide, Lead diazide	13424-46-9	236-542-1	Toxic for reproduction (Article 57c)	Mainly used as initiator or booster in detonators for both civilian and military uses and as initiator in pyrotechnic devices.
Lead styphnate	15245-44-0	239-290-0	Toxic for reproduction (Article 57c)	Mainly used as a primer for small calibre and rifle ammunition. Other common uses are in munition pyrotechnics, powder actuated devices and detonators for civilian use.
Lead dipicrate	6477-64-1	229-335-2	Toxic for reproduction (Article 57c)	No registration for this substance has been submitted to ECHA. Lead dipicrate is an explosive like lead diazide and lead styphnate. It may be used in low amounts in detonator mixtures together with the two other mentioned lead compounds.

- Zirconia Aluminosilicate Refractory Ceramic Fibres are fibres covered by index number 650-017-00-8 in Annex VI, part 3, table 3.1 of Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, and fulfil the three following conditions: a) oxides of aluminium, silicon and zirconium are the main components present (in the fibres) within variable concentration ranges b) fibres have a length weighted geometric mean diameter less two standard geometric errors of 6 or less micrometres (μm). c) alkaline oxide and alkali earth oxide ($\text{Na}_2\text{O}+\text{K}_2\text{O}+\text{CaO}+\text{MgO}+\text{BaO}$) content less or equal to 18% by weight
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■ **The Announcement of the seventh 13 SVHCs List**

The ECHA has added thirteen more chemical Substances of Very High Concern (SVHC) to the Candidate List on 18th June 2012.

The list of these 13 SVHCs and possible applications are shown below:

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
1,2-bis(2-methoxyethoxy) ethane (TEGDME; triglyme)	112-49-2	203-977-3	Toxic for reproduction (Article 57c)	Mainly used as a solvent or as a processing aid in the manufacture and formulation of industrial chemicals. Minor use in brake fluids and repair of motor vehicles.
1,2-dimethoxyethane; ethylene glycol dimethyl ether (EGDME)	110-71-4	203-794-9	Toxic for reproduction (Article 57c)	Mainly used as a solvent or as a processing aid in the manufacture and formulation of industrial chemicals, including use as an electrolyte solvent in lithium batteries.
Diboron trioxide	1303-86-2	215-125-8	Toxic for reproduction (Article 57c)	Used in a multitude of applications, e.g., in glass and glass fibres, frits, ceramics, flame retardants, catalysts, industrial fluids, metallurgy, adhesives, inks/paints, film developers solutions, detergents and cleaners, biocides and insecticides.
Formamide	75-12-7	200-842-0	Toxic for reproduction (Article 57c)	Mainly used as an intermediate. Minor uses as solvent, as reagent chemical (in the pharmaceutical industry) and as laboratory chemical. The substance seems further to be used in the agrochemical industry and as a plasticiser.
Lead (II) bis (methanesulfonate)	17570-76-2	401-750-5	Toxic for reproduction (Article 57c)	Mainly used in plating (both electrolytic and electroless) processes for electronic components (such as printed circuit boards).
TGIC(1,3,5-tris (oxiranylmethyl) -1,3,5-triazine-2,4,6 (1H,3H,5H) -trione)	2451-62-9	219-514-3	Mutagenic (Article 57b)	Mainly used as a hardener in resins and coatings; also used in inks for the printed circuit board industry, electrical insulation material, resin moulding systems, laminated sheeting, silk screen printing coatings, tools, adhesives, lining materials and stabilisers for plastics.
β-TGIC(1,3,5-tris[(2S and2R)-2,3-epoxypropyl]-1	59653-74-6	423-400-0	Mutagenic (Article 57b)	Mainly used as a hardener in resins and coatings; also used in inks for the printed

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
,3,5-triazine-2,4,6-(1H,3H,5H)-trione)				circuit board industry, electrical insulation material, resin moulding systems, laminated sheeting, silk screen printing coatings, tools, adhesives, lining materials and stabilisers for plastics.
4,4'-bis(dimethylamino) benzophenone(Michler's ketone)	90-94-8	202-027-5	Carcinogenic (Article 57a)	Intermediate in the manufacture of triphenylmethane dyes and other substances. Further potential uses include as additive (photosensitiser) in dyes and pigments, in dry film products, as a process chemical in the production of electronic circuit boards, in research and development applications.
N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler's base)	101-61-1	202-959-2	Carcinogenic (Article 57a)	Intermediate in the manufacture of dyes and other substances. Used also as chemical reagent in research and development.
[4-[4,4'-bis(dimethylamino) benzhydrylidene] cyclohexa-2,5-dien-1-ylidene] dimethylammonium chloride (C.I. Basic Violet 3) ¹	548-62-9	208-953-6	Carcinogenic (Article 57a)	Used mainly for paper colouring and inks supplied in printer cartridges and ball pens. Further uses include staining of dried plants, marker for increasing the visibility of liquids, staining in microbial and clinical laboratories.
[4-[[4-anilino-1-naphthyl][4-(dimethylamino)phenyl]methylene]cyclohexa-2,5-dien-1-ylidene] dimethylammonium chloride (C.I. Basic Blue 26) ¹	2580-56-5	219-943-6	Carcinogenic (Article 57a)	Used in the production of inks, cleaners, and coatings, as well as for dyeing of paper, packaging, textiles, plastic products, and other types of articles. It is also used in diagnostic and analytical applications.
α,α-Bis[4-(dimethylamino) phenyl]-4 (phenylamino) naphthalene -1-methanol (C.I. Solvent Blue 4) ¹	6786-83-0	229-851-8	Carcinogenic (Article 57a)	Mainly used in the production of printing and writing inks, for dyeing of paper and in mixtures such as windscreen washing agents.
4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol ¹	561-41-1	209-218-2	Carcinogenic (Article 57a)	Used in the production of writing inks and potentially in the production of other inks, as well as for dyeing of a variety of materials.

