

Aluminium oxide

Substance identity

EC / List no.: 215-691-6

CAS no.: 1344-28-1

Mol. formula: Al₂O₃

No image available

Hazard classification & labelling



Warning! According to the classification provided by companies to ECHA in REACH registrations this substance is harmful if swallowed and is harmful if inhaled.

At least one company has indicated that the substance classification is affected by impurities or additives.

About this substance

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

This substance is used in the following products: metal surface treatment products, adhesives and sealants, metal working fluids, metals, cosmetics and personal care products, polymers, welding & soldering products, paper chemicals and dyes, polishes and waxes, lubricants and greases, laboratory chemicals, coating products, textile treatment products and dyes, fillers, putties, plasters, modelling clay, inks and toners, pH regulators and water treatment products, washing & cleaning products, hydraulic fluids, fertilisers, heat transfer fluids, pharmaceuticals, non-metal-surface treatment products, adsorbents, air care products, finger paints, semiconductors, plant protection products, photo-chemicals, biocides (e.g. disinfectants, pest control products), water treatment chemicals, fuels, anti-freeze products, explosives, perfumes and fragrances, water softeners and leather treatment products. 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, building & construction work, health services, printing and recorded media reproduction, agriculture, forestry and fishing, municipal supply (e.g. electricity, steam, gas, water) and sewage treatment, mining and scientific research and development. This substance is used for the manufacture of: chemicals, mineral products (e.g. plasters, cement), machinery and vehicles, metals, electrical, electronic and optical equipment, fabricated metal products, furniture, plastic products, textile, leather or fur, pulp, paper and paper products, rubber products, wood and wood products and food products.

Release to the environment of this substance can occur from industrial use; formulation of mixtures, formulation in materials, manufacturing of the substance, in the production of articles, in processing aids at industrial sites, as processing aid, of substances in closed systems with minimal release, for thermoplastic manufacture, as an intermediate step in further manufacturing of another substance (use of intermediates), as processing aid, industrial abrasion processing with high release rate (e.g. sanding operations or paint stripping by shot-blasting), industrial abrasion processing with low release rate (e.g. cutting of textile, cutting, machining or grinding of metal) and of articles where the substances are not intended to be released and where the conditions of use do not promote 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 (e.g. machine wash liquids/detergents, automotive care products, paints and coating or adhesives, fragrances and air fresheners), outdoor use, 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 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)), indoor use in close systems with minimal release (e.g. cooling liquids in refrigerators, oil-based electric heaters), outdoor use in close systems with minimal release (e.g. hydraulic liquids in automotive suspension, lubricants in motor oil and break fluids) and indoor use in long-life materials with high release rate (e.g. release from fabrics, textiles during washing, removal of indoor paints).

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), vehicles, electrical batteries and accumulators and Machinery, mechanical appliances, electrical/electronic products covered by the Waste Electrical and Electronic Equipment (WEEE) directive (e.g. refrigerators, washing machines, vacuum cleaners, computers, telephones, drills, saws, smoke detectors, thermostats, radiators). This substance can be found in products with material based on: paper (e.g. tissues, feminine hygiene products, nappies, books, magazines, wallpaper), rubber (e.g. tyres, shoes, toys), stone, plaster, cement, glass or ceramic (e.g. dishes, pots/pans, food storage containers, construction and isolation material), metal (e.g. cutlery, pots, toys, jewellery), fabrics, textiles and apparel (e.g. clothing, mattress, curtains or carpets, textile toys), plastic (e.g. food packaging and storage, toys, mobile phones), wood (e.g. floors, furniture, toys), leather (e.g. gloves, shoes, purses, furniture), stone, plaster, cement, glass and ceramic used for articles with intense direct dermal contact during normal use (e.g. jewellery) and metal used for large surface area articles (e.g. construction and building materials used for roof sheets, pipes). This substance is intended to be released from scented: clothes, paper products, eraser, toys and CDs.

