

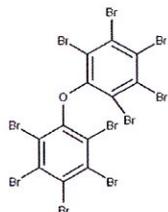
## Bis(pentabromophenyl) ether

### Substance identity

EC / List no.: 214-604-9

CAS no.: 1163-19-5

Mol. formula: C<sub>12</sub>Br<sub>10</sub>O



### Hazard classification & labelling

According to the notifications provided by companies to ECHA in REACH registrations no hazards have been classified.

### Properties of concern

PBT

### Regulatory activities

Substance of very high concern (SVHC) and included in the candidate list for authorisation.

Some uses of this substance are restricted under Annex XVII of REACH.

### About this substance

This substance is manufactured and/or imported in the European Economic Area in 1 000 - 10 000 tonnes per year.

This substance is used by consumers, in articles, by professional workers (widespread uses), in formulation or re-packing and at industrial sites.

### Consumer Uses

ECHA has no public registered data indicating whether or in which chemical products the substance might be used. ECHA has no public registered data on the routes by which this substance is most likely to be released to the environment.

### Article service life

ECHA has no public registered data on the routes by which this substance is most likely to be released to the environment. ECHA has no public registered data indicating whether or into which articles the substance might have been processed.

### Widespread uses by professional workers

ECHA has no public registered data indicating whether or in which chemical products the substance might be used. ECHA has no public registered data on the types of manufacture using this substance. ECHA has no public registered data on the routes by which this substance is most likely to be released to the environment.

### Formulation or re-packing

ECHA has no public registered data indicating whether or in which chemical products the substance might be used. ECHA has no public registered data on the routes by which this substance is most likely to be released to the environment.

### Uses at industrial sites

ECHA has no public registered data indicating whether or in which chemical products the substance might be used. ECHA has no public registered data on the types of manufacture using this substance. ECHA has no public registered data on the routes by which this substance is most likely to be released to the environment.

### Manufacture

ECHA has no public registered data on the routes by which this substance is most likely to be released to the environment.

The InfoCard summarises the non-confidential data on substances as held in the databases of the European Chemicals Agency (ECHA), including data provided by third parties. The InfoCard is automatically generated. Information requirements under different legislative frameworks may therefore not be up-to-date or complete. Substance manufacturers and importers are responsible for consulting official publications. This InfoCard is covered by the ECHA Legal Disclaimer.



about INFOCARD - Last updated: 30/01/2018

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italiano (it)



L'Agenzia

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REGOLAMENTI

REACH

CLP

BPR

PIC

CONSULTAZIONI PUBBLICHE

INFORMAZIONI SULLE  
SOSTANZE CHIMICHE

ASSISTENZA

ECHA > Substance Information

## Visualizzazione Contenuto Web

Infocards are automatically generated based on industry data. What is an infocard?

RSS

### Bis(pentabromophenyl) ether

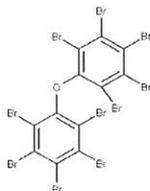
Other names: Regulatory process names [3] Trade names [4] Other names [1] IUPAC names [9]

#### Substance identity

**EC / List no.:** 214-604-9

**CAS no.:** 1163-19-5

**Mol. formula:** C12Br10O



#### About this substance

This substance is manufactured and/or imported in the European Economic Area in 1 000 - 10 000 tonnes per year.

This substance is used by consumers, in articles, by professional workers (widespread uses), in formulation or re-packing and at industrial sites.

#### Consumer Uses

This substance is used in the following products: adhesives and sealants, coating products, fillers, putties, plasters, modelling clay, inks and toners, leather treatment products, lubricants and greases, polishes and waxes, polymers, washing & cleaning products and cosmetics and personal care products. Other release to the environment of this substance is likely to occur from: indoor use, outdoor use resulting in inclusion into or onto a materials (e.g. binding agent in paints and coatings or adhesives), outdoor use in long-life materials with low release rate (e.g. metal, wooden and plastic construction and building materials) and indoor use in long-life materials with low release rate (e.g. flooring, furniture, toys, construction

#### Hazard classification & labelling

According to the notifications provided by companies to ECHA in REACH registrations no hazards have been classified.

#### Properties of concern

PBT

#### Important to know

Substance of very high concern (SVHC) and included in the candidate list for authorisation. Some uses of this substance are restricted under Annex XVII of REACH.

#### How to use it safely

ECHA has no data from registration dossiers on the precautionary measures for using this substance.

Guidance on the safe use of the substance provided by manufacturers and importers of this substance.

about INFOCARD - Last updated: 12/05/2017

### Regulations and regulatory activities

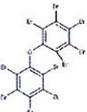
This substance has been found in the following regulatory activities:

## Bis(pentabromophenyl) ether

Brief Profile - Last updated: 30/01/2018



### Substance Description

Substance Identity		SMILES:	BrC1=C(Br)C(Br)=C(OC2=C(Br)C(Br)=C(Br)C(Br)=C2Br)C(Br)=C1Br
	<p><b>EC / List name:</b> Bis(pentabromophenyl) ether</p> <p><b>IUPAC name:</b> 1,2,3,4,5-pentabromo-6-pentabromophenoxybenzene</p> <p><b>Other names</b></p>	<b>InChI:</b>	InChI=1S/C12Br10O/c13-1-3(15)7(19)11(8(20)4(1)16)23-12-9(21)5(17)2(14)6(18)10(12)22 AuxInfo=1/0/N:3,14,2,4,13,15,7,5,18,16,6,17,10,21,9,1 1,20,22,8,12,19,23,1/E:(1,2)(3,4,5,6)(7,8,9,10)(11,12)(13,14)(15,16,17,18) (19,20,21,22)/r/A:23OCCCCCBrBrBrBrCCCCCBrBrBrBrBr/r/B:s2;d:3;s4;s1d+5;d-2s6;s7;s2;s3;s4;s5;s13;d-14;s15;s1d+16;d-13s17;s18;s13;s14;s15;s16/r/C:6.1383,-5.3792,0;2.22 43,-4.0957,0;1.4971,-5.4111,0;2.2671,-6.7478,0;3.807 1,-6.6944,0;4.5771,-5.3577,0;3.7856,-4.0423,0;4.5556,-2.7055,0;1.4864,-2.7589,0;0,-5.4432,0;1.5398,-8.106,0; 4.6092,-8.0526,0;9.1539,-2.6413,0;8.3735,-1.3474,0;6. 8335,-1.3474,0;6.1062,-2.6628,0;6.8762,-3.9995,0;8.4 161,-3.9674,0;9.2075,-5.2829,0;10.6833,-2.6307,0;9.1 006,0;0;6.0635,-0534,0;4.8444,-3.0692,0;
<b>EC / List no.:</b>	214-604-9	<b>Type of substance:</b>	Mono constituent substance
<b>CAS no.:</b>	1163-19-5	<b>Origin:</b>	Organic
<b>Index number:</b>		<b>Registered compositions:</b>	5
<b>Molecular formula:</b>	C12Br10O	<b>Of which contain:</b>	0 impurities relevant for classification 0 additives relevant for classification
		<b>Substance Listed:</b>	EINECS (European INventory of Existing Commercial chemical Substances) List