■ **The Announcement of the eighth 54 SVHCs List**

The ECHA has added fifty-four more chemical Substances of Very High Concern (SVHC) to the Candidate List on 19th December 2012.

The list of these 54 SVHCs and properties are shown below:

Substance Name	EC No.	CAS No.	SVHC Property
Bis(pentabromophenyl) ether (decabromodiphenyl ether; DecaBDE)	214-604-9	1163-19-5	PBT (Article 57d) vPvB (Article 57e)
Pentacosafuorotridecanoic acid	276-745-2	72629-94-8	vPvB (Article 57e)
Tricosafuorododecanoic acid	206-203-2	307-55-1	Toxic for reproduction (Article 57c)
Henicosafuoroundecanoic acid	218-165-4	2058-94-8	vPvB (Article 57e)
Heptacosafuorotetradecanoic acid	206-803-4	376-06-7	vPvB (Article 57e)
Diazene-1,2-dicarboxamide (C,C'-azodi(formamide)) (ADCA)	204-650-8	123-77-3	Respiratory sensitising properties (Article 57(f) - human health)
Cyclohexane-1,2-dicarboxylic anhydride [1] cis-cyclohexane-1,2-dicarboxylic anhydride [2] trans-cyclohexane-1,2-dicarboxylic anhydride [3] [The individual cis- [2] and trans- [3] isomer substances and all possible combinations of the cis- and trans-isomers [1] are covered by this entry].	201-604-9, 236-086-3, 238-009-9	85-42-7, 13149-00-3, 14166-21-3	Respiratory sensitising properties (Article 57(f) - human health)
Hexahydromethylphthalic anhydride including cis- and trans- stereo isomeric forms and all possible combinations of the isomers Hexahydromethylphthalic anhydride Hexahydro-3-methylphthalic anhydride Hexahydro-1-methylphthalic anhydride Hexahydro-4-methylphthalic anhydride	247-094-1, 260-566-1, 256-356-4, 243-072-0,	25550-51-0, 57110-29-9, 48122-14-1, 19438-60-9,	Respiratory sensitising properties (Article 57(f) - human health)
4-Nonylphenol, branched and linear [substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, covering also UVCB- and well-defined substances which include any of the individual isomers or a combination thereof]	-	-	Endocrine disrupting properties (Article 57(f) - environment)
4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated [covering well-defined substances and UVCB substances, polymers and homologues]	-	-	Endocrine disrupting properties (Article 57(f) - environment)
Methoxyacetic acid	210-894-6	625-45-6	Toxic for reproduction (Article 57c)
N,N-dimethylformamide	200-679-5	68-12-2	Toxic for reproduction (Article 57c)
Dibutyltin dichloride (DBTC)	211-670-0	683-18-1	Toxic for reproduction (Article 57c)
Lead monoxide (Lead oxide)	215-267-0	1317-36-8	Toxic for reproduction (Article 57c)

Substance Name	EC No.	CAS No.	SVHC Property
Orange lead (Lead tetroxide)	215-235-6	1314-41-6	Toxic for reproduction (Article 57c)
Lead bis(tetrafluoroborate)	237-486-0	13814-96-5	Toxic for reproduction (Article 57c)
Trilead bis(carbonate)dihydroxide	215-290-6	1319-46-6	Toxic for reproduction (Article 57c)
Lead titanium trioxide	235-038-9	12060-00-3	Toxic for reproduction (Article 57c)
Lead titanium zirconium oxide	235-727-4	12626-81-2	Toxic for reproduction (Article 57c)
Silicic acid, lead salt	234-363-3	11120-22-2	Toxic for reproduction (Article 57c)
Silicic acid (H ₂ Si ₂ O ₅), barium salt (1:1), lead-doped [with lead (Pb) content above the applicable generic concentration limit for 'toxicity for reproduction' Repr. 1A (CLP) or category 1 (DSD); the substance is a member of the group entry of lead compounds, with index number 082-001-00-6 in Regulation (EC) No 1272/2008]	272-271-5	68784-75-8	Toxic for reproduction (Article 57c)
1-bromopropane (n-propyl bromide)	203-445-0	106-94-5	Toxic for reproduction (Article 57c)
Methyloxirane (Propylene oxide)	200-879-2	75-56-9	Carcinogenic (Article 57a) Mutagenic (Article 57b)
1,2-Benzenedicarboxylic acid, dipentylester, branched and linear	284-032-2	84777-06-0	Toxic for reproduction (Article 57c)
Diisopentylphthalate (DIPP)	210-088-4	605-50-5	Toxic for reproduction (Article 57c)
N-pentyl-isopentylphthalate	-	776297-69-9	Toxic for reproduction (Article 57c)
1,2-diethoxyethane	211-076-1	629-14-1	Toxic for reproduction (Article 57c)
Acetic acid, lead salt, basic	257-175-3	51404-69-4	Toxic for reproduction (Article 57c)
Lead oxide sulfate	234-853-7	12036-76-9	Toxic for reproduction (Article 57c)
[Phthalato(2-)]dioxotrilead	273-688-5	69011-06-9	Toxic for reproduction (Article 57c)
Dioxobis(stearato)trilead	235-702-8	12578-12-0	Toxic for reproduction (Article 57c)
Fatty acids, C16-18, lead salts	292-966-7	91031-62-8	Toxic for reproduction (Article 57c)
Lead cyanamidate	244-073-9	20837-86-9	Toxic for reproduction (Article 57c)
Lead dinitrate	233-245-9	10099-74-8	Toxic for reproduction (Article 57c)
Pentalead tetraoxide sulphate	235-067-7	12065-90-6	Toxic for reproduction (Article 57c)
Pyrochlore, antimony lead yellow	232-382-1	8012-00-8	Toxic for reproduction (Article 57c)
Sulfurous acid, lead salt, dibasic	263-467-1	62229-08-7	Toxic for reproduction (Article 57c)
Tetraethyllead	201-075-4	78-00-2	Toxic for reproduction (Article 57c)
Tetralead trioxide sulphate	235-380-9	12202-17-4	Toxic for reproduction (Article 57c)
Trilead dioxide phosphonate	235-252-2	12141-20-7	Toxic for reproduction (Article 57c)