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: 02/06/2017

Aluminium oxide

Brief Profile - Last updated: 30/01/2018

Substance Description

Substance Identity		
No image available	EC / List name: Aluminium oxide	SMILES: O=[Al]O[Al]=O
	IUPAC name: oxo[(oxoalumanyloxy)alumane]	InChI: InChI=1S/2Al.3O AuxInfo=1/0/N:1,3,2,4,5/I:A:5AlOAlO0/r:B:s1;s2;d3;d1; /rC:3.9751,0,0,2.6537,-.7907,0,1.3321,0,0,0,-.7694,0,5. 3125,-.7694,0;
	Other names	
EC / List no.: 215-691-6	Type of substance: Mono constituent substance	
CAS no.: 1344-28-1	Origin: Inorganic	
Molecular formula: Al ₂ O ₃	Registered compositions: 52	
	Of which contain: 8 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 classification provided by companies to ECHA in REACH registrations this substance is harmful if swallowed and is harmful if inhaled.	Breakdown of all 1664 C&L notifications submitted to ECHA																													
		<table border="1"> <thead> <tr> <th colspan="2">Not Classified</th> </tr> </thead> <tbody> <tr><td>STOT SE 3</td><td>H335</td></tr> <tr><td>STOT RE 1</td><td>H372</td></tr> <tr><td>STOT SE 3</td><td>H370</td></tr> <tr><td>Eye Irrit. 2</td><td>H319</td></tr> <tr><td>Skin Irrit. 2</td><td>H315</td></tr> <tr><td>Carc. 1B</td><td>H350</td></tr> <tr><td>Muta. 2</td><td>H341</td></tr> <tr><td>Repr. 2</td><td>H361</td></tr> <tr><td>Aquatic Chronic 3</td><td>H412</td></tr> <tr><td>Skin Sens. 1</td><td>H317</td></tr> <tr><td>Acute Tox. 4</td><td>H302</td></tr> <tr><td>Acute Tox. 4</td><td>H332</td></tr> <tr><td>STOT RE 2</td><td>H373</td></tr> <tr><td>Flam. Liq. 2</td><td>H225</td></tr> </tbody> </table>	Not Classified		STOT SE 3	H335	STOT RE 1	H372	STOT SE 3	H370	Eye Irrit. 2	H319	Skin Irrit. 2	H315	Carc. 1B	H350	Muta. 2	H341	Repr. 2	H361	Aquatic Chronic 3	H412	Skin Sens. 1	H317	Acute Tox. 4	H302	Acute Tox. 4	H332	STOT RE 2	H373
Not Classified																														
STOT SE 3	H335																													
STOT RE 1	H372																													
STOT SE 3	H370																													
Eye Irrit. 2	H319																													
Skin Irrit. 2	H315																													
Carc. 1B	H350																													
Muta. 2	H341																													
Repr. 2	H361																													
Aquatic Chronic 3	H412																													
Skin Sens. 1	H317																													
Acute Tox. 4	H302																													
Acute Tox. 4	H332																													
STOT RE 2	H373																													
Flam. Liq. 2	H225																													
 Additionally, the classification provided by companies to ECHA in CLP notifications identifies that this substance may cause respiratory irritation.	<table border="1"> <tr> <td><input checked="" type="checkbox"/></td> <td>Harmonised Classification</td> </tr> <tr> <td><input type="checkbox"/></td> <td>REACH registration dossiers notifications</td> </tr> <tr> <td><input type="checkbox"/></td> <td>CLP notifications</td> </tr> </table> <p> <input checked="" type="checkbox"/> At least one notifier has indicated that an impurity or an additive present in the substance impacts the notified classification. </p>	<input checked="" type="checkbox"/>	Harmonised Classification	<input type="checkbox"/>	REACH registration dossiers notifications	<input type="checkbox"/>	CLP notifications																							
<input checked="" type="checkbox"/>	Harmonised Classification																													
<input type="checkbox"/>	REACH registration dossiers notifications																													
<input type="checkbox"/>	CLP notifications																													

Classification of the substance

Regulatory activities

Registration, Evaluation, Authorisation & Restriction of Chemicals (REACH)	Classification Labelling & Packaging (CLP)
Registration Pre-registration: Substance pre-registered under REACH. Registration: This substance has 264 active registrations under REACH, 1 Joint Submission(s) and 0 Individual Submission(s).	Harmonised C&L: Notification: Classification & Labelling has been notified by industry to ECHA for this substance.
Evaluation Dossier Evaluation: Registration dossiers submitted to ECHA for this substance have been evaluated under REACH.	Biocidal Products Regulation (BPR) Active Substance: Biocidal Products: Prior Informed Consent (PIC)
Substance Evaluation: Authorisation Annex XIV Restriction Annex XVII	Annex I: Annex V:

About this substance

General

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

Product Categories

This substance is used in the following products: metal surface treatment products, adhesives and sealants, metal working fluids, metals, cosmetics and personal care products, polymers, welding & soldering products, paper chemicals and dyes, polishes and waxes, lubricants and greases, laboratory chemicals, coating products, textile treatment products and dyes, fillers, putties, plasters, modelling clay, inks and toners, pH regulators and water treatment products, washing & cleaning products, hydraulic fluids, fertilisers, heat transfer fluids, pharmaceuticals, non-metal-surface treatment products, adsorbents, air care products, finger paints, semiconductors, plant protection products, photo-chemicals, biocides (e.g. disinfectants, pest control products), water treatment chemicals, fuels, anti-freeze products, explosives, perfumes and fragrances, water softeners and leather treatment products. This substance has an industrial use resulting in manufacture of another substance (use of intermediates).

Sectors of Use

This substance is used in the following areas: formulation of mixtures and/or re-packaging, building & construction work, health services, printing and recorded media reproduction, agriculture, forestry and fishing, municipal supply (e.g. electricity, steam, gas, water) and sewage treatment, mining and scientific research and development. This substance is used for the manufacture of: chemicals, mineral products (e.g. plasters, cement), machinery and vehicles, metals, electrical, electronic and optical equipment, fabricated metal products, furniture, plastic products, textile, leather or fur, pulp, paper and paper products, rubber products, wood and wood products and food products.

Processes Categories

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

Environmental Release

Release to the environment of this substance can occur from industrial use: formulation of mixtures, formulation in materials, manufacturing of the substance, in the production of articles, in processing aids at industrial sites, as processing aid, of substances in closed systems with minimal release, for thermoplastic manufacture, as an intermediate step in further manufacturing of another substance (use of intermediates), as processing aid, industrial abrasion processing with high release rate (e.g. sanding operations or paint stripping by shot-blasting), industrial abrasion processing with low release rate (e.g. cutting of textile, cutting, machining or grinding of metal) and of articles where the substances are not intended to be released and where the conditions of use do not promote 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 (e.g. machine wash liquids/detergents, automotive care products, paints and coating or adhesives, fragrances and air fresheners), outdoor use, 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 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)), indoor use in close systems with minimal release (e.g. cooling liquids in refrigerators, oil-based electric heaters), outdoor use in close systems with minimal release (e.g. hydraulic liquids in automotive suspension, lubricants in motor oil and brake fluids) and indoor use in long-life materials with high release rate (e.g. release from fabrics, textiles during washing, removal of indoor paints).

