

Sebbene gran parte del materiale online fornito dall'ECHA sia accessibile nella tua lingua, alcuni contenuti di questa pagina sono disponibili solo in inglese. Maggiori informazioni sulla prassi dell'ECHA in [materia di multilinguismo](#).

Chiuso

☒ Non mostrare più questo messaggio.



Un'agenzia dell'Unione europea

italiano (it)



L'Agenzia

Contatti

REGOLAMENTI

REGOLAMENTI

CONSULTAZIONI PUBBLICHE

INFORMAZIONI SULLE
SOSTANZE CHIMICHE

ASSISTENZA

REACH

CLP

BPR

PIC

ECHA > Substance Information

Visualizzazione Contenuto Web

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

RSS

2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol

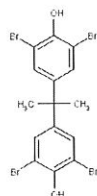
[Other names: Regulatory process names [4] Trade names [7] IUPAC names [12]

Substance identity

EC / List no.: 201-236-9

CAS no.: 79-94-7

Mol. formula:
C₁₅H₁₂Br₄O₂



Hazard classification & labelling



Warning! According to the **harmonised classification and labelling** (ATP01) approved by the European Union, this substance is very toxic to aquatic life and is very toxic to aquatic life with long lasting effects.



Additionally, the classification provided by companies to ECHA in **REACH registrations** identifies that this substance is suspected of causing cancer.

Important to know

Substance included in the Community Rolling Action Plan (CoRAP).

How to use it safely

Precautionary measures suggested by manufacturers and importers of this substance.

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

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: **polymers**.
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) and outdoor use in close systems with minimal release (e.g. hydraulic liquids in automotive suspension, lubricants in motor oil and break fluids).

Article service life

Release to the environment of this substance can occur from industrial use: in the production of articles, industrial abrasion processing

about INFOCARD - Last updated: 16/11/2017

Regulations and regulatory activities

This substance has been found in the following regulatory activities:

CLP

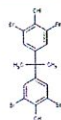
ESR

2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol

Brief Profile - Last updated: 12/12/2017

Substance Description

Substance Identity



EC / List name: 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol

IUPAC name: 2,6-dibromo-4-[2-(3,5-dibromo-4-hydroxyphenyl)propan-2-yl]phenol

Other names

SMILES:

CC(C)(C1=CC(Br)=C(O)C(Br)=C1)C1=CC(Br)=C(O)C(Br)=C1

InChI:

InChI=1S/C15H12Br4O2/c1-15(2,7-3-9(16)13(20)10(17)4-7)8-5-11(18)14(21)12(19)6-8/h3-6,20-21H,1-2H3
AuxInfo=1/0/N:16,17,5,6,12,13,7,14,4,3,11,10,1,8,15,2
1,19,20,18,2,9/E:(1,2)(3,4,5,6)(7,8)(9,10,11,12)(13,14)(16,17,18,19)
(20,21)/rA:21C0CCCCCCCCCCCCCBrBrBrBr/rB:s1;d+1;s1;d-4;s3;s5d-6;;s8;d+8;s8;d-11;s10;s12d-13;s7s14;s15;s15;s10;s3;s11;s4;/rC:5.9691,-1.5223,0;5.9691,0,0;7.3197,-2.3278,0;4.6891,-2.3278,0;4.6891,-3.8503,0;7.3197,-3.8503,0;5.9865,-4.6199,0;1.4877,-4.9746,0,0;-4.5506,0;2.5787,-3.8587,0;1.8941,-6.419,0,3.383,-6.8429,0;4.0664,-4.2826,0;4.4642,-5.7703,0;5.9605,-6.1422,0;5.5887,-7.6483,0;7.4495,-5.727,0;2.2142,-2.3711,0;8.6518,-1.5223,0;8303,-7.5445,0;3.3226,-1.5568,0;

EC / List no.: 201-236-9

CAS no.: 79-94-7

Index number: 604-074-00-0

Molecular formula: C15H12Br4O2

Type of substance:

Mono constituent substance

Origin:

Organic

Registered compositions: 4

Of which contain:

0 impurities relevant for classification

0 additives relevant for classification

Substance Listed:

EINECS (European Inventory of Existing Commercial chemical Substances) List

Hazard classification & labelling



Warning! According to the harmonised classification and labelling (ATP01) approved by the European Union, this substance is very toxic to aquatic life and is very toxic to aquatic life with long lasting effects.