### Hazard classification & labelling

According to the notifications provided by companies to ECHA in REACH registrations no hazards have been classified.



Additionally, the classification provided by companies to ECHA in CLP notifications identifies that this substance is harmful if swallowed, is harmful in contact with skin, is harmful if inhaled, causes serious eye irritation, may cause long lasting harmful effects to aquatic life, is suspected of causing genetic defects and may cause damage to organs through prolonged or repeated exposure.

#### Breakdown of all 273 C&L notifications submitted to ECHA

Classification	Count
Not Classified	1
Acute Tox. 4 H302	1
Acute Tox. 4 H312	1
Acute Tox. 4 H332	1
Eye Irrit. 2 H319	1
Aquatic Chronic 4 H413	1
Muta. 2 H341	1
STOT RE 2 H373	1
Repr. 1B H360	1
Skin Irrit. 2 H315	1
STOT SE 3 H335	1

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

- Harmonised Classification
- REACH registration dossiers notifications
- CLP notifications

### Properties of concern



## Regulatory activities

### Registration, Evaluation, Authorisation & Restriction of Chemicals (REACH)

#### Registration

**Pre-registration:** Substance pre-registered under REACH.

**Registration:** This substance has 4 active registrations under REACH, 1 Joint Submission(s) and 0 Individual Submission(s).

#### Evaluation

Dossier Evaluation:

Substance Evaluation:

#### Authorisation

**Candidate List:** Substance of very high concern (SVHC) and included in the candidate list for authorisation.

Annex XIV (Authorisation List):

#### Restriction

**Annex XVII (Restriction List):** Some uses of this substance are restricted under Annex XVII of REACH.

### Classification Labelling & Packaging (CLP)

Harmonised C&L:

**Notification:** Classification & Labelling has been notified by industry to ECHA for this substance.

### Biocidal Products Regulation (BPR)

Active Substance:

Biocidal Products:

### Prior Informed Consent (PIC)

Annex I:

Annex V:

## About this substance

### General

This substance is manufactured and/or imported in the European Economic Area in 1 000 - 10 000 tonnes per year.

This substance is used by consumers, in articles, by professional workers (widespread uses), in formulation or re-packing and at industrial sites.

### Consumer Uses

This substance is used in the following products: adhesives and sealants, coating products, fillers, putties, plasters, modelling clay, inks and toners, leather treatment products, lubricants and greases, polishes and waxes, polymers, washing & cleaning products and cosmetics and personal care products.

Other release to the environment of this substance is likely to occur from: indoor use, outdoor use resulting in inclusion into or onto a materials (e.g. binding agent in paints and coatings or adhesives), outdoor use in long-life materials with low release rate (e.g. metal, wooden and plastic construction and building materials) and indoor use in long-life materials with low release rate (e.g. flooring, furniture, toys, construction materials, curtains, foot-wear, leather products, paper and cardboard products, electronic equipment).

### Article service life

This substance is used in the following activities or processes at workplace: the low energy manipulation of substances bound in materials or articles, production of mixtures or articles by tableting, compression, extrusion or pelletisation, high energy work-up of substances bound in materials or articles (e.g. hot rolling/forming, grinding, mechanical cutting, drilling or sanding), hot work operations with metals (e.g. welding, soldering, gouging, brazing, flame cutting) and potentially closed industrial processing with minerals/metals at elevated temperature (e.g. smelters, furnaces, refineries, coke ovens).

Release to the environment of this substance can occur from industrial use: in the production of articles, formulation in materials, in processing aids at industrial sites, formulation of mixtures, as processing aid, as processing aid and of substances in closed systems with minimal release. Other release to the environment of this substance is likely to occur from: outdoor use in long-life materials with low release rate (e.g. metal, wooden and plastic construction and building materials), indoor use in long-life materials with low release rate (e.g. flooring, furniture, toys, construction materials, curtains, foot-wear, leather products, paper and cardboard products, electronic equipment), outdoor use, indoor use (e.g. machine wash liquids/detergents, automotive care products, paints and coating or adhesives, fragrances and air fresheners) and outdoor use in long-life materials with high release rate (e.g. tyres, treated wooden products, treated textile and fabric, brake pads in trucks or cars, sanding of buildings (bridges, facades) or vehicles (ships)).

This substance can be found in complex articles, with no release intended: vehicles and machinery, mechanical appliances and electrical/electronic products (e.g. computers, cameras, lamps, refrigerators, washing machines). This substance can be found in products with material based on: plastic (e.g. food packaging and storage, toys, mobile phones), fabrics, textiles and apparel (e.g. clothing, mattress, curtains or carpets, textile toys), rubber (e.g. tyres, shoes, toys), leather (e.g. gloves, shoes, purses, furniture), paper (e.g. tissues, feminine hygiene products, nappies, books, magazines, wallpaper), wood (e.g. floors, furniture, toys) and metal (e.g. cutlery, pots, toys, jewellery).