Article Categories

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), vehicles, electrical batteries and accumulators and Machinery, mechanical appliances, electrical/electronic products covered by the Waste Electrical and Electronic Equipment (WEEE) directive (e.g. refrigerators, washing machines, vacuum cleaners, computers, telephones, drills, saws, smoke detectors, thermostats, radiators). This substance can be found in products with material based on: paper (e.g. tissues, feminine hygiene products, nappies, books, magazines, wallpaper), rubber (e.g. tyres, shoes, toys), stone, plaster, cement, glass or ceramic (e.g. dishes, pots/pans, food storage containers, construction and isolation material), metal (e.g. cutlery, pots, toys, jewellery), fabrics, textiles and apparel (e.g. clothing, mattresses, curtains or carpets, textile toys), plastic (e.g. food packaging and storage, toys, mobile phones), wood (e.g. floors, furniture, toys), leather (e.g. gloves, shoes, purses, furniture), stone, plaster, cement, glass and ceramic used for articles with intense direct dermal contact during normal use (e.g. jewellery) and metal used for large surface area articles (e.g. construction and building materials used for roof sheets, pipes). This substance is intended to be released from scented: clothes, paper products, eraser, toys and CDs.

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

- 3M Belgium BVBA/SPRL, Hermeslaan 7 1831 Diegem Belgium
- A.G.P., 20 Avenue Reille 75014 Paris France
- A.M.P.E.R.E. ALLOYS, 12 Mail Joliot Curie 95310 SAINT-OUEN-LAUMONE VAL D'OISE France
- A.M.P.I.S.r.l., Strada Anulare Torre 4 20090 San Felice - Segrate Milan Italy
- ABRASINTER S.L., providencia 76-78 ento 4* 08024 barcelona Spain
- Advanced Refining Technologies GmbH, In der Hollerhecke 1 67547 Worms Germany
- Advanced Refining Technologies Srl, Via Trento 7 20017 Passirana di Rho (MI) Italy
- Akzo Nobel Pulp and Performance Chemicals AB, EKA Bohus SE-445 60 Bohus Sweden
- Akzo Nobel Pulp and Performance Chemicals Norway AS, Svaddeveien 119 NO-3660 Rjukan Norway
- Alaska Metals Ltd, 25 Berkeley Square W1J 6HN London United Kingdom
- ALBEMARLE CATALYSTS COMPANY B.V., Nieuwendammerkade 1-3 PO Box 37650 1030 BE Amsterdam Netherlands
- Alcan Iceland LTD, Straumsvik P.O. BOX 244 222 Hafnarfjörður Iceland
- Alcoa Fjarðabáí sf, Hraun 1 730 Reyðarfjörður Iceland
- ALCOA NORWAY AS, Hoffsvæien 65 B NO-0377 Oslo Norway
- ALCOA TRASFORMAZIONI Srl., Piazza Missori 2 20122 Milano Italy
- Almatris B.V., Theemsweg 30 NL-3197 Botlek Netherlands
- Almatris B.V. OR INC, Theemsweg 30 3197 KM Botlek Rotterdam Netherlands
- Almatris B.V. OR LTD, Theemsweg 30 3197 KM Botlek Rotterdam Netherlands
- Almatris BV OR Inc., Theemsweg 30 NL-3197 Botlek Netherlands
- Almatris GmbH, Lyoner Str. 9 60528 Frankfurt Germany
- ALRO, 116, Pilestii 230104 Slatina Olk Romania
- Alteo Gardanna, Route de Biver BP 20062 13541 GARDANNE cedex France
- ALUMINA ESPAÑOLA, S.A., Pedro Teixeira, 8 28020 Madrid Spain
- Aluminium Dunkerque, 17 Place des Reflets La defense 2 92400 Courbevoie France
- ALUMINIUM OF GREECE I.C.S.A., 8 Artemidos 151 25 Maroussi Athens Greece
- Aluminium Oxid Stade GmbH, Johann-Rathje-Köser-Strasse 21683 Stede-Bützfehth Germany
- AMG Superalloys UK Limited, Fullerton Road S60 1DL Rotherham South Yorkshire United Kingdom
- ANF Development OÜ, Tööstuse 48a Tallinn 10416 Tallinn Estonia
- Arc Fused Alumina, 38 rue des Fondateurs 73540 La Bâthie France
- ArcelorMittal Refractories Sp. z o.o., ul. Ujastek 1 30-969 Krakow malopolskie Poland
- Archroma Germany GmbH, Kasteler Str. 45 65203 Wiesbaden Germany
- Arcillas Refractorias, S. A., Barrio Castiello, s/n 33690 Lugo de Llanera Asturias Spain