Additionally, the classification provided by companies to ECHA in REACH registrations identifies that this substance is suspected of causing cancer.

Breakdown of all 528 C&L notifications submitted to ECHA

Aquatic Acute 1

H400



Aquatic Chronic 1

H410



Carc. 2

H351

Aquatic Chronic 2

H410

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 12 active registrations under REACH, 1 Joint Submission(s) and 0 Individual Submission(s).

Evaluation

Dossier Evaluation: Registration dossiers submitted to ECHA for this substance have been evaluated under REACH.

Substance Evaluation: Substance included in the Community Rolling Action Plan (CoRAP).

Authorisation

Candidate List:

Annex XIV (Authorisation)
List:

Restriction

Annex XVII (Restrictions)
List:

Classification Labelling & Packaging (CLP)

Harmonised C&L:

A European Union Harmonised Classification & Labelling has been assigned to this substance.

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: polymers.

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) and outdoor use in close systems with minimal release (e.g. hydraulic liquids in automotive suspension, lubricants in motor oil and break fluids).

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 and high energy work-up of substances bound in materials or articles (e.g. hot rolling/forming, grinding, mechanical cutting, drilling or sanding).

Release to the environment of this substance can occur from industrial use: in the production of articles, industrial abrasion processing with low release rate (e.g. cutting of textile, cutting, machining or grinding of metal) and as processing aid. 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) 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).

This substance can be found in complex articles, with no release intended: 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).

Widespread uses by professional workers

ECHA has no public registered data indicating whether or in which chemical products the substance might be used.

This substance is used in the following areas: building & construction work.

This substance is used in the following activities or processes at workplace: the low energy manipulation of substances bound in materials or articles.

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) 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. This substance has an industrial use resulting in manufacture of another substance (use of intermediates).

This substance is used in the following activities or processes at workplace: transfer of chemicals, batch processing in synthesis or formulation with opportunity for exposure, mixing in open batch processes, transfer of substance into small containers, production of mixtures or articles by tableting, compression, extrusion or pelletisation, blowing agents in manufacture of foam, closed processes with no likelihood of exposure, closed, continuous processes with occasional controlled exposure, closed batch processing in synthesis or formulation and laboratory work.

Release to the environment of this substance can occur from industrial use: formulation in materials, in the production of articles, in processing aids at industrial sites and for thermoplastic manufacture.

Uses at industrial sites

This substance is used in the following products: polymers. This substance has an industrial use resulting in manufacture of another substance (use of intermediates).

This substance is used in the following areas: formulation of mixtures and/or re-packaging. This substance is used for the manufacture of: plastic products, chemicals, electrical, electronic and optical equipment and machinery and vehicles.

This substance is used in the following activities or processes at workplace: transfer of chemicals, batch processing in synthesis or formulation with opportunity for exposure, mixing in open batch processes, transfer of substance into small containers, laboratory work, production of mixtures or articles by tableting, compression, extrusion or pelletisation, closed processes with no likelihood of exposure, closed, continuous processes with occasional controlled exposure, closed batch processing in synthesis or formulation, calendaring operations, the low energy manipulation of substances bound in materials or articles, high energy work-up of substances bound in materials or articles (e.g. hot rolling/forming, grinding, mechanical cutting, drilling or sanding), blowing agents in manufacture of foam, industrial spraying, roller or brushing applications and treatment of articles by dipping and pouring.

Release to the environment of this substance can occur from industrial use: in the production of articles, for thermoplastic manufacture, as processing aid, in processing aids at industrial sites and formulation in materials.

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

Precautions for using this substance have been recommended by its registrants under REACH, as follows:

Prevention statements

When handling this substance: obtain special instructions before use; avoid release to the environment; wear protective gloves and/or clothing, and eye and/or face protection as specified by manufacturer/supplier.

Response statements

In case of incident: If exposed or concerned: get medical advice/attention. Collect spillage.

Disposal statements

The substance must be disposed in accordance with local/regional/national/international regulation.