### Widespread uses by professional workers

This substance is used in the following products: fillers, putties, plasters, modelling clay, polymers, coating products, adhesives and sealants, inks and toners, leather treatment products, lubricants and greases, polishes and waxes, washing & cleaning products and cosmetics and personal care products.

This substance is used in the following areas: building & construction work. This substance is used for the manufacture of: plastic products, machinery and vehicles, textile, leather or fur, rubber products, fabricated metal products, electrical, electronic and optical equipment and furniture.

This substance is used in the following activities or processes at workplace: transfer of chemicals, hand mixing with intimate contact only with personal protective equipment available, mixing in open batch processes, transfer of substance into small containers, roller or brushing applications, treatment of articles by dipping and pouring, closed processes with no likelihood of exposure, closed, continuous processes with occasional controlled exposure, closed batch processing in synthesis or formulation, batch processing in synthesis or formulation with opportunity for exposure, non-industrial spraying, laboratory work and industrial spraying.

Other release to the environment of this substance is likely to occur from: indoor use, outdoor use resulting in inclusion into or onto a materials (e.g. binding agent in paints and coatings or adhesives), outdoor use in long-life materials with low release rate (e.g. metal, wooden and plastic construction and building materials) and indoor use in long-life materials with low release rate (e.g. flooring, furniture, toys, construction materials, curtains, foot-wear, leather products, paper and cardboard products, electronic equipment).

### Formulation or re-packing

This substance is used in the following products: polymers, adhesives and sealants, coating products, inks and toners, washing & cleaning products, leather treatment products, lubricants and greases, polishes and waxes, fillers, putties, plasters, modelling clay, cosmetics and personal care products, biocides (e.g. disinfectants, pest control products), pH regulators and water treatment products, paper chemicals and dyes and perfumes and fragrances.

This substance is used in the following activities or processes at workplace: transfer of chemicals, mixing in open batch processes, closed batch processing in synthesis or formulation, transfer of substance into small containers, batch processing in synthesis or formulation with opportunity for exposure, closed processes with no likelihood of exposure, laboratory work, roller or brushing applications, industrial spraying, treatment of articles by dipping and pouring, the low energy manipulation of substances bound in materials or articles, production of mixtures or articles by tableting, compression, extrusion or pelletisation, closed, continuous processes with occasional controlled exposure, calendaring operations, non-industrial spraying, hand mixing with intimate contact only with personal protective equipment available, high energy work-up of substances bound in materials or articles (e.g. hot rolling/forming, grinding, mechanical cutting, drilling or sanding), in materials as fuel sources, with limited exposure to unburned product to be expected, potentially closed industrial processing with minerals/metals at elevated temperature (e.g. smelters, furnaces, refineries, coke ovens), hot work operations with metals (e.g. welding, soldering, gouging, brazing, flame cutting) and handling of solid inorganic substances (e.g. ores and raw metal oxides, packaging/mixing/blending and weighing of metal powders).

Release to the environment of this substance can occur from industrial use: formulation of mixtures, formulation in materials, in the production of articles, in processing aids at industrial sites, as processing aid, as processing aid, of substances in closed systems with minimal release and as an intermediate step in further manufacturing of another substance (use of intermediates). Other release to the environment of this substance is likely to occur from: indoor use (e.g. machine wash liquids/detergents, automotive care products, paints and coating or adhesives, fragrances and air fresheners), outdoor use, outdoor use in long-life materials with low release rate (e.g. metal, wooden and plastic construction and building materials), outdoor use in long-life materials with high release rate (e.g. tyres, treated wooden products, treated textile and fabric, brake pads in trucks or cars, sanding of buildings (bridges, facades) or vehicles (ships)) and indoor use in long-life materials with low release rate (e.g. flooring, furniture, toys, construction materials, curtains, foot-wear, leather products, paper and cardboard products, electronic equipment).

### Uses at industrial sites

This substance is used in the following products: polymers, adhesives and sealants, coating products, inks and toners, washing & cleaning products, fillers, putties, plasters, modelling clay, leather treatment products, lubricants and greases, polishes and waxes, cosmetics and personal care products, textile treatment products and dyes, biocides (e.g. disinfectants, pest control products), pH regulators and water treatment products, paper chemicals and dyes and perfumes and fragrances.

This substance is used in the following areas: formulation of mixtures and/or re-packing, building & construction work and agriculture, forestry and fishing. This substance is used for the manufacture of: plastic products, rubber products, textile, leather or fur, fabricated metal products, electrical, electronic and optical equipment, machinery and vehicles, metals, pulp, paper and paper products and chemicals.

This substance is used in the following activities or processes at workplace: transfer of chemicals, closed batch processing in synthesis or formulation, the low energy manipulation of substances bound in materials or articles, mixing in open batch processes, roller or brushing applications, production of mixtures or articles by tableting, compression, extrusion or pelletisation, industrial spraying, transfer of substance into small containers, treatment of articles by dipping and pouring, batch processing in synthesis or formulation with opportunity for exposure, closed processes with no likelihood of exposure, laboratory work, calendaring operations, hand mixing with intimate contact only with personal protective equipment available, non-industrial spraying, closed, continuous processes with occasional controlled exposure, high energy work-up of substances bound in materials or articles (e.g. hot rolling/forming, grinding, mechanical cutting, drilling or sanding), hot work operations with metals (e.g. welding, soldering, gouging, brazing, flame cutting), blowing agents in manufacture of foam, in materials as fuel sources, with limited exposure to unburned product to be expected, potentially closed industrial processing with minerals/metals at elevated temperature (e.g. smelters, furnaces, refineries, coke ovens) and handling of solid inorganic substances (e.g. ores and raw metal oxides, packaging/mixing/blending and weighing of metal powders).

Release to the environment of this substance can occur from industrial use: in the production of articles, in processing aids at industrial sites, formulation of mixtures, formulation in materials, as processing aid, as processing aid, of substances in closed systems with minimal release and as an intermediate step in further manufacturing of another substance (use of intermediates). Other release to the environment of this substance is likely to occur from: outdoor use in long-life materials with low release rate (e.g. metal, wooden and plastic construction and building materials), indoor use in long-life materials with low release rate (e.g. flooring, furniture, toys, construction materials, curtains, foot-wear, leather products, paper and cardboard products, electronic equipment), indoor use (e.g. machine wash liquids/detergents, automotive care products, paints and coating or adhesives, fragrances and air fresheners), outdoor use and outdoor use in long-life materials with high release rate (e.g. tyres, treated wooden products, treated textile and fabric, brake pads in trucks or cars, sanding of buildings (bridges, facades) or vehicles (ships)).