Substance Name	EC No.	CAS No.	SVHC Property
Furan	203-727-3	110-00-9	Carcinogenic (Article 57a)
Diethyl sulphate	200-589-6	64-67-5	Carcinogenic (Article 57a) Mutagenic (Article 57b)
Dimethyl sulphate	201-058-1	77-78-1	Carcinogenic (Article 57a)
3-ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine	421-150-7	143860-04-2	Toxic for reproduction (Article 57c)
Dinoseb (6-sec-butyl-2,4-dinitrophenol)	201-861-7	88-85-7	Toxic for reproduction (Article 57c)
4,4'-methylenedi-o-toluidine	212-658-8	838-88-0	Carcinogenic (Article 57a)
4,4'-oxydianiline and its salts	202-977-0	101-80-4	Carcinogenic (Article 57a) Mutagenic (Article 57b)
4-aminoazobenzene	200-453-6	60-09-3	Carcinogenic (Article 57a)
4-methyl-m-phenylenediamine (toluene-2,4-diamine)	202-453-1	95-80-7	Carcinogenic (Article 57a)
6-methoxy-m-toluidine (p-cresidine)	204-419-1	120-71-8	Carcinogenic (Article 57a)
Biphenyl-4-ylamine	202-177-1	92-67-1	Carcinogenic (Article 57a)
o-aminoazotoluene [(4-o-tolylazo-o-toluidine)]	202-591-2	97-56-3	Carcinogenic (Article 57a)
o-toluidine	202-429-0	95-53-4	Carcinogenic (Article 57a)
N-methylacetamide	201-182-6	79-16-3	Toxic for reproduction (Article 57c)

- The last four SVHCs identification is based on the presence of the carcinogenic constituents Michler's ketone or Michler's base above the concentration limit for classifying the substances as carcinogenic (≥ 0.1 % weight/weight).

■ The Announcement of the ninth 6 SVHCs List

The ECHA has added six more chemical Substances of Very High Concern (SVHC) to the Candidate List on 20th June 2013.

The list of these 6 SVHCs and properties are shown below:

Substance Name	EC No.	CAS No.	SVHC Property
Cadmium	231-152-8	7440-43-9	Carcinogenic (Article 57a); Equivalent level of concern having probable serious effects to human health (Article 57 f)
Cadmium oxide	215-146-2	1306-19-0	Carcinogenic (Article 57a); Equivalent level of concern having probable serious effects to human health (Article 57 f)
Ammonium pentadecafluorooctanoate (APFO)	223-320-4	3825-26-1	Toxic for reproduction (Article 57 c); PBT (Article 57 d)
Pentadecafluorooctanoic acid (PFOA)	206-397-9	335-67-1	Toxic for reproduction (Article 57 c); PBT (Article 57 d)
Dipentyl phthalate (DPP)	205-017-9	131-18-0	Toxic for reproduction (Article 57 c)

Substance Name	EC No.	CAS No.	SVHC Property
4-Nonylphenol, branched and linear, ethoxylated[substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, ethoxylated covering UVCB- and well-defined substances, polymers and homologues, which include any of the individual isomers and/or combinations thereof]	-	-	Equivalent level of concern having probable serious effects to the environment (Article 57 f)

■ The Announcement of the tenth 7 SVHCs List

The ECHA has added seven more chemical Substances of Very High Concern (SVHC) to the Candidate List on 16th December 2013.