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

Registrants/suppliers

Active

- 3M Belgium BVBA/SPRL, Hermeslaan 7 1831 Diegem Belgium
- ALBEMARLE EUROPE SPRL, Parc Scientifique (Einstein) Rue du Bosquet 9 1348 LOUVAIN-LA-NEUVE Belgium
- Blue Cube Netherlands B.V., Axelsedam 3a 4531HH Terneuzen Netherlands
- Envigo Consulting Limited, Woolley Road Alconbury PE28 4HS Huntingdon Cambridgeshire United Kingdom
- Henkel Global Supply Chain B.V., Gustav Mahlerlaan 2970 1081 LA Amsterdam Netherlands
- ICL Europe Coöperatief U.A. (OR1), Koningin Wilhelminaplein 30 Prinsenhof 1062 KR Amsterdam Netherlands
- LANXESS Sales Netherlands B.V., Ankervweg 18 1041AT Amsterdam Netherlands
- LANXESS SOLUTIONS UK LTD (US03), Tenax Road M17 1WT Manchester United Kingdom
- SABIC Innovative Plastics BV, Plasticlaan 1 4612 PX Bergen op Zoom Netherlands Netherlands
- SABIC Innovative Plastics Espana ScpA, Ctra. Cartagena-Alhama de Murcia km. 13. La Aljorra 30390 Cartagena Spain Spain
- TOSOH EUROPE B.V., Amstelplein 1 1096 HA Amsterdam Netherlands
- [Confidential], [Confidential]

Inactive

Other names

IUPAC names

-
- 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol
- 2,2',6,6'-Tetrabromo-4,4'-isopropylidenediphenol
- 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol
- 2,6-dibromo-4-[2-(3,5-dibromo-4-hydroxyphenyl)propan-2-yl]phenol
- 4,4'-isopropylidenebis(2,6-dibromophenol)
- 4,4'-propane-2,2-diylbis(2,6-dibromophenol)
- FR-1524
- TETRABROMO BISPHENOL (RM LEAD)
- Tetrabromobisphenol A
- Tetrabromobisphenol A, TBBA
- Tetrabromobisphenol-A

Regulatory processes names

- 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol
- 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol
- tetrabromobisphenol-A

Trade names

- FR-1524
- Great Lakes BA-59P
- Great Lakes BA-59PC
- none, import in Epoxy Resin formulations
- Saytex CP-2000 Flame Retardant
- TBBPA
- Tetrabromobisphenol-A

Other names

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
C Physical state at 20 °C and 1013 hPa Solid (100%) [1]		Studies with data Key study 1	Data waiving no waivers	No data available
C Form Powder (100%) [1]				
C Odour Odourless (100%) [1]				
C Substance type Organic (100%) [1]				

Melting/freezing point

Study results	2 studies submitted 2 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
R Melting / freezing point 179 - 181 °C [2]		Studies with data Weight of evidence 2	Data waiving no waivers	No data available

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 Not feasible 1	Data waiving Not feasible 1	No data available

Density

Study results	3 studies submitted 2 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
R Relative density 2.17 [1]		Studies with data Weight of evidence 3	Data waiving no waivers	No data available
R Tap density 1.75 g/cm³ [1]				

Vapour pressure

Study results	1 study submitted 1 study processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
R Vapour pressure 0 Pa @ 20 °C [1]		Studies with data Key study 1	Data waiving no waivers	No data available

Partition coefficient		Type of Study provided		Summaries	
Study results	2 studies submitted 1 study processed			0 summaries submitted 0 summaries processed	
R Log Pow 5.903 @ 25 °C [1]		Studies with data Key study 1 Supporting study 1	Data waiving no waivers	No data available	

Water solubility		Type of Study provided		Summaries	
Study results	4 studies submitted 1 study processed			0 summaries submitted 0 summaries processed	
R Water solubility (mass/vol.) 148 - 2 340 µg/L @ 25 °C and pH 5 - 9 [3]		Studies with data Key study 1 Supporting study 3	Data waiving no waivers	No data available	

Solubility in organic solvents / fat solubility		Summaries	
		Data not provided by the registrant	