### Manufacture

ECHA has no public registered data on the use of this substance in activities or processes at the workplace.

ECHA has no public registered data on the routes by which this substance is most likely to be released to the environment.

### Precautionary Measures and safe use

ECHA has no data from registration dossiers on the precautionary measures for using this substance. Guidance on the safe use of the substance provided by manufacturers and importers of this substance.

## Registrants/suppliers

### Active

- ALBEMARLE EUROPE SPRL, Parc Scientifique (Einstein) Rue du Bosquet 9 1348 LOUVAIN-LA-NEUVE Belgium
- Chemical Inspection & Regulation Service Limited, Unit 1 Ardee Business Park, Hale Street Co. Louth Ardee Ireland
- everkem, piazza carbonari, 12 20125 milano Italy
- ICL Europe Coöperatief U.A. (OR1), Koningin Wilhelminaplein 30 Prinsenhof 1062 KR Amsterdam Netherlands

### Inactive

- LANXESS SOLUTIONS UK LTD (US03), Tenax Road M17 1WT Manchester United Kingdom

## Other names

### IUPAC names

- 
- 1,1'-oxybis(pentabromobenzene)
- 1,2,3,4,5-pentabromo-6-pentabromophenoxybenzene
- 2,3,4,5,6-Pentabromo-1-(2,3,4,5,6-pentabromophenoxy)benzene
- Bis(pentabromophenyl) ether
- Decabromodiphenylether
- DECABROMODIPHENYL ETHER
- DECABROMODIPHENYL OXIDE
- FR-1210

### Regulatory processes names

- Bis(pentabromophenyl) ether
- Bis(pentabromophenyl) ether (decabromodiphenyl ether) (DecaBDE)

### Trade names

- bromkal82-0de
- FR-1210
- Great Lakes DE-83R
- SAYTEX 10ZE Flame Retardant

### Other names

- DecaBDE

## Scientific properties

### Physical and chemical properties

This section provides physicochemical information compiled from all automatically processable data from REACH registration dossiers that is available to ECHA at the time of generation. The quality and correctness of the information remains the responsibility of the data submitter. The Agency thus cannot guarantee the correctness of the information displayed.

### Appearance/physical state / colour

Study results	1 study submitted 1 study processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
<b>C</b> Physical state at 20 °C and 1013 hPa Solid (100%) [1]		Studies with data Key study 1	<b>Data waiving</b> No data available no waivers	
<b>C</b> Form Powder (100%) [1]				
<b>C</b> Odour Odourless (100%) [1]				
<b>C</b> Substance type Organic (100%) [1]				

### Melting/freezing point

Study results	1 study submitted 1 study processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
<b>R</b> Melting / freezing point 304 °C [1]		Studies with data Key study 1	<b>Data waiving</b> No data available no waivers	

### Boiling point

Study results	1 study submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
No automatically processable data submitted		Studies with data Key study 1	<b>Data waiving</b> No data available Sci. unjustified 1	

### Density

Study results	1 study submitted 1 study processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
<b>R</b> Relative density 2.63 @ 20 °C [1]		Studies with data Key study 1	<b>Data waiving</b> No data available no waivers	

Vapour pressure				
<b>Study results</b>	1 study submitted 1 study processed	<b>Type of Study provided</b>	Summaries	0 summaries submitted 0 summaries processed
<b>R</b> Vapour pressure 0 Pa @ 21 °C [1]		<b>Studies with data</b> Key study 1	<b>Data waiving</b> no waivers	⚠ No data available

Partition coefficient				
<b>Study results</b>	1 study submitted 1 study processed	<b>Type of Study provided</b>	Summaries	0 summaries submitted 0 summaries processed
<b>R</b> Log Pow 6.625 @ 25 °C [1]		<b>Studies with data</b> Key study 1	<b>Data waiving</b> no waivers	⚠ No data available

Water solubility				
<b>Study results</b>	1 study submitted 1 study processed	<b>Type of Study provided</b>	Summaries	0 summaries submitted 0 summaries processed
<b>R</b> Water solubility (mass/vol.) 100 ng/L @ 25 °C [1]		<b>Studies with data</b> Key study 1	<b>Data waiving</b> no waivers	⚠ No data available

Solubility in organic solvents / fat solubility				
<b>Study results</b>	1 study submitted 0 studies processed	<b>Type of Study provided</b>	Summaries	0 summaries submitted 0 summaries processed
⚠ No automatically processable data submitted		<b>Studies with data</b>	<b>Data waiving</b> Sci. unjustified 1	⚠ No data available

Surface tension				
<b>Study results</b>	1 study submitted 0 studies processed	<b>Type of Study provided</b>	Summaries	0 summaries submitted 0 summaries processed
⚠ No automatically processable data submitted		<b>Studies with data</b>	<b>Data waiving</b> Sci. unjustified 1	⚠ No data available

Flash point				
<b>Study results</b>	1 study submitted 0 studies processed	<b>Type of Study provided</b>	Summaries	0 summaries submitted 0 summaries processed
⚠ No automatically processable data submitted		<b>Studies with data</b>	<b>Data waiving</b> Sci. unjustified 1	⚠ No data available

Auto flammability				
<b>Study results</b>	1 study submitted 0 studies processed	<b>Type of Study provided</b>	Summaries	0 summaries submitted 0 summaries processed
⚠ No automatically processable data submitted		<b>Studies with data</b>	<b>Data waiving</b> Sci. unjustified 1	⚠ No data available

Flammability				
<b>Study results</b>	1 study submitted 0 studies processed	<b>Type of Study provided</b>	Summaries	0 summaries submitted 0 summaries processed
⚠ No automatically processable data submitted		<b>Studies with data</b>	<b>Data waiving</b> Sci. unjustified 1	⚠ No data available