The list of these 7 SVHCs and properties are shown below:

Substance Name	EC No.	CAS No.	SVHC Property
Disodium 4-amino-3-[[4'-[(2,4-diaminophenyl)azo][1,1'-biphenyl]-4-yl]azo]-5-hydroxy-6-(phenylazo)naphthalene-2,7-disulphonate(C.I. Direct Black 38)	217-710-3	1937-37-7	Carcinogenic (Article 57a)
Trixylyl phosphate	246-677-8	25155-23-1	Toxic for reproduction (Article 57 c)
Disodium 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(azo)]bis(4-aminonaphthalene-1-sulphonate) (C.I. Direct Red 28)	209-358-4	573-58-0	Carcinogenic (Article 57a)
Dihexyl phthalate	201-559-5	84-75-3	Toxic for reproduction (Article 57 c)
Imidazolidine-2-thione; 2-imidazoline-2-thiol	202-506-9	96-45-7	Toxic for reproduction (Article 57 c)
Cadmium sulphide	215-147-8	1306-23-6	Carcinogenic (Article 57a); Equivalent level of concern having probable serious effects to human health (Article 57 f)
Lead di(acetate)	206-104-4	301-04-2	Toxic for reproduction (Article 57 c)

■ The Announcement of the eleventh 4 SVHCs List

The ECHA has added four more chemical Substances of Very High Concern (SVHC) to the Candidate List on 16th June 2014.

The list of these 4 SVHCs and properties are shown below:

Substance Name	EC No.	CAS No.	SVHC Property
Cadmium chloride	233-296-7	10108-64-2	Carcinogenic (Article 57a); Mutagenic (Article 57b);

			Toxic for reproduction (Article 57c); Equivalent level of concern having probable serious effects to human health (Article 57 f)
1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear	271-093-5	68515-50-4	Toxic for reproduction (Article 57 c)
Sodium peroxometaborate	231-556-4	7632-04-4	Toxic for reproduction (Article 57 c)
Sodium perborate; perboric acid, sodium salt	239-172-9; 234-390-0	-	Toxic for reproduction (Article 57 c)

■ The Announcement of the 12th 6 SVHCs List

The ECHA has added six more chemical Substances of Very High Concern (SVHC) to the Candidate List on 17th December 2014.

The list of these 6 SVHCs and properties are shown below:

Substance Name	EC No.	CAS No.	SVHC Property
Cadmium fluoride	232-222-0	7790-79-6	Carcinogenic (Article 57 a); Mutagenic (Article 57 b); Toxic for reproduction (Article 57 c); Equivalent level of concern having probable serious effects to human health (Article 57 f)
Cadmium sulphate	233-331-6	10124-36-4; 31119-53-6	Carcinogenic (Article 57 a); Mutagenic (Article 57 b); Toxic for reproduction (Article 57 c); Equivalent level of concern having probable serious effects to human health (Article 57 f)
2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320)	223-346-6	3846-71-7	PBT (Article 57 d); vPvB (Article 57 e)
2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328)	247-384-8	25973-55-1	PBT (Article 57 d); vPvB (Article 57 e)
2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE)	239-622-4	15571-58-1	Toxic for reproduction (Article 57 c)
Reaction mass of 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate and 2-ethylhexyl 10-ethyl-4-[[2-[(2-ethylhexyl)oxy]-2-oxoethyl]thio]-4-octyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (reaction mass of DOTE and MOTE)	-	-	Toxic for reproduction (Article 57 c)

■ **The Announcement of the 13th 2 SVHCs List**

The ECHA has added two more chemical Substances of Very High Concern (SVHC) to the Candidate List on 15th June 2015.

The list of these 2 SVHCs and properties are shown below:

Substance Name	EC No.	CAS No.	SVHC Property
1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters; 1,2-benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters with $\geq 0.3\%$ of dihexyl phthalate (EC No. 201-559-5)	271-094-0; 272-013-1	68515-51-5; 68648-93-1	Toxic for reproduction (Article 57 c)
5-sec-butyl-2-(2,4-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [1], 5-sec-butyl-2-(4,6-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [2] [covering any of the individual stereoisomers of [1] and [2] or any combination thereof]	-	-	vPvB (Article 57e)

■ **The Announcement of the 14th 5 SVHCs List**

The ECHA has added five more chemical Substances of Very High Concern (SVHC) to the Candidate List on 17th December 2015.

The list of these 5 SVHCs and properties are shown below:

Substance Name	EC No.	CAS No.	SVHC Property
Nitrobenzene	202-716-0	98-95-3	Toxic for reproduction (Article 57 c)
2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol (UV-327)	223-383-8	3864-99-1	vPvB (Article 57 e)
2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl) phenol (UV-350)	253-037-1	36437-37-3	vPvB (Article 57 e)
1,3-propanesultone	214-317-9	1120-71-4	Carcinogenic (Article 57 a)
Perfluorononan-1-oic-acid and its sodium and ammonium salts	206-801-3	375-95-1 21049-39-8 4149-60-4	Toxic for reproduction (Article 57 c) PBT (Article 57 d)

■ **The Announcement of the 15th 1 SVHC List**

The ECHA has added one more chemical Substances of Very High Concern (SVHC) to the Candidate List on 20th June 2016.

The list of these one SVHC and property are shown below:

Substance Name	EC No.	CAS No.	SVHC Property
Benzo[def]chrysene (Benzo[a]pyrene)	200-028-5	50-32-8	Carcinogenic (Article 57a) Mutagenic (Article 57b)

Toxic for reproduction (Article 57c)
 PBT (Article 57d)
 vPvB (Article 57e)

■ The Announcement of the 16th 4 SVHCs List

The ECHA has added four more chemical Substances of Very High Concern (SVHC) to the Candidate List on 12th January 2017.