Surface tension		Type of Study provided		Summaries	
Study results	1 study submitted 0 studies processed			0 summaries submitted 0 summaries processed	
No automatically processable data submitted		Studies with data	Data waiving Other 1	No data available	

Flash point		Type of Study provided		Summaries	
Study results	1 study submitted 0 studies processed			0 summaries submitted 0 summaries processed	
No automatically processable data submitted		Studies with data	Data waiving Not feasible 1	No data available	

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

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

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

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

Oxidation reduction potential		Summaries	
		Data not provided by the registrant	

pH		Summaries	
		Data not provided by the registrant	

Dissociation constant				
Study results	3 studies submitted 1 study processed	Type of Study provided		Summaries 0 summaries submitted 0 summaries processed
C Dissociating properties Yes (100%) [1]		Studies with data	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Data waiving no waivers ⚠ No data available
		Key study	1	
R Dissociation constant 9.37 - 9.43 @ 20 °C [2]		Supporting study	1	
		Other	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	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Data waiving Not feasible 1 ⚠ No data available
		Key study	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 1 study processed	Type of Study provided		Summaries 0 summaries submitted 0 summaries processed
R Dissipation half life (DT50) 2.88 h [1]		Studies with data	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Data waiving no waivers ⚠ No data available
		Key study	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	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Data waiving Sci. unjustified 1 ⚠ No data available
		Key study	1	

Phototransformation in water				
Study results	1 study submitted 1 study processed	Type of Study provided		Summaries 0 summaries submitted 0 summaries processed
R Dissipation Half-life (DT50) 16 - 350 min [9]		Studies with data	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Data waiving no waivers ⚠ No data available
		Key study	1	

Phototransformation in soil	⚠ Data not provided by the registrant
-----------------------------	---------------------------------------

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

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

Biodegradation in soil				
Study results	4 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	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Data waiving no waivers ⚠ No data available
		Key study	2	
		Supporting study	1	
		Other	1	

Bioaccumulation: aquatic / sediment				
Study results	5 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	<div> <div>⚠</div> <div>📄</div> <div>📊</div> <div>⚠</div> </div>	Data waiving no waivers ⚠ No data available
		Key study	3	
		Supporting study	2	

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	<div> <div>⚠</div> <div>📄</div> <div>📊</div> <div>⚠</div> </div>	Data waiving no waivers ⚠ No data available
		Key study	2	

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	<div> <div>⚠</div> <div>📄</div> <div>📊</div> <div>⚠</div> </div>	Data waiving no waivers ⚠ No data available
		Key study	1	
		Supporting study	1	

Henry's law constant (H)				
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	<div> <div>⚠</div> <div>📄</div> <div>📊</div> <div>⚠</div> </div>	Data waiving no waivers ⚠ No data available
		Key study	1	

Distribution modelling

Study results

1 study submitted
1 study processed

% Distribution in Media:

R

Air

0 % [1]

R

Water

0.632 % [1]

R

Soil

53.2 % [1]

R

Sediment

46.2 % [1]

R

Aerosol

0 % [1]

Type of Study provided

Studies with data

Key study

1

Data waiving

no waivers

⚠ No summary exists for this scientific endpoint

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	16 µg/L (1)
Intermittent releases (freshwater)	-
Marine water	340 ng/L (1)
Intermittent releases (marine water)	-
Sewage treatment plant (STP)	1.5 mg/L (1)
Sediment (freshwater)	9 mg/kg sediment dw (1)
Sediment (marine water)	1.8 mg/kg sediment dw (1)

Hazard for Air

Air	No hazard identified (1)
Hazard for Terrestrial Organism	
Soil	31 µg/kg soil dw (1)
Hazard for Predators	
Secondary poisoning	222.22 mg/kg food (1)

Short-term toxicity to fish

Study results

5 studies submitted
3 studies processed

Type of Study provided

Summaries

0 summaries submitted
0 summaries processed

P/R Results

LC50 (6 days) 490 µg/L [1]
LC50 (4 days) 540 - 1 100 µg/L [3]
LC50 (48 h) 800 µg/L [1]
NOEC (6 days) 260 µg/L [1]
NOEC (4 days) 1.1 mg/L [1]