- August Rüggeberg GmbH & Co. KG, Hauptstr. 13 51709 Marienheide Germany
- AWUKO ABRASIVES Wendmacher GmbH & Co. KG, Hedemündener Str.9 34346 Hann. Münden Germany
- Axens OR, 89, boulevard Franklin Roosevelt B.P. 50802 F-92508 Rueil-Malmaison Cedex France France
- AXENS SA, 89, boulevard Franklin Roosevelt B.P. 50802 F-92508 Rueil-Malmaison Cedex France France
- B-Lands Consulting (811192-0), World Trade Center, 5 Place Robert Schuman - BP 1510 38025 Grenoble France France
- B-Lands Consulting (811538-8), World Trade Center, 5 Place Robert Schuman, BP 1516 38025 Grenoble France France
- B-Lands Consulting (811543-4), World Trade Center, 5 Place Robert Schuman, BP 1516 38025 Grenoble France France
- Balkowski, BP 501 74339 La Baime de Sillingy cedex France
- BASF Catalysts Germany GmbH, Seligmannallee 1 30173 Hannover Germany
- BASF Italia S.p.A., Via Marconato 8 20811 Cesano Maderno Italy
- BASF Nederland B.V., Groningensingel 1 Postbus 1019 6801 MC Arnhem Netherlands
- BASF Polska Sp.z o.o., Aleje Jerozolimskie 154 02-326 Warszawa Poland
- BASF SE, Carl-Bosch-Str. 38 67056 Ludwigshafen am Rhein Rheinland-Pfalz Germany
- BASF Sonatrach Propanchem S.A., Carretera Nacional 340, km 1.156 43006 Tarragona Spain
- BENS consulting d.o.o., Bakovniška 7 1241 Karnik Slovenia
- BP Chembel NV/SA, Amocolaan 2 2440 Geel Belgium
- Cabot GmbH, Kronenstrasse 2 D-79618 Rheinfelden Germany
- Cambridge Environmental Assessments part of BSK ADAS Ltd, Battlegate Road Boxworth CB23 4NN Cambridge Cambridgeshire United Kingdom
- Carl Spaeter GmbH, Philosophenweg 17 47053 Duisburg Germany
- CATALYST RECOVERY EUROPE S.A., 420, Route de Longwy 4832 Rodange Luxembourg
- CATALYST RECOVERY EUROPE S.A. (OR1), 420, Route de Longwy 4832 Rodange Luxembourg
- CellMark Deutschland GmbH, Hamborner Straße 53 D - 40547 Düsseldorf Germany Germany
- Cerablast GmbH & Co. KG, Gerhard-Rummeler-Str.2 74343 Sachsenheim Germany
- Chemical Inspection & Regulation Service Limited, Unit 1 Ardee Business Park, Hale Street Co. Louth Ardee Ireland
- CHEMICAL INSPECTION & REGULATION SERVICE LIMITED, Unit 1 Ardee Business Park, Hale Street Co. Louth Ardee Ireland
- Chemical Inspection & Regulation Service Limited, Unit 1 Ardee Business Park, Hale Street Co. Louth Ardee Ireland
- Chemical Inspection & Regulation Service Limited, Singleton House, Laurence Street Co. Louth Drogheda Ireland
- CHEMICAL INSPECTION & REGULATION SERVICE LIMITED, Singleton House, Laurence Street Co. Louth Drogheda Ireland
- Chemservice S.A. (HSP7), 5, an de Laengten 6776 Grevenmacher Luxembourg
- Clariant Prodotti (Italia) S.p.A., Via Vittor Pisani 20 IT-20124 Milano Italy
- Clariant Produkte (Deutschland) GmbH, Am Unisys-Park 1 65843 Sulzbach am Taunus Germany
- Clariant SE - SDCl, Am Unisyspark 1 65843 Sulzbach am Taunus Germany
- Clariant SE - USD1, Am Unisyspark 1 65843 Sulzbach am Taunus Germany
- CMC Comerals International Sàrl, 33 rue du Puits Romain, Boite 6 Atrium Business Park, Vitrum building 8070 Bertrange Luxembourg
- COMELT S.p.A., Via Sondrio, 4 20063 Cernusco sul Naviglio (MI) Italy
- Corazzi, Paolo Corazzi 26100 Cremona Italy
- CRI Catalyst Company Belgium NV, Ringvaartweg-Wondelgem, 4 B-9032 Wondelgem Belgium
- CRI Catalyst Leuna GmbH, Gebäude 8322 Am Hauptort D-06237 Leuna Leuna Germany
- CSI-OR004, Pentlands Science Park Penicuik EH26 0PZ Edinburgh United Kingdom
- CUMI International Limited, Arch Makarios III Avenue, 284 Fortuna Court, Block B, 2nd Floor P C 3105 Limassol Cyprus
- DCX CHROME SAS, 68 rue Jean Jaurès 59770 Marly France
- Denka Chemielas GmbH, Kaiserswerther Str. 163 40474 Dusseldorf Germany
- Didier-Weike AG, Hagenauer Str. 53-55a 65203 Wiesbaden Germany
- Doerentrup Feuerfestprodukte GmbH&Co.KG, Lemgoer Straße 9 32694 Dörentrup Germany