The list of these 4 SVHCs and properties are shown below:

Substance Name	EC No.	CAS No.	SVHC Property
4,4'-isopropylidenediphenol (bisphenol A; BPA)	201-245-8	80-05-7	Toxic for reproduction (Article 57c) Endocrine disrupting properties (Article 57(f) - environment) Endocrine disrupting properties (Article 57(f) - human health)
Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts	206-400-3 - 221-470-5	335-76-2 3830-45-3 3108-42-7	Toxic for reproduction (Article 57c) PBT (Article 57d)
p-(1,1-dimethylpropyl)phenol	201-280-9	80-46-6	Equivalent level of concern having probable serious effects to environment (Article 57f)
4-heptylphenol, branched and linear [substances with a linear and/or branched alkyl chain with a carbon number of 7 covalently bound predominantly in position 4 to phenol, covering also UVCB- and well-defined substances which include any of the individual isomers or a combination thereof]	-	-	Equivalent level of concern having probable serious effects to environment (Article 57f)

■ The Announcement of the 17th 1 SVHC List

The ECHA has added one more chemical Substances of Very High Concern (SVHC) to the Candidate List on 7th July 2017.

The list of one SVHC and property are shown below:

Substance Name	EC No.	CAS No.	SVHC Property
Perfluorohexane-1-sulphonic acid and its salts (PFHxS)	-	-	vPvB (Article 57e)

■ **The Announcement of the 18th 7 SVHCs List**

The ECHA has added seven more chemical Substances of Very High Concern (SVHC) to the Candidate List on 15th January 2018.

The list of these 7 SVHCs and properties are shown below:

Substance Name	EC No.	CAS No.	SVHC Property
Chrysene	205-923-4	218-01-9	Carcinogenic (Article 57a) PBT (Article 57d) vPvB (Article 57e)
Benz[a]anthracene	200-280-6	56-55-3	Carcinogenic (Article 57a) PBT (Article 57d) vPvB (Article 57e)
Cadmium nitrate	233-710-6	10325-94-7	Carcinogenic (Article 57a) Mutagenic (Article 57b) Specific target organ toxicity after repeated exposure (Article 57(f) - human health)
Cadmium hydroxide	244-168-5	21041-95-2	Carcinogenic (Article 57a) Mutagenic (Article 57b) Specific target organ toxicity after repeated exposure (Article 57(f) - human health)
Cadmium carbonate	208-168-9	513-78-0	Carcinogenic (Article 57a) Mutagenic (Article 57b) Specific target organ toxicity after repeated exposure (Article 57(f) - human health)
1,6,7,8,9,14,15,16,17,17,18,18-Dodecachloropentacyclo[12.2.1.16,9.02,13.05,10] octadeca-7,15-diene ("Dechlorane Plus"™) [covering any of its individual anti- and syn-isomers or any combination thereof]	-	-	vPvB (Article 57e)
Reaction products of 1,3,4-thiadiazolidine-2,5-dithione, formaldehyde and 4-heptylphenol, branched and linear (RP-HP) [with ≥0.1% w/w 4-heptylphenol, branched and linear]	-	-	Endocrine disrupting properties (Article 57(f) - environment)

■ **The Announcement of the 19th 10 SVHCs List**

The ECHA has added ten more chemical Substances of Very High Concern (SVHC) to the Candidate List on 27th June 2018.

The list of these 10 SVHCs and possible applications are shown below:

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
Octamethylcyclotetrasiloxane (D4)	209-136-7	556-67-2	PBT (Article 57d)	Used in washing and cleaning

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
			vPvB (Article 57e)	products, polishes and waxes and cosmetics and personal care products.
Decamethylcyclopentasiloxane (D5)	208-764-9	541-02-6	PBT (Article 57d) vPvB (Article 57e)	Used in washing and cleaning products, polishes and waxes, cosmetics and personal care products, textile treatment products and dyes.
Dodecamethylcyclohexasiloxane (D6)	208-762-8	540-97-6	PBT (Article 57d) vPvB (Article 57e)	Used in washing and cleaning products, polishes and waxes, cosmetics and personal care products.
Lead	231-100-4	7439-92-1	Toxic for reproduction (Article 57c)	Used in metals, welding and soldering products, metal surface treatment products, and polymers.
Disodium octaborate	234-541-0	12008-41-2	Toxic for reproduction (Article 57c)	Used in anti-freeze products, heat transfer fluids, lubricants and greases, and washing and cleaning products.
Benzo[ghi]perylene	205-883-8	191-24-2	PBT (Article 57d) vPvB (Article 57e)	Not registered under REACH. Normally not produced intentionally but rather occurs as a constituent or impurity in other substances.
Terphenyl hydrogenated	262-967-7	61788-32-7	vPvB (Article 57e)	Used as a plastic additive, solvent, in coatings/inks, in adhesives and sealants, and heat transfer fluids.
Ethylenediamine (EDA)	203-468-6	107-15-3	Respiratory sensitising properties (Article 57(f) - human health)	Used in adhesives and sealants, coating products, fillers, putties, plasters, modelling clay, pH regulators and water treatment products.
Benzene-1,2,4-tricarboxylic acid 1,2 anhydride (trimellitic anhydride) (TMA)	209-008-0	552-30-7	Respiratory sensitising properties (Article 57(f) - human health)	Used in the manufacture of esters and polymers.
Dicyclohexyl phthalate (DCHP)	201-545-9	84-61-7	Toxic for reproduction (Article 57c) Endocrine disrupting properties	Used in plastisol, PVC, rubber and plastic articles. A further

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
			(Article 57(f) - human health)	use is also as a phlegmatiser and dispersing agent for formulations of organic peroxides.