Explosiveness				
<b>Study results</b>	1 study submitted 0 studies processed	<b>Type of Study provided</b>	Summaries	0 summaries submitted 0 summaries processed
⚠ No automatically processable data submitted		<b>Studies with data</b>	<b>Data waiving</b> Sci. unjustified 1	⚠ No data available

Oxidising				
Study results	1 study submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
⚠ No automatically processable data submitted		Studies with data	Data waiving	⚠ No data available
			Sci. unjustified	1

Oxidation reduction potential ⚠ Data not provided by the registrant

pH				
Study results	1 study submitted 0 studies processed	Type of Study provided	⚠ No summary e data for this scientific endpoint	
⚠ No automatically processable data submitted		Studies with data	Data waiving	
			Sci. unjustified	1

Dissociation constant				
Study results	1 study submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
⚠ No automatically processable data submitted		Studies with data	Data waiving	⚠ No data available
			Sci. unjustified	1

Viscosity				
Study results	1 study submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
⚠ No automatically processable data submitted		Studies with data	Data waiving	⚠ No data available
			Sci. unjustified	1

### Environmental fate and pathways

This section provides environmental fate and pathways information compiled from all automatically processable data from REACH registration dossiers that is available to ECHA at the time of generation. The quality and correctness of the information remains the responsibility of the data submitter. The Agency thus cannot guarantee the correctness of the information displayed.

Phototransformation in air				
Study results	1 study submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
⚠ No automatically processable data submitted		Studies with data	Data waiving	⚠ No data available
			Sci. unjustified	1

Hydrolysis				
Study results	1 study submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
⚠ Study data not processed for brief profile		Studies with data	Data waiving	⚠ No data available
			Not feasible	1

Phototransformation in water				
Study results	1 study submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
⚠ No automatically processable data submitted		Studies with data	Data waiving	⚠ No data available
			Sci. unjustified	1

Phototransformation in soil				
Study results	1 study submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
⚠ No automatically processable data submitted		Studies with data	Data waiving	⚠ No data available
			no waivers	
		Key study		1

Biodegradation in water - screening tests				
Study results	1 study submitted 1 study processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
<b>C</b> Interpretation of results Under test conditions no biodegradation observed (100%) [1]		Studies with data Key study 1	Data waiving no waivers	No data available

Biodegradation in water & sediment - simulation tests ⚠ Data not provided by the registrant

Biodegradation in soil				
Study results	2 studies submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
⚠ Study data not processed for brief profile		Studies with data Key study 1 Supporting study 1	Data waiving no waivers	No data available

Bioaccumulation: aquatic / sediment				
Study results	7 studies submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
⚠ Study data not processed for brief profile		Studies with data Key study 6 Supporting study 1	Data waiving no waivers	No data available

Bioaccumulation: terrestrial				
Study results	2 studies submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
⚠ Study data not processed for brief profile		Studies with data Key study 2	Data waiving no waivers	No data available

Adsorption/desorption				
Study results	2 studies submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
⚠ No automatically processable data submitted		Studies with data Key study 2	Data waiving no waivers	No data available

Henry's law constant (H)				
Study results	1 study submitted 1 study processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
<b>R</b> H - (pressure) m <sup>3</sup> /mol 0.002 Pa m <sup>3</sup> /mol @ 25 °C and 101.325 kPa [1]		Studies with data Key study 1	Data waiving no waivers	No data available

Distribution modelling				
Study results	1 study submitted 1 study processed	Type of Study provided	⚠ No summary exists for this scientific endpoint	
<b>% Distribution in Media:</b>		Studies with data Key study 1	Data waiving no waivers	
<b>R</b> Air	0.05 % [1]			
<b>R</b> Water	0.6 % [1]			
<b>R</b> Soil	50 % [1]			
<b>R</b> Sediment	49.3 % [1]			
<b>R</b> Aerosol	0 % [1]			

#### Ecotoxicological information

This section provides ecotoxicological information compiled from all automatically processable data from REACH registration dossiers that is available to ECHA at the time of generation. The quality and correctness of the information remains the responsibility of the data submitter. The Agency thus cannot guarantee the correctness of the information displayed.

**Predicted No-Effect Concentration (PNEC)**

**R** Summaries

1 summary submitted  
1 summary processed

The Predicted No-Effect Concentration (PNEC) value is the concentration of a substance below which adverse effects in the environment are not expected to occur. Please note that when more than one summary is provided, PNEC values may refer to constituents of the substance and not to the substance as a whole. More detailed information is available in the dossiers.

**Hazard for Aquatic Organisms**

Freshwater	No data: aquatic toxicity unlikely (1)
Intermittent releases (freshwater)	No data: aquatic toxicity unlikely (1)
Marine water	No data: aquatic toxicity unlikely (1)
Intermittent releases (marine water)	No data: aquatic toxicity unlikely (1)
Sewage treatment plant (STP)	1.5 mg/L (1)
Sediment (freshwater)	384 mg/kg sediment dw (1)
Sediment (marine water)	10 mg/kg sediment dw (1)

**Hazard for Air**

Air	-
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**Hazard for Terrestrial Organism**

Soil	98 mg/kg soil dw (1)
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**Hazard for Predators**

Secondary poisoning	222 mg/kg food (1)
---------------------	--------------------