- EIHusa Trading, Río Guadalbarba, Local 4* 29649 Mijas Costa Malaga Spain
- ENRC Leasing B.V., Only Representative of JSC Aluminium of Kazakhstan, Jan Luykenstraat 8 lg. 1071 CM Amsterdam Netherlands
- Envigo Consulting Limited, Woolley Road Alconbury PE28 4HS Huntingdon Cambridgeshire United Kingdom
- Eurallumina SpA, Portovesme 09010 Portoscuso Sardegna Italy
- Eureka Deutschland GmbH, Tricatstrasse 06803 Bitterfeld-Wolfen Saxonia-Anhalt Germany
- EURECAT FRANCE SAS, 121 ave Marie Curie ZI Jean Jaurès 07800 La Vouille sur Rhône France
- Euro Support Advanced Materials B.V., Liessentstraat 9f 5405 AH Uden Netherlands
- Euro Support BV, Kortegracht 26 3811 KH Amersfoort Netherlands
- Euro Support Manufacturing Czechia, s.r.o., Záluží 1 436 70 Litvinov Czech Republic
- EUROMAP S.A., Pl. La Pahlilla Urea, 5 46370 Chiva Valencia Spain
- EUROPE NANXI MINERALS, S.A., GOYA 115, 2ND FLOOR 28009 MADRID MADRID Spain
- Evonik Degussa GmbH, Rellinghauser Strasse 1 - 11 C-ES 45128 Essen North Rhine-Westfalia Germany
- Evonik Resource Efficiency GmbH, Rellinghauser Strasse 1-11 45128 Essen Germany
- Exponent International, The Lenz Hornbeam Business Park HG2 8RE Harrogate North Yorkshire United Kingdom
- ExxonMobil Petroleum & Chemical BVBA ORO3, Polderdijkweg 2030 Antwerpen Belgium
- Ferro GmbH, Gültenstr.215 60327 Frankfurt am Main Germany
- Fosbel GmbH, Schifferstrasse 166 47059 Duisberg Germany
- Fujimi Europe GmbH, Schlossstrasse 5 D-74653 Ingelfingen Germany
- Glencore Import BV, Blaak 31 3011 GA Rotterdam Netherlands
- Glencore International Import BV, Blaak 31 3011 GA Rotterdam Netherlands
- GRACE GmbH & Co. KG, In der Hollerhecke 1 67547 Worms Germany
- GRACE GmbH & Co. KG (OR 4), In der Hollerhecke 1 67547 Worms Germany
- H.C. Starck Tungsten GmbH, Landsberger Str. 98 80339 München Germany
- Haldor Topsoe A/S, Nymøllevej 50 DK28000 Lyngby Denmark
- Hargreaves raw material services GmbH, Böningerstrasse29 47051 Duisburg Germany Germany
- Hellenic Petroleum S.A., 8A Chlmarras st. GR 15125 Maroussi Attica Greece
- Henkel Global Supply Chain B.V., Brugwâl 11 3432NZ Nieuwegein Netherlands
- Hodge Clemco Ltd, Orgreave Drive S13 9NR Sheffield United Kingdom
- Hydro Aluminium AS, Drammensveien 260 0240 OSLO Norway
- IBU-tec Advanced Materials AG, Hainweg 9-11 D-99425 Weimar Germany
- IC Profil Körlátolt Feletősségű Társaság, Rákóczi utca 5. 1. em 8200 Veszprém Veszprém Hungary
- Imerys Fused Minerals Domodossola s.r.l., Via Pieve 67 28845 Domodossola Italy
- Imerys Fused Minerals Laufenburg GmbH, Ferroweg 1 79725 Laufenburg Baden Germany
- Imerys Fused Minerals Ruse d.o.o., Mariborska cesta 44 2352 Selnica ob Dravi Slovenia
- Imerys Fused Minerals Villach GmbH, Seebach 2 9523 Villach Austria
- Imerys Fused Minerals Villach GmbH_OR_CEM, Seebach 2 9523 Landskron Villach Austria
- Imerys Fused Minerals Villach GmbH_OR_IFM-NF, Seebach 2 9523 Landskron Villach Austria
- Imerys Fused Minerals Villach GmbH_OR_IFM-SA, Seebach 2 9523 Landskron Villach Austria
- Imerys Fused Minerals Zschornowitz GmbH, Burgkennitzerstrasse 17 06791 Zschornowitz Germany
- Imerys Metalcasting Germany GmbH, Duisburger Strasse 69-73 D-46049 Oberhausen Germany
- Imexco-tilllich GmbH, Buehler Stasse 20 66130 Saarbruecken Germany
- INGENIERIA Y SERVICIOS TECNICOS, S.A., AVENIDA CERVANTES, 6 48970 BASAURI VIZCAYA Spain
- INOVYN France S.A.S., RUE DE CLICHY 25 75009 PARIS France
- Intercat Europe BV, Stationsstraat 50 3451bz Vleuten Netherlands
- INTERTEK FRANCE, ZAC Ecoparc II 27400 HEUDEBOUVILLE France
- JASTAR Jan Szopa, Halina Szopa Sp.J., Żeromskiego 19 20-460 Lublin Lubelskie Poland
- Johnson Matthey Chemicals GmbH, Wardstrasse 17 D-46446 Emmerich am Rhein Germany