■ The Announcement of the 20th 6 SVHCs List

The ECHA has added six more chemical Substances of Very High Concern (SVHC) to the Candidate List on 15th January 2019.

The list of these six SVHCs and possible applications are shown below:

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
1,7,7-trimethyl-3-(phenylmethylene)bicyclo[2.2.1]heptan-2-one	239-139-9	15087-24-8	Endocrine disrupting properties (Article 57(f) - environment)	Not yet registered under REACH.
2,2-bis(4'-hydroxyphenyl)-4-methyl pentane	401-720-1	6807-17-6	Toxic for reproduction (Article 57c)	No active registrations under REACH.
Benzo[k]fluoranthene	205-916-6	207-08-9	Carcinogenic (Article 57a) PBT (Article 57d) vPvB (Article 57e)	Not yet registered under REACH.
Fluoranthene	205-912-4	206-44-0; 9 3951-69-0	PBT (Article 57d) vPvB (Article 57e)	Not yet registered under REACH.
Phenanthrene	201-581-5	85-01-8	vPvB (Article 57e)	Not yet registered under REACH.
Pyrene	204-927-3	129-00-0; 1 718-52-1	PBT (Article 57d) vPvB (Article 57e)	Used as a transported intermediate for the manufacture of fine chemicals.

■ The Announcement of the 21st 4 SVHCs List

The ECHA has added four more chemical Substances of Very High Concern (SVHC) to the Candidate List on 16th July 2019.

The list of these four SVHCs and possible applications are shown below:

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
2-methoxyethyl acetate	203-772-9	110-49-6	Toxic for reproduction (Article 57(c))	Not registered under REACH.
Tris(4-nonylphenyl, branched and linear) phosphite (TNPP) with ≥ 0.1% w/w of 4-nonylphenol, branched and linear (4-NP)	-	-	Endocrine disrupting properties (Article 57(f) - environment)	Primarily used as an antioxidant to stabilise polymers.
2,3,3,3-tetrafluoro-2-(heptafluoropropoxy) propionic	-	-	Equivalent level of concern having probable serious effects to the	Processing aid in the production of fluorinated

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
acid, its salts and its acyl halides (covering any of their individual isomers and combinations thereof)			environment (Article 57(f) - environment) Equivalent level of concern having probable serious effects to human health (Article 57(f) - human health)	polymers.
4-tert-butylphenol	202-679-0	98-54-4	Endocrine disrupting properties (Article 57(f) - environment)	Used in coating products, polymers, adhesives, sealants and for the synthesis of other substances.

■ The Announcement of the 22nd 4 SVHCs List

The ECHA has added four more chemical Substances of Very High Concern (SVHC) to the Candidate List on 16th January 2020.

The list of these four SVHCs and possible applications are shown below:

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
Perfluorobutane sulfonic acid (PFBS) and its salts	-	-	Equivalent level of concern having probable serious effects to human health (Article 57(f)- human health) Equivalent level of concern having probable serious effects to the environment (Article 57(f) - environment)	Used as a catalyst/additive/reactant in polymer manufacture and in chemical synthesis. It is also used as a flame retardant in polycarbonate (for electronic equipment).
Diisohexyl phthalate	276-090-2	71850-09-4	Toxic for reproduction (Article 57c)	Not registered under REACH.
2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one	400-600-6	71868-10-5	Toxic for reproduction (Article 57c)	The substance is used in polymer production
2-benzyl-2-dimethylamino-4'-morpholinobutyrophenone	404-360-3	119313-12-1	Toxic for reproduction (Article 57c)	The substance is used in polymer production

■ The Announcement of the 23rd 4 SVHCs List

The ECHA has added four more chemical Substances of Very High Concern (SVHC) to the Candidate List on 25th June 2020.

The list of these four SVHCs and possible applications are shown below:

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
1-vinylimidazole	214-012-0	1072-63-5	Toxic for reproduction (Article 57 (c))	In formulations and as a monomer in the production of

				polymers
2-methylimidazole	211-765-7	693-98-1	Toxic for reproduction (Article 57 (c))	As a catalyst in the production of coating products
Dibutylbis(pentane-2,4-dionato-O,O')tin	245-152-0	22673-19-4	Toxic for reproduction (Article 57 (c))	As a catalyst and as an additive in the production of plastics
Butyl 4-hydroxybenzoate (Butylparaben)	202-318-7	94-26-8	Endocrine disrupting properties-human health (Article 57(f)- human health)	Cosmetics, personal care products and pharmaceuticals

■ The Announcement of the 24th 2 SVHCs List

The ECHA has added two more chemical Substances of Very High Concern (SVHC) to the Candidate List on 19th January 2021.

The list of these two SVHCs and possible applications are shown below:

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
Bis(2-(2-methoxyethoxy)ethyl)ether	205-594-7	143-24-8	Toxic for reproduction (Article 57 (c))	Solvent/extraction agent.
Diocetyl tin dilaurate, stannane, dioctyl-, bis(coco acyloxy) derivs., and any other stannane, dioctyl-, bis(fatty acyloxy) derivs. wherein C12 is the predominant carbon number of the fatty acyloxy moiety	293-901-5 - 222-883-3	91648-39-4 - 3648-18-8	Toxic for reproduction (Article 57 (c))	Not registered under REACH as a group of substances. However, one of the three group members (Diocetyl tin dilaurate) is registered. The mono-constituent form of the substance (dioctyl tin dilaurate) is used as an additive in the production of plastics and rubber tyres.