**Short-term toxicity to fish**

**Study results** 1 study submitted  
1 study processed

**Type of Study provided**

Summaries 0 summaries submitted  
0 summaries processed

**P/R** Results  
LC50 (11.2 months) 500 mg/L [1]

<b>Studies with data</b>	1
<b>Key study</b>	1

**Data waiving**  
no waivers

⚠ No data available

**Long-term toxicity to fish**

**Study results** 1 study submitted  
0 studies processed

**Type of Study provided**

Summaries 0 summaries submitted  
0 summaries processed

⚠ No automatically processable data submitted

<b>Studies with data</b>	1
<b>Key study</b>	1

**Data waiving**  
no waivers

⚠ No data available

**Short-term toxicity to aquatic invertebrates**

**Study results** 1 study submitted  
0 studies processed

**Type of Study provided**

Summaries 0 summaries submitted  
0 summaries processed

⚠ No automatically processable data submitted

<b>Studies with data</b>	1
<b>Key study</b>	1

**Data waiving**  
Sci. unjustified

⚠ No data available

**Long-term toxicity to aquatic invertebrates**

**Study results** 1 study submitted  
1 study processed

**Type of Study provided**

Summaries 0 summaries submitted  
0 summaries processed

**P/R** Results  
NOEC (21 days) 2 µg/L [1]

<b>Studies with data</b>	1
<b>Key study</b>	1

**Data waiving**  
no waivers

⚠ No data available

**Toxicity to aquatic algae and cyanobacteria**

**Study results** 1 study submitted  
1 study processed

**Type of Study provided**

Summaries 0 summaries submitted  
0 summaries processed

**P/R** Results  
EC50 (4 days) 1 mg/L [1]  
EC50 (72 h) 1 mg/L [1]

<b>Studies with data</b>	1
<b>Key study</b>	1

**Data waiving**  
no waivers

⚠ No data available

Toxicity to aquatic plants other than algae

⚠ Data not provided by the registrant

**Toxicity to microorganisms**

**Study results** 1 study submitted  
1 study processed

**Type of Study provided**

Summaries 0 summaries submitted  
0 summaries processed

**P/R** Results  
EC50 (3 h) 15 mg/L [1]

<b>Studies with data</b>	1
<b>Key study</b>	1

**Data waiving**  
no waivers

⚠ No data available

**Sediment toxicity**

**Study results** 2 studies submitted  
2 studies processed

**Type of Study provided**

Summaries 0 summaries submitted  
0 summaries processed

**P/R** Results  
NOEC (28 days) 5 000 mg/kg sediment dw [2]

<b>Studies with data</b>	2
<b>Key study</b>	2

**Data waiving**  
no waivers

⚠ No data available

Toxicity to terrestrial macroorganisms except arthropods				
<b>Study results</b>	1 study submitted 1 study processed	<b>Type of Study provided</b>	Summaries	0 summaries submitted 0 summaries processed
<b>P/R</b> Results	NOEC (56 days) 4.91 g/kg soil dw [1] EC50 (56 days) 4.91 g/kg soil dw [1] EC50 (28 days) 4.91 g/kg soil dw [1]	<b>Studies with data</b> Key study 1	<b>Data waiving</b> no waivers	⚠ No data available

Toxicity to terrestrial arthropods ⚠ Data not provided by the registrant

Toxicity to terrestrial plants				
<b>Study results</b>	1 study submitted 1 study processed	<b>Type of Study provided</b>	Summaries	0 summaries submitted 0 summaries processed
<b>P/R</b> Results	NOEC (21 days) 6.25 g/kg soil dw [6]	<b>Studies with data</b> Key study 1	<b>Data waiving</b> no waivers	⚠ No data available

Toxicity to soil microorganisms				
<b>Study results</b>	1 study submitted 0 studies processed	<b>Type of Study provided</b>	Summaries	0 summaries submitted 0 summaries processed
⚠ No automatically processable data submitted		<b>Studies with data</b>	<b>Data waiving</b> Sci. unjustified 1	⚠ No data available

Toxicity to birds				
<b>Study results</b>	1 study submitted 0 studies processed	<b>Type of Study provided</b>	Summaries	0 summaries submitted 0 summaries processed
⚠ No automatically processable data submitted		<b>Studies with data</b>	<b>Data waiving</b> Sci. unjustified 1	⚠ No data available

Toxicity to mammals ⚠ Data not provided by the registrant

### Toxicological information

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Derived No- or Minimal Effect Level (DN(M)EL)						
<b>M/C</b> Summaries					1 summary submitted 1 summary processed	
The derived no- or minimum effect level (DN(M)EL) is the level of exposure above which a human should not be exposed to a substance. Please note that when more than one summary is provided, DN(M)EL values may refer to constituents of the substance and not to the substance as a whole. More detailed information is available in the dossiers.						
Data for WORKERS			Data for the GENERAL POPULATION			
<b>INHALATION Exposure</b>	<b>Threshold</b>	<b>Most sensitive study</b>	<b>INHALATION Exposure</b>	<b>Threshold</b>	<b>Most sensitive study</b>	
Long-term:	(DNEL) 6 mg/m <sup>3</sup>	repeated dose toxicity	Long-term:	(DNEL) 70 mg/m <sup>3</sup>	repeated dose toxicity	
Acute /short term:	-	-	Acute /short term:	-	-	
Long-term:	-	-	Long-term:	-	-	
Acute /short term:	-	-	Acute /short term:	-	-	
<b>DERMAL Exposure</b>	<b>Threshold</b>	<b>Most sensitive study</b>	<b>DERMAL Exposure</b>	<b>Threshold</b>	<b>Most sensitive study</b>	
Long-term:	-	-	Long-term:	-	-	
Acute /short term:	-	-	Acute /short term:	-	-	
Long-term:	-	-	Long-term:	-	-	
Acute /short term:	-	-	Acute /short term:	-	-	
<b>EYE Exposure</b>			<b>ORAL Exposure</b>	<b>Threshold</b>	<b>Most sensitive study</b>	
-			Long-term:	(DNEL) 20 mg/kg bw/day	repeated dose toxicity	
			Acute /short term:	(DNEL) 20 mg/kg bw/day	repeated dose toxicity	
			<b>EYE Exposure</b>			
			-			