- Johnson Matthew PLC, 5th Floor, 25 Farringdon Street E04A 4AB London United Kingdom
- Kavneer Nederland B.V (OR AWA Brasil), Archimedesstraat 9, 3846 CT Harderwijk Netherlands
- Kavneer Nederland B.V (OR Suriname), Archimedesstraat 9, 3846 CT Harderwijk Netherlands
- KERNEOS SA, 11 cours Valmy - Paris la Défense 92800 Puteaux France
- Klingspor Schleifsysteme GmbH & Co. KG, Hüttenstr. 36 35708 Haiger Germany
- KLINGSPOR Sp.z.o.o., ul T. Regeza 58 43-382 Bielsko-Biala Poland
- Kobelco Welding of Europe B.V., Eisterweg 8 6422 PN Heerlen Netherlands
- Komateq a.s./, Komenského 1097/13 05001 Revuca Slovakia
- Kominex Mineralmahlwerk, Am Selkebad 2 06463 Falkenstein/Harz OT Ermsleben Germany
- Kominex Örtömű Kft., Vidor u.10. fest 1172 Budapest Hungary
- Krahn Chemie GmbH, Grimm 10 20457 Hamburg Hamburg Germany
- KROSAKI AMR REFRACTARIOS S.A.U., Polígono Ibaiondo, Nº 31 20120 Hernani Spain
- KROSAKI AMR REFRACTARIOS S.A.U., Polígono Ibaiondo, 31 20120 Hernani Guipuzcoa Spain
- Kulbäck AB, Landsvägsallén 79 851 76 Sundsvall Sweden
- Kuhmichel Abrasiv Austria GmbH, Ziegelefeldstrasse 5 3430 Tulln Austria
- Kuhmichel Abrasiv B.V., Fabrikweg 4 7451 EM Holten Netherlands
- Kuhmichel Abrasiv GmbH, Am Rosenbaum 22 40882 Ratingen Germany
- Kuhmichel Abrasiv Ltd., Friars Mill, Friars Terrace ST17 4AU Stafford United Kingdom
- Kuhmichel Recycling GmbH, Ermslebener Straße 3 06493 Ballenstedt Germany
- KVS EKODIVIZE a.s., Leskova 566 79312 Horni Benesov Czech Republic
- LKAB Minerals Ltd, Flixborough Industrial Estate Third Avenue DN15 8BF Flixborough North Lincolnshire United Kingdom
- LTS-REACH-OR-NANOPHASE, 43-45 rue Jaroque 33560 sainte eulalie France
- LUGLI SRL, Via Valmanella, 14 14040 Castelnuovo Calcea Piemonte Italy
- MARTINSWERK GMBH, Koelnerstrasse, 110 50127 BERGHEIM Germany
- Merck KGaA, Frankfurter Strasse 64293 Darmstadt Germany
- Micro Abrasives Europe GmbH, Schweriner Strasse 13 22844 Norderstedt Germany
- MIDEGASA SA, INDUSTRIALDEA ASTEASU, NAVES 102-103 20159 ASTEASU GIPUZKOA Spain
- MINERALS GmbH & Co. KG, Alfredstr. 61 45130 Essen Germany
- MINERMET SPA, Via Durini 27 20122 Milano Italy
- MINMETALS GERMANY GMBH, Kaiserswerther Straße 22 40477 Düsseldorf Germany
- Morgan Advanced Ceramics Wesgo GmbH, Willi-Grasser-Str. 11 D-91056 Erlangen Germany
- MOTIM Electroconundum Ltd., Timföldgyári utca 9-13 9200 Mosonmagyaróvár Hungary
- MP Biomedicals Germany GmbH, Thüringer Straße 15 37269 Eschwege Germany
- Nabaltec AG, Alustr. 50-52 92421 Schwandorf Germany
- Nemoto Portugal - Quimica Fina, Lda., Pq. Ind. Manuel da Mota, Lote 1E 3100-354 Pombal Portugal
- Neue Porzellanfabrik Triptis GmbH, Geraer Strasse 51 07819 Triptis Germany
- Nickelhütte Aue GmbH, Rudolf-Breitscheid-Straße 65-75 D-08280 Aue Germany
- Noble Resources UK Limited, 33 Cavendish Square W1G 0PW London United Kingdom
- Normag GmbH, Saalburgstr. 155 61350 Bad Homburg Germany
- Norðurá Century Aluminium, Grundartanga 301 Akranes Iceland
- Oerlikon Metco Europe GmbH, Spreestraße 2 65451 Kelsterbach Hessen Germany
- Oerlikon Metco WOKA GmbH, Im Vorwerk 25 36456 Barchfeld-Immelborn Germany
- officina dell'ambiente, strada provinciale 193/bis 27034 Iomello Italy
- PETROCHINA INTERNATIONAL (LONDON) CO., LTD, 5 Wilton Road SW1V 1AN LONDON United Kingdom
- Pferd Rüggeberg, S.A., Jundiz 18 (Pol. Ind. Jundiz) 01015 Vitoria-Gasteiz Spain
- Pilmex S.r.l., Via Campo d' Appio n°144 54031 Avenza Italy
- Possehl Erzkontor GmbH & Co. KG, Beckergrube 38-52 23552 Lübeck Germany
- Q.S.Abrasive Marengo SRL, via delle Gilare SS 35 bis del Giovi 15062 Bosco Marengo Italy
- Quarwerke GmbH, Kaskadenweg 40 50226 Frechen Germany
- Rappold Winterthur Technologie GmbH, Sankt Magdalener Strasse 85 9500 Vilsch Austria
- REACH GLOBAL SERVICES S.A., Rond Point Schuman, 6 Box 5 B-1040 Brussels Belgium
- REACH24H CONSULTING GROUP, Paramount Court, Corrig Road, Sandford Dublin 18 Dublin Ireland
- REACH24H CONSULTING GROUP, Paramount Court, Corrig Road, Sandford Dublin 18 Dublin Ireland
- REACH24H CONSULTING GROUP, Suite 1E, Paramount Court, Corrig Road, Sandford Dublin 18 Dublin Ireland
- REACH24H CONSULTING GROUP (Shaanxi king stone enterprise company limited), Suite 1E, Paramount Court, Corrig Road, Sandford Dublin 18 Dublin Ireland
- REACHLaw Ltd., Väinökuja 3 JK 21 FI-02600 Espoo Finland
- Refractaria, S.A., Buenavista, 13 33187 Siero Asturias Spain
- RH Urmitz AG & Co. KG, Gewerbe und Industriegebiet Urmitz/Börsnhof 56220 Mühlem-Kärflich Urmitz Germany
- RHODIA OPERATIONS, 40 rue de la Haie Coq 93306 AUBERVILLIERS France