■ The Announcement of the 25th 8 SVHCs List

The ECHA has added eight more chemical Substances of Very High Concern (SVHC) to the Candidate List on 8th July 2021.

The list of these eight SVHCs and possible applications are shown below:

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
2-(4-tert-butylbenzyl)propionaldehyde and its individual stereoisomers	- - 201-289-8	75166-31-3 80-54-6 75166-30-2	Toxic for reproduction (Article 57 (c))	Cleaning agents, cosmetics, in scented articles, polishes and wax blends.
Orthoboric acid, sodium salt	- - 238-253-6 215-604-1	25747-83-5 22454-04-2 14312-40-4 1333-73-9	Toxic for reproduction (Article 57 (c))	Not registered under REACH. May be used as solvent and corrosion inhibitor.

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
	237-560-2 -	13840-56-7 14890-53-0		
2,2-bis(bromomethyl)propane 1,3-diol (BMP); 2,2-dimethylpropan-1-ol, tribromo derivative/3-bromo-2,2-bis (bromomethyl)-1-propanol (TBNPA); 2,3-dibromo-1-propanol (2,3-DBPA)	221-967-7, 253-057-0, 202-480-9	3296-90-0, 36483-57-5, 1522-92-5, 96-13-9	Carcinogenic (Article 57 a)	BMP: manufacture of polymer resins and in one component foam (OCPF) application. TBNPA: polymer production manufacture of plastics products, including compounding and conversion and as an intermediate. DBPA: registered as an intermediate.
Glutaral	203-856-5	111-30-8	Respiratory sensitising properties (Article 57f - human health)	Biocides, leather tanning, x-ray film processing, cosmetics.
Medium-chain chlorinated paraffins (MCCP) (UVCB substances consisting of more than or equal to 80% linear chloroalkanes with carbon chain lengths within the range from C14 to C17)	- 287-477-0 950-299-5 -	1372804-76-6 85535-85-9 - 198840-65-2	PBT (Article 57d) vPvB (Article 57e)	Flame retardants, plasticising additives in plastics, sealants, rubber and textiles.
Phenol, alkylation products (mainly in para position) with C12-rich branched alkyl chains from oligomerisation, covering any individual isomers and/or combinations thereof (PDDP)	- - - 310-154-3 - -	210555-94-5 27459-10-5 27147-75-7 121158-58-5 74499-35-7 57427-55-1	Toxic for reproduction (Article 57c) Endocrine disrupting properties (Article 57f - human health and environment)	Preparation of lubricant additive materials and of fuel system cleaners.
1,4-dioxane	204-661-8	123-91-1	Carcinogenic (Article 57a) Equivalent level of concern having probable serious effects to the environment (Article 57f -environment) Equivalent level of concern having probable serious effects to human health (Article 57f -human health)	Solvent
4,4'-(1-methylpropylidene)bisphenol	201-025-1	77-40-7	Endocrine disrupting properties (Article 57f - human health and environment)	Not registered under REACH. May be used in manufacture of phenolic and polycarbonate resin.

■ The Announcement of the 26th 4 SVHCs List

The ECHA has added four more chemical Substances of Very High Concern (SVHC) to the Candidate List on 17th January 2022.

The list of these four SVHCs and possible applications are shown below:

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
(±)-1,7,7-trimethyl-3-[(4-methylphenyl)methylene] bicyclo[2.2.1]heptan-2-one covering any of the individual isomers and/or combinations thereof (4-MBC)	-	-	Endocrine disrupting properties (Article 57(f) - human health)	Cosmetics
6,6'-di-tert-butyl-2,2'-methylene-di-p-cresol (DBMC)	119-47-1	204-327-1	Toxic for reproduction (Article 57 c)	Rubbers, lubricants, adhesives, inks, fuels
S-(tricyclo[5.2.1.0' ² ,6]deca-3-en-8(or 9)-yl) O-(isopropyl or isobutyl or 2-ethylhexyl) O-(isopropyl or isobutyl or 2-ethylhexyl) phosphorodithioate	255881-94-8	401-850-9	PBT (Article 57 d)	Lubricants, greases
tris(2-methoxyethoxy)vinylsilane	1067-53-4	213-934-0	Toxic for reproduction (Article 57 c)	Rubbers, plastics, sealants

■ The Announcement of the 27th 1 SVHC List

The ECHA has added one more chemical Substances of Very High Concern (SVHC) to the Candidate List on 10th June 2022.

The list of the one SVHC and possible applications are shown below:

Substance Name	CAS No.	EC No.	Reason for inclusion	Examples of use(s)
N-(hydroxymethyl)acrylamide	924-42-5	213-103-2	Carcinogenic (Article 57a) Mutagenic (Article 57b)	As a monomer for polymerisation, as a fluoroalkyl acrylate copolymer, and in paints and coatings.

■ The Announcement of the 28th 9 SVHCs List

The ECHA has added nine more chemical Substances of Very High Concern (SVHC) to the Candidate List on 17th January 2023.

The list of the nine SVHCs and possible applications are shown below:

Substance Name	EC No.	CAS No.	Reason for inclusion	Examples of use(s)
1,1'-[ethane-1,2-diylbis(oxy)]bis[2,4,6-tribromobenzene]	253-692-3	37853-59-1	Very persistent and very bioaccumulative (REACH Article 57 e)	While the substance itself is not registered under REACH, identification as an SVHC can be seen as a measure to avoid future regrettable substitution.