Studies with data

Key study 3
Supporting study 2

Data waiving

no waivers

⚠ No data available

Long-term toxicity to fish

Study results

2 studies submitted
1 study processed

Type of Study provided

Summaries

0 summaries submitted
0 summaries processed

P/R Results

NOEC (35 days) 160 µg/L [1]
LOEC (35 days) 310 µg/L [1]

Studies with data

Key study 1
Supporting study 1

Data waiving

no waivers

⚠ No data available

Short-term toxicity to aquatic invertebrates

Study results

4 studies submitted
1 study processed

Type of Study provided

Summaries

0 summaries submitted
0 summaries processed

P/R Results

LC50 (48 h) 1.8 mg/L [1]
LC50 (24 h) 1.8 mg/L [1]
NOEC (48 h) 1.8 mg/L [1]

Studies with data

Key study 1
Supporting study 3

Data waiving

no waivers

⚠ No data available

Long-term toxicity to aquatic invertebrates

Study results

3 studies submitted
2 studies processed

Type of Study provided

Summaries

0 summaries submitted
0 summaries processed

P/R Results

NOEC (70 days) 17 µg/L [1]
NOEC (42 days) 32 µg/L [1]
NOEC (21 days) 380 µg/L [1]
NOEC (14 days) 62 µg/L [1]
LOEC (70 days) 32 µg/L [1]

Studies with data

Key study 2
Supporting study 1

Data waiving

no waivers

⚠ No data available

Toxicity to aquatic algae and cyanobacteria

Study results

4 studies submitted
1 study processed

Type of Study provided

Summaries

0 summaries submitted
0 summaries processed

P/R Results

NOEC (4 days) 5.6 mg/L [1]

Studies with data

Key study 1
Supporting study 3

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]

Studies with data

Key study 1

Data waiving

no waivers

⚠ No data available

Sediment toxicity

Study results

5 studies submitted
5 studies processed

Type of Study provided

Summaries

0 summaries submitted
0 summaries processed

P/R Results

NOEC (28 days) 90 - 254 mg/kg sediment dw [4]
NOEC (14 days) 39 - 46 µg/L [3]
LOEC (28 days) 151 - 500 mg/kg sediment dw [4]
EC50 (28 days) 235 - 1 000 mg/kg sediment dw [4]

Studies with data

Key study 5

Data waiving

no waivers

⚠ No data available

Endocrine disruptor testing in aquatic vertebrates - in vivo

⚠ Data not provided by the registrant

Toxicity to terrestrial macroorganisms except arthropods

Study results	3 studies submitted 1 study processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
<div> <div>P/R</div> <div>Results</div> </div> NOEC (56 days) 310 µg/kg soil dw [1] NOEC (28 days) 20 mg/kg soil dw [1]				
Studies with data	1	1	Data waiving	1
Key study	1		no waivers	
Supporting study	2			

Toxicity to terrestrial arthropods

⚠ Data not provided by the registrant

Toxicity to terrestrial plants

Study results	2 studies submitted 1 study processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
<div> <div>P/R</div> <div>Results</div> </div> NOEC (21 days) 20 - 5 000 mg/kg soil dw [6] LOEC (21 days) 78 - 1 250 mg/kg soil dw [5] EC50 (21 days) 459 - 5 000 mg/kg soil dw [5]				
Studies with data	1	1	Data waiving	1
Key study	1		no waivers	
Supporting study	1			

Toxicity to soil microorganisms

Study results	2 studies submitted 1 study processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
<div> <div>P/R</div> <div>Results</div> </div> EC10 (28 days) 1 g/kg soil dw [1]				
Studies with data	1	1	Data waiving	1
Key study	1		no waivers	
Supporting study	1			

Toxicity to birds

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

Toxicity to mammals

⚠ Data not provided by the registrant

Toxicological information

This section provides toxicological 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.