- RHODIUS Schleifwerkzeuge GmbH & Co. KG, Brothalsstr. 2 56659 Burgbrohl Germany
- Richard Baker Harrison Ltd., Marsh Trees House Marsh Parade ST5 1BT Newcastle-under-Lyme Staffordshire United Kingdom
- Rivendell International, Rivendell House Co. Meath Stamullen Ireland
- Rivendell International, Rivendell House Co. Meath Stamullen Co. Meath Ireland
- RSA le Rubis SA, RN85 38560 JARRIE France
- Rusal Aghinish Alumina, Aghinish Island 0000 Askeaton County Limerick Ireland
- SAINT-GOBAIN ABRASIFS FRANCE, RUE DE L'AMBASSADEUR BP 8 78702 CONFLANS-SAINTE-HONORINE France
- SAINT-GOBAIN ABRASIVES BV (NEDERLAND), GROENLOSEWEG P.O. BOX 10 7150 EIBERGEN Netherlands
- SAINT-GOBAIN ABRASIVES LIMITED, DOXEY ROAD ST161EA STAFFORD United Kingdom
- SAINT-GOBAIN ABRASIVES SP Z.O.O., 239 - 241 UL. TORUŃSKA VOIVIDIE WIELKOPOLSKIE 62600 KOLO Poland
- SAINT-GOBAIN ABRASIVI SPA, 4 VIA PER CESANO BOSCONI 20094 CORSICO Italy
- Saint-Gobain Ceramic Materials GMBH, AM BAHNOF D-56414 Steinfrenz Germany
- Saint-Gobain Coating Solutions, 50 RUE DU MOURELET B.P. 90966 84093 Avignon France
- Saint-Gobain Matériaux Céramiques, 17 rue de l'Artisanat ZI du Luteau 45 320 COURTENAY France
- Sait Abrasivi S.p.A., Via Torino PIAZZAZZA 20 10093 Collegno (TO) Italy
- Sasol Germany GmbH, Anckelmannsplatz 1 D-20537 Hamburg Germany
- Sasol Germany GmbH - OR, Anckelmannsplatz 1 D-20537 Hamburg Germany
- SC Alum SA, Isacei 820228 Tulcea Tulcea Romania
- SCAS Europe S.A./N.V., Leonardo Da Vinciiaan 19 B-1831 Diegem Belgium
- SDCmaterials GmbH, Schipkauer Straße 1 01987 Schwarzhelde Germany
- SEPR, BP 60025 Route de Lyon 84131 le pontet cedex France
- SHOWA DENKO EUROPE GmbH, KONRAD-ZUSE-PLATZ 3 81829 München Germany
- SHOWA DENKO EUROPE GmbH (STIC), Konrad-Zuse-Platz 3 81829 Munich Germany
- SILKEM, d.o.o., Tovarniška cesta 10 2325 Kidričevo Slovenia Slovenia
- Simec Lochaber Hydropower 2 Limited, 7 Hartford Street W1J 7RH London United Kingdom
- Sinopac Europa GmbH, Messe Turm Friedrich-Ebert-Anlage 49 60308 Frankfurt am Main Germany
- SSAIL - OR for BAWPL, 8th Floor Neathouse Place SW1V1LH London United Kingdom
- SSAIL - OR for BMSA, 8th Floor Neathouse Place SW1V1LH London United Kingdom
- Starcke GmbH & Co. KG, Markt 10 49324 Melle Germany
- StonCor Europe, Rue du Travail, 9 1400 Nivelles Belgium
- SWATYCOMET d.o.o., Trnova cesta 60 SI-2000 Maribor - Slovenia
- Sør-Norge Aluminium AS, Onarhelmsveien 54 5460 Husnes Norway
- TALUM d.d., Tovarniška 10 2325 KIDRIČEVO Slovenia
- The Bergquist Company GmbH, Verbindungsweg 42 25469 Halstenbek Germany
- thyssenkrupp Raw Materials, thyssenkrupp Allee 1 45143 Essen NRW Germany
- TQSOH EUROPE B.V., Hullenbergweg 359 1101 CP Amsterdam Netherlands
- Traxys Europe SA, 19-21 Route Arlon same L-8009 Strassen Luxembourg Luxembourg
- TRAXYS France S.A.S., 49 avenue Hoche 75008 Paris France
- TRB, 7 rue de la neuville 62152 nesles France
- Treibacher Schleifmittel Villach_OR_TSK, Seebach 2 9523 Landskron Villach Austria
- Treibacher Schleifmittel Villach_OR_TSK, Seebach 2 9523 Landskron Villach Austria
- TRIMET Aluminium SE, Aluminiumallee 1 45356 Essen NRW Germany
- TRIMET FRANCE, Rue Henri Sainte Claire Deville Zone Industrielle Le Parquet 73300 SAINT JEAN DE MAURIENNE France
- TSGE, Concordia House, St James Business Park Grimbald Crag Court HGS 8QB Knaresborough North Yorkshire United Kingdom
- TÜV SÜD Industrie Service GmbH, IS-USR-MUC Westendstraße 199 80686 Munich Germany
- Unicore NV/SA, Rue du Marais 31 1000 Brussels Belgium
- United Company Rusal Aluminium Limited, Themistokli Dervis Street, 5 Elenion Building, 2nd floor 1066 Nikosia Cyprus
- United Company Rusal Aluminium Limited, Themistokli Dervis Street, 5 Elenion Building, 2nd floor 1066 Nikosia Cyprus
- Univar BV, Schouwburgplein 30-34 NL-3012 CL Rotterdam Netherlands
- UOP B.V.B.A., Noorderlaan 147 B-2030 Antwerp Belgium
- Veitsch-Radex GmbH & Co OG, Wienerbergstrasse 11 1100 Wien Austria
- Vesuvius France S.A., 68, Rue Paul Deudon 59750 Feignies France
- Vesuvius Poland Sp. z o.o., ul. Tyniecka 12 32-050 Skawina Poland
- Vesuvius UK Ltd, 1 Midland Way Central Park 843 4XA Batiborough Links Derbyshire United Kingdom
- VSM - Vereinigte Schmirgel- und Maschinen-Fabriken AG, Siegmundstr. 17 30165 Hannover Germany
- washington mills electro minerals limited, mosley road trafford park m17 1nr manchester lancashire United Kingdom
- Wester Mineralien GmbH, Heerstrasse 41 53347 Alfter - Witterschlick NRW Germany
- William Blythe Limited, Bridge Street BB5 4PD Church / Accrington Lancashire United Kingdom
- [Confidential], [Confidential]