**Toxicokinetics, metabolism, and distribution**

Study results	Type of Study provided	Summaries																								
<p>Study data not processed for brief profile</p>	<p><b>Study data: basic toxicokinetics</b></p> <table border="1"> <thead> <tr> <th>Studies with data</th> <th>Δ</th> <th>📄</th> <th>📊</th> <th>⚠️</th> <th>Data waiving</th> </tr> </thead> <tbody> <tr> <td>Key study</td> <td>9</td> <td></td> <td></td> <td></td> <td>no waivers</td> </tr> <tr> <td>Supporting study</td> <td>1</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Other</td> <td>4</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Studies with data	Δ	📄	📊	⚠️	Data waiving	Key study	9				no waivers	Supporting study	1					Other	4					<p>0 summaries submitted 0 summaries processed</p> <p>⚠️ No data available</p>
Studies with data	Δ	📄	📊	⚠️	Data waiving																					
Key study	9				no waivers																					
Supporting study	1																									
Other	4																									
<p>Study data not processed for brief profile</p>	<p><b>Study data: dermal absorption</b></p> <table border="1"> <thead> <tr> <th>Studies with data</th> <th>Δ</th> <th>📄</th> <th>📊</th> <th>⚠️</th> <th>Data waiving</th> </tr> </thead> <tbody> <tr> <td>Key study</td> <td>1</td> <td></td> <td></td> <td></td> <td>no waivers</td> </tr> </tbody> </table>	Studies with data	Δ	📄	📊	⚠️	Data waiving	Key study	1				no waivers													
Studies with data	Δ	📄	📊	⚠️	Data waiving																					
Key study	1				no waivers																					

Study results	Type of Study provided	Summaries												
<p><b>oral</b> 1 study submitted 1 study processed</p> <p><b>P/R</b> Results LD50 2 000 mg/kg bw (rat) [1]</p> <p><b>M/C</b> Interpretations of results Practically nontoxic [1]</p>	<p><b>oral</b></p> <table border="1"> <thead> <tr> <th>Studies with data</th> <th>Δ</th> <th>📄</th> <th>📊</th> <th>⚠️</th> <th>Data waiving</th> </tr> </thead> <tbody> <tr> <td>Key study</td> <td>1</td> <td></td> <td></td> <td></td> <td>no waivers</td> </tr> </tbody> </table>	Studies with data	Δ	📄	📊	⚠️	Data waiving	Key study	1				no waivers	<p>0 summaries submitted 0 summaries processed</p> <p>⚠️ No data available</p>
Studies with data	Δ	📄	📊	⚠️	Data waiving									
Key study	1				no waivers									
<p><b>inhalation</b> 1 study submitted 1 study processed</p> <p><b>P/R</b> Results LC50 (60 min) 48.2 mg/L air (rat) [1]</p> <p><b>M/C</b> Interpretations of results Practically nontoxic [1]</p>	<p><b>inhalation</b></p> <table border="1"> <thead> <tr> <th>Studies with data</th> <th>Δ</th> <th>📄</th> <th>📊</th> <th>⚠️</th> <th>Data waiving</th> </tr> </thead> <tbody> <tr> <td>Key study</td> <td>1</td> <td></td> <td></td> <td></td> <td>no waivers</td> </tr> </tbody> </table>	Studies with data	Δ	📄	📊	⚠️	Data waiving	Key study	1				no waivers	
Studies with data	Δ	📄	📊	⚠️	Data waiving									
Key study	1				no waivers									
<p><b>dermal</b> 1 study submitted 1 study processed</p> <p><b>P/R</b> Results LD50 8 000 mg/kg bw (rabbit) [1]</p> <p><b>M/C</b> Interpretations of results Practically nontoxic [1]</p>	<p><b>dermal</b></p> <table border="1"> <thead> <tr> <th>Studies with data</th> <th>Δ</th> <th>📄</th> <th>📊</th> <th>⚠️</th> <th>Data waiving</th> </tr> </thead> <tbody> <tr> <td>Key study</td> <td>1</td> <td></td> <td></td> <td></td> <td>no waivers</td> </tr> </tbody> </table>	Studies with data	Δ	📄	📊	⚠️	Data waiving	Key study	1				no waivers	
Studies with data	Δ	📄	📊	⚠️	Data waiving									
Key study	1				no waivers									
<p><b>other routes</b> 0 studies submitted 0 studies processed</p> <p>⚠️ No data available</p>	<p><b>other routes</b></p> <table border="1"> <thead> <tr> <th>Studies with data</th> <th>Δ</th> <th>📄</th> <th>📊</th> <th>⚠️</th> <th>Data waiving</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>no waivers</td> </tr> </tbody> </table>	Studies with data	Δ	📄	📊	⚠️	Data waiving						no waivers	
Studies with data	Δ	📄	📊	⚠️	Data waiving									
					no waivers									

Irritation / corrosion															
Study results	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed												
Study data: skin 1 study submitted 0 studies processed	<b>Study data: skin</b>		⚠ No data available												
⚠ Study data not processed for brief profile	<table border="1"> <tr> <td><b>Studies with data</b></td> <td>⚠</td> <td>📄</td> <td>📊</td> <td>⚠</td> <td><b>Data waiving</b></td> </tr> <tr> <td><b>Key study</b></td> <td>1</td> <td></td> <td></td> <td></td> <td>no waivers</td> </tr> </table>	<b>Studies with data</b>	⚠	📄	📊	⚠	<b>Data waiving</b>	<b>Key study</b>	1				no waivers		
<b>Studies with data</b>	⚠	📄	📊	⚠	<b>Data waiving</b>										
<b>Key study</b>	1				no waivers										
Study data: eye 1 study submitted 0 studies processed	<b>Study data: eye</b>														
⚠ Study data not processed for brief profile	<table border="1"> <tr> <td><b>Studies with data</b></td> <td>⚠</td> <td>📄</td> <td>📊</td> <td>⚠</td> <td><b>Data waiving</b></td> </tr> <tr> <td><b>Key study</b></td> <td>1</td> <td></td> <td></td> <td></td> <td>no waivers</td> </tr> </table>	<b>Studies with data</b>	⚠	📄	📊	⚠	<b>Data waiving</b>	<b>Key study</b>	1				no waivers		
<b>Studies with data</b>	⚠	📄	📊	⚠	<b>Data waiving</b>										
<b>Key study</b>	1				no waivers										