Derived No- or Minimal Effect Level (DN(M)EL)

M/C 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

INHALATION Exposure	Threshold	Most sensitive study
Long-term:	(DNEL) 17.6 mg/m³	repeated dose toxicity
Acute /short term:	No hazard identified	
Long-term:	No hazard identified	
Acute /short term:	No hazard identified	
DERMAL Exposure	Threshold	Most sensitive study
Long-term:	(DNEL) 250 mg/kg bw/day	repeated dose toxicity
Acute /short term:	No DNEL required: short term exposure controlled by conditions for long-term	
Long-term:	No hazard identified	
Acute /short term:	No hazard identified	

EYE Exposure

No hazard identified

Data for the GENERAL POPULATION

INHALATION Exposure	Threshold	Most sensitive study
Long-term:	(DNEL) 4.3 mg/m³	developmental toxicity / teratogenicity
Acute /short term:	No hazard identified	
Long-term:	No hazard identified	
Acute /short term:	No hazard identified	
DERMAL Exposure	Threshold	Most sensitive study
Long-term:	(DNEL) 125 mg/kg bw/day	repeated dose toxicity
Acute /short term:	No DNEL required: short term exposure controlled by conditions for long-term	
Long-term:	No hazard identified	
Acute /short term:	No hazard identified	
ORAL Exposure	Threshold	Most sensitive study
Long-term:	(DNEL) 2.5 mg/kg bw/day	repeated dose toxicity
Acute /short term:	No hazard identified	
EYE Exposure		
No hazard identified		

Toxicokinetics, metabolism, and distribution

Study results	Type of Study provided	Summaries
Study not available: no data available	Study data: basic toxicokinetics	0 summaries submitted 0 summaries processed
Study data not processed for brief profile	<div> <div> Studies with data </div> <div> Key study 2 </div> <div> Supporting study 1 </div> </div> <div> Data waiving no waivers </div>	<div> No data available </div>
Study data not processed for brief profile	<div> <div> Studies with data </div> <div> Key study 1 </div> </div> <div> Data waiving no waivers </div>	<div> Study submitted multiple processed </div>

Sensitisation		Type of Study provided		Summaries	0 summaries submitted 0 summaries processed																		
Study results																							
Study data: skin	0 studies submitted 0 studies processed	Study data: skin		⚠ No data available																			
⚠ Study data not processed for brief profile		<table border="1"> <thead> <tr> <th>Studies with data</th> <th>⚠</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> <tr> <td>Supporting study</td> <td>2</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Studies with data	⚠	📄	📊	⚠	Data waiving	Key study	1				no waivers	Supporting study	2						
Studies with data	⚠	📄	📊	⚠	Data waiving																		
Key study	1				no waivers																		
Supporting study	2																						
Study data: respiratory	0 studies submitted 0 studies processed	Study data: respiratory																					
⚠ Study data not processed for brief profile		<table border="1"> <thead> <tr> <th>Studies with data</th> <th>⚠</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	⚠	📄	📊	⚠	Data waiving						no waivers								
Studies with data	⚠	📄	📊	⚠	Data waiving																		
					no waivers																		

Repeated dose toxicity		Type of Study provided		Summaries	0 summaries submitted 0 summaries processed																		
Study results																							
Study data: oral	5 studies submitted 1 study processed	Study data: oral		⚠ No data available																			
P/R Results NOAEL (rat): 1 000 mg/kg bw/day [1]		<table border="1"> <thead> <tr> <th>Studies with data</th> <th>⚠</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> <tr> <td>Supporting study</td> <td>4</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Studies with data	⚠	📄	📊	⚠	Data waiving	Key study	1				no waivers	Supporting study	4						
Studies with data	⚠	📄	📊	⚠	Data waiving																		
Key study	1				no waivers																		
Supporting study	4																						
Study data: inhalation	1 study submitted 1 study processed	Study data: inhalation																					
P/R Results NOAEC (rat): 18 mg/L air [2]		<table border="1"> <thead> <tr> <th>Studies with data</th> <th>⚠</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	⚠	📄	📊	⚠	Data waiving	Key study	1				no waivers								
Studies with data	⚠	📄	📊	⚠	Data waiving																		
Key study	1				no waivers																		
Study data: dermal	1 study submitted 1 study processed	Study data: dermal																					
P/R Results NOAEL (rabbit): 2 500 mg/kg bw/day [1]		<table border="1"> <thead> <tr> <th>Studies with data</th> <th>⚠</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	⚠	📄	📊	⚠	Data waiving	Key study	1				no waivers								
Studies with data	⚠	📄	📊	⚠	Data waiving																		
Key study	1				no waivers																		