Inactive

- BHP Billiton Marketing B.V., Verheeskade 25 2521 BE Den Haag Netherlands
- Chemical Inspection & Regulation Service Limited, Singleton House, Laurence Street Co. Louth Drogheda Ireland
- Kavneer Nederland B.V (OR Alcoa Minerals of Jamaica), Archimedesstraat 9, 3846 CT Harderwijk Netherlands

Other names

IUPAC names

- -
- 13547_1344-28-1
- Activated Alumina
- Activated alumina / catalyst support
- Al₂O₃
- Alumax N8
- Alumina
- Alumina (Actal-UG1)
- Alumines
- ALUMINIUM OXIDE
- Aluminium oxide (Brown Fused Alumina)
- ALUMINIUM OXIDE (ENCAPSULATED)
- aluminium oxide equivalent
- Aluminium oxide, activated alumina, calcined alumina, fused alumina, tabular alumina, fused alumina
- Aluminium oxide, Alumina
- aluminium sesquioxide
- Aluminium(III)oxide
- Aluminiumoxide
- Aluminium (II) oxide
- Aluminium Oxide
- Aluminium oxide, alumina
- Brown fused alumina
- Brown Fused Alumina (BFA)
- Dialuminium trioxide
- dialuminium oxygen
- dialuminium oxygen(2-) hydrate
- dialuminium; oxygen(2-)
- dialuminium;oxygen(2-)
- Fused Alumina
- Fused Aluminium Oxide
- Korund
- Nafen
- Not available
- oxid hlinitý
- oxo (oxoaluminumoxy) alumane
- Oxo(oxoaluminumoxy)alumane
- oxo(oxoaluminumoxy)alumane
- oxo[(oxoaluminum)oxy]alumane
- Tabular alumina
- White fused alumina
- White Fused Alumina, Calcined alumina, Tabular alumina and Fused alumina
- White Fused Alumina, Electrocorundum, Korund
- xo(oxoaluminumoxy)alumane

Regulatory processes names

- Aluminium oxide

Trade names

- A
- AB 12
- AB75
- Actal-UG1
- Activated Alumina
- Adamas® A-100D Alumina Powder
- Adamas® A-901K Splendor White
- Adamas® AE-901K-OP Splendor White
- Aeroxide
- Alcaten
- ALO-Marron
- ALO-.....
- Alu - Oxide, Alu - Oxid, Sandy Calcined, Metallurgical Grade Alumina, Sandy Calcined Alumina, Sandy Alumina
- Alugel
- Alumac
- Alumax
- Alumina
- ALUMINA CALCINADA
- ALUMINA CALCINADA B GRADE
- ALUMINA CALCINADA BM45 GRADE
- ALUMINA CALCINADA G GRADE
- ALUMINA CALCINADA HTM1
- ALUMINA CALCINADA S
- ALUMINA CALCINADA STANDARD
- ALUMINA MICRONIZADA HTM10
- ALUMINA MICRONIZADA HTM20
- ALUMINA SX
- Alumina, fused alumina, fumed alumina, activated alumina, tabular alumina
- Alumina, fused alumina, fumed alumina, activated alumina, tabular alumina, Aluminium Oxide, Aluminium Oxid,
- Alumina, fused alumina, fumed alumina, activated alumina, tabular alumina, Aluminium Oxide, Aluminium Oxid, Alu - Oxide, Alu - Oxid, Sandy Calcined, Metallurgical Grade Alumina, Sandy Calcined Alumina, Sandy Alumina, Calcined Alumina
- Alumine
- ALUMINIUM OXIDE
- Aluminium Oxide, Aluminium Oxid