Substance Name	EC No.	CAS No.	Reason for inclusion	Examples of use(s)
2,2',6,6'-tetrabromo-4,4'-isopropylidene diphenol	201-236-9	79-94-7	Carcinogenic (Article 57 a)	As a reactive flame retardant and as an additive flame retardant in the manufacture of polymer resins, in products such as epoxy coated circuit boards, printed circuit boards, paper and textiles.
4,4'-sulphonyldiphenol	201-250-5	80-09-1	Toxic for reproduction (Article 57 c); Endocrine disrupting properties (Article 57 f – environment); Endocrine disrupting properties (Article 57 f – human health)	In the manufacture of: pulp, paper and paper products, textile, leather or fur and chemicals.
Barium diboron tetraoxide	237-222-4	13701-59-2	Toxic for reproduction (Article 57 c)	In paints and coatings.
Bis(2-ethylhexyl) tetrabromophthalate covering any of the individual isomers and/or combinations thereof	-	-	Very persistent and very bioaccumulative (Article 57 e)	As a flame retardant and as a plasticiser for flexible polyvinylchloride and for use in wire and cable insulation, film and sheeting, carpet backing, coated fabrics, wall coverings and adhesives.
Isobutyl 4-hydroxybenzoate	224-208-8	4247-02-3	Endocrine disrupting properties (Article 57 f – human health)	In the manufacture of substances and in the following products: coating products, fillers, putties, plasters, modelling clay and inks and toners.
Melamine	203-615-4	108-78-1	Equivalent level of concern having probable serious effects to human health (Article 57 f – human health); Equivalent level of concern having probable serious effects to the environment (Article 57 f – environment)	In polymers and resins, coating products, adhesives and sealants, leather treatment products, laboratory chemicals.

Substance Name	EC No.	CAS No.	Reason for inclusion	Examples of use(s)
Perfluoroheptanoic acid and its salts	-	-	Toxic for reproduction (Article 57 c); Persistent, bioaccumulative and toxic (Article 57 d); Very persistent and very bioaccumulative (Article 57 e); Equivalent level of concern having probable serious effects to human health (Article 57 f – human health); Equivalent level of concern having probable serious effects to the environment (Article 57 f – environment)	While the substance itself is not registered under REACH, identification as an SVHC can be seen as a measure to avoid future regrettable substitution.
reaction mass of 2,2,3,3,5,5,6,6-octafluoro-4-(1,1,1,2,3,3,3-heptafluoropropan-2-yl)morpholine and 2,2,3,3,5,5,6,6-octafluoro-4-(heptafluoropropyl)morpholine	473-390-7	-	Very persistent and very bioaccumulative (Article 57 e)	Used in articles, by professional workers (widespread uses), in formulation or re-packing, at industrial sites and in manufacturing.

■ The Announcement of the 29th 2 SVHCs List

The ECHA has added two more chemical Substances of Very High Concern (SVHC) to the Candidate List on 14th June 2023.

The list of these two SVHCs and possible applications are shown below:

Substance Name	EC No.	CAS No.	Reason for inclusion	Examples of use(s)
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	278-355-8	75980-60-8	Toxic for reproduction (Article 57c)	Inks and toners, coating products, photo-chemicals, polymers, adhesives and sealants and fillers, putties, plasters, modelling clay.
Bis(4-chlorophenyl) sulphone	201-247-9	80-07-9	Very persistent and very bioaccumulative (Article 57 e)	Manufacture of chemicals, plastic products and rubber products.

ECHA's Member State Committee confirmed the addition of these substances to the Candidate List. The Candidate List now has 235 entries – some are groups of chemicals so the overall number of impacted chemicals is higher.

These substances may be placed on the Authorisation List in the future. If a substance is on that list, its use will be prohibited unless companies apply for authorisation and the European Commission authorises them to continue its use.

- According to REACH regulation, all EU manufacturers or importers of the 235 SVHCs should fulfill either one of the following regulatory obligations:
 1. should supply Safety Data Sheet (SDS/MSDS) to their downstream users when the SVHC concerned is sold as a substance on itself; or
 2. should supply SDS/MSDS to their downstream users when the SVHC concerned is produced or imported at or above 0.1% w/w in a mixture or preparation; or
 3. should supply the product recipient or in request of the product consumers, with available sufficient information, free of charge, which covers at least the name of the substance, within 45 days on receiving the request, if the SVHC is above 0.1% w/w threshold in an article.
- All EU manufacturers or importers must submit a notification for SVHCs placed on EU market before June 1, 2011 to European Chemicals Agency (ECHA), if the substance is produced or imported above the quantity of 1 tonne per year and its concentration percentage in the article above the threshold of 0.1% w/w.
- Under the Waste Framework Directive, companies also have to notify ECHA if the articles they produce contain substances of very high concern in a concentration above 0.1 % (weight by weight). This notification is published in ECHA's database of substances of concern in products (SCIP).

Contact us

CIRS-C&K Testing

Web: en.cirs-ck.com

Phone: +86-571-87206587

FAX: +86-571-89900719

E-mail: test@cirs-group.com

CIRS Ireland

Web: www.cirs-reach.com

Phone: +353 (1) 477 3710

FAX: +353 (1) 477 3710

E-mail: service@cirs-reach.com