Genetic toxicity		Type of Study provided		Summaries	0 summaries submitted 0 summaries processed																		
Study results																							
Study data: in vitro	0 studies submitted 0 studies processed	Study data: in vitro		⚠ No data available																			
⚠ Study data not processed for brief profile		<table border="1"> <thead> <tr> <th>Studies with data</th> <th>⚠</th> <th>📄</th> <th>📊</th> <th>⚠</th> <th>Data waiving</th> </tr> </thead> <tbody> <tr> <td>Key study</td> <td>3</td> <td></td> <td></td> <td></td> <td>Sci. unjustified 1</td> </tr> <tr> <td>Supporting study</td> <td>2</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Studies with data	⚠	📄	📊	⚠	Data waiving	Key study	3				Sci. unjustified 1	Supporting study	2						
Studies with data	⚠	📄	📊	⚠	Data waiving																		
Key study	3				Sci. unjustified 1																		
Supporting study	2																						
Study data: in vivo	0 studies submitted 0 studies processed	Study data: in vivo																					
⚠ Study data not processed for brief profile		<table border="1"> <thead> <tr> <th>Studies with data</th> <th>⚠</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>Sci. unjustified 1</td> </tr> </tbody> </table>		Studies with data	⚠	📄	📊	⚠	Data waiving						Sci. unjustified 1								
Studies with data	⚠	📄	📊	⚠	Data waiving																		
					Sci. unjustified 1																		

Carcinogenicity		Type of Study provided		Summaries	0 summaries submitted 0 summaries processed																		
Study results	0 studies submitted 0 studies processed																						
⚠ Study data not processed for brief profile		<table border="1"> <thead> <tr> <th>Studies with data</th> <th>⚠</th> <th>📄</th> <th>📊</th> <th>⚠</th> <th>Data waiving</th> </tr> </thead> <tbody> <tr> <td>Key study</td> <td>2</td> <td></td> <td></td> <td></td> <td>no waivers</td> </tr> <tr> <td>Weight of evidence</td> <td>1</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Studies with data	⚠	📄	📊	⚠	Data waiving	Key study	2				no waivers	Weight of evidence	1					⚠ No data available	
Studies with data	⚠	📄	📊	⚠	Data waiving																		
Key study	2				no waivers																		
Weight of evidence	1																						

Toxicity to reproduction				
Study results		Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
0 studies submitted 0 studies processed		Study data: reproduction	No data available	
Study data not processed for brief profile		Studies with data	Data waiving	
			no waivers	
		Key study	1	
		Supporting study	1	
		Other	1	
		Study data: developmental		
Study data not processed for brief profile		Studies with data	Data waiving	
			no waivers	
		Key study	1	
		Supporting study	2	
		Study data: other studies		
Study data not processed for brief profile		Studies with data	Data waiving	
			no waivers	

Neurotoxicity				
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 waivers	
		Weight of evidence	1	

Immunotoxicity				
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 waivers	
		Weight of evidence	1	

Endocrine disrupter mammalian screening - in vivo	Data not provided by the registrant			
---	-------------------------------------	--	--	--

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

The brief profile is based on non-confidential data contained in ECHA's databases at the time of generation. Please be aware that as additional data is submitted to ECHA, the brief profile will also be updated to reflect the new situation. All data remain the property of its respective owners.

Note that the brief profile is an automatically generated summary and that not all available data may be displayed. The content is subject to change without prior notice. The information has not been reviewed or verified by ECHA or any other authority. The Agency thus cannot guarantee the correctness of the information displayed. The identification of applicable legislative frameworks is done automatically and without manual verification. Therefore this does not constitute official and legally binding information. To confirm if a substance is covered by a specific legislative framework the official publication should be consulted.

Reproduction or further distribution of this information may be subject to copyright protection. Use of the information without obtaining the permission from the owner(s) of the respective information might violate the rights of the owner. The Agency does not take any responsibility whatsoever for any copyright or other infringements that may be caused by using the information. This brief profile is covered by the ECHA Legal Notice.