Sensitisation															
Study results	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed												
Study data: skin 1 study submitted 0 studies processed	<b>Study data: skin</b>		⚠ No data available												
⚠ Study data not processed for brief profile	<table border="1"> <tr> <td><b>Studies with data</b></td> <td>⚠</td> <td>📄</td> <td>📊</td> <td>⚠</td> <td><b>Data waiving</b></td> </tr> <tr> <td><b>Key study</b></td> <td>1</td> <td></td> <td></td> <td></td> <td>no waivers</td> </tr> </table>	<b>Studies with data</b>	⚠	📄	📊	⚠	<b>Data waiving</b>	<b>Key study</b>	1				no waivers		
<b>Studies with data</b>	⚠	📄	📊	⚠	<b>Data waiving</b>										
<b>Key study</b>	1				no waivers										
Study data: respiratory 1 study submitted 0 studies processed	<b>Study data: respiratory</b>														
⚠ Study data not processed for brief profile	<table border="1"> <tr> <td><b>Studies with data</b></td> <td>⚠</td> <td>📄</td> <td>📊</td> <td>⚠</td> <td><b>Data waiving</b></td> </tr> <tr> <td><b>Key study</b></td> <td>1</td> <td></td> <td></td> <td></td> <td>no waivers</td> </tr> </table>	<b>Studies with data</b>	⚠	📄	📊	⚠	<b>Data waiving</b>	<b>Key study</b>	1				no waivers		
<b>Studies with data</b>	⚠	📄	📊	⚠	<b>Data waiving</b>										
<b>Key study</b>	1				no waivers										

Repeated dose toxicity																											
Study results	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed																								
Study data: oral 4 studies submitted 0 studies processed	<b>Study data: oral</b>		⚠ No data available																								
⚠ No automatically processable data submitted	<table border="1"> <tr> <td><b>Studies with data</b></td> <td>⚠</td> <td>📄</td> <td>📊</td> <td>⚠</td> <td><b>Data waiving</b></td> </tr> <tr> <td><b>Key study</b></td> <td>2</td> <td></td> <td></td> <td></td> <td>no waivers</td> </tr> <tr> <td><b>Supporting study</b></td> <td>1</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td><b>Other</b></td> <td>1</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	<b>Studies with data</b>	⚠	📄	📊	⚠	<b>Data waiving</b>	<b>Key study</b>	2				no waivers	<b>Supporting study</b>	1					<b>Other</b>	1						
<b>Studies with data</b>	⚠	📄	📊	⚠	<b>Data waiving</b>																						
<b>Key study</b>	2				no waivers																						
<b>Supporting study</b>	1																										
<b>Other</b>	1																										
Study data: inhalation 0 studies submitted 0 studies processed	<b>Study data: inhalation</b>																										
⚠ No data available	<table border="1"> <tr> <td><b>Studies with data</b></td> <td>⚠</td> <td>📄</td> <td>📊</td> <td>⚠</td> <td><b>Data waiving</b></td> </tr> <tr> <td><b>Key study</b></td> <td>0</td> <td></td> <td></td> <td></td> <td>no waivers</td> </tr> </table>	<b>Studies with data</b>	⚠	📄	📊	⚠	<b>Data waiving</b>	<b>Key study</b>	0				no waivers														
<b>Studies with data</b>	⚠	📄	📊	⚠	<b>Data waiving</b>																						
<b>Key study</b>	0				no waivers																						
Study data: dermal 0 studies submitted 0 studies processed	<b>Study data: dermal</b>																										
⚠ No data available	<table border="1"> <tr> <td><b>Studies with data</b></td> <td>⚠</td> <td>📄</td> <td>📊</td> <td>⚠</td> <td><b>Data waiving</b></td> </tr> <tr> <td><b>Key study</b></td> <td>0</td> <td></td> <td></td> <td></td> <td>no waivers</td> </tr> </table>	<b>Studies with data</b>	⚠	📄	📊	⚠	<b>Data waiving</b>	<b>Key study</b>	0				no waivers														
<b>Studies with data</b>	⚠	📄	📊	⚠	<b>Data waiving</b>																						
<b>Key study</b>	0				no waivers																						

Genetic toxicity		Type of Study provided	Summaries
Study results			0 summaries submitted 0 summaries processed
Study data: <b>in vitro</b>	5 studies submitted 0 studies processed		⚠ No data available
⚠ Study data not processed for brief profile		<b>Studies with data</b> ⚠     <b>Key study</b> 2	<b>Data waiving</b> no waivers
Study data: <b>in vivo</b>	1 study submitted 0 studies processed		
⚠ Study data not processed for brief profile		<b>Studies with data</b> ⚠     <b>Key study</b> 1	<b>Data waiving</b> no waivers

Carcinogenicity		Type of Study provided	Summaries
Study results	2 studies submitted 0 studies processed		0 summaries submitted 0 summaries processed
⚠ Study data not processed for brief profile		<b>Studies with data</b> ⚠     <b>Key study</b> 2	<b>Data waiving</b> no waivers

Toxicity to reproduction		Type of Study provided	Summaries
Study results			0 summaries submitted 0 summaries processed
Study data: <b>reproduction</b>	1 studies submitted 0 studies processed		⚠ No data available
⚠ Study data not processed for brief profile		<b>Studies with data</b> ⚠     <b>Key study</b> 1	<b>Data waiving</b> Sci. unjustified 1
Study data: <b>developmental</b>	1 studies submitted 0 studies processed		
⚠ Study data not processed for brief profile		<b>Studies with data</b> ⚠     <b>Key study</b> 3 <b>Other</b> 1	<b>Data waiving</b> no waivers
Study data: <b>other studies</b>	0 studies submitted 0 studies processed		
⚠ Study data not processed for brief profile		<b>Studies with data</b> ⚠     <b>Key study</b> 0	<b>Data waiving</b> no waivers

Neurotoxicity	⚠ Data not provided by the registrant
Immunotoxicity	⚠ Data not provided by the registrant

Legend	Type of study	Type of aggregation
⚠	Experimental results	 Concatenated distinct values
	Read across based on grouping of substance (category approach) or Read-across from supporting substance (structural analogue or surrogate)	 Range of values
	Estimated by calculation or (Q)SAR	 Prioritisation (Eco)Toxicology AND Range of values
	Experimental study planned, other or unspecified	 Most Conservative of values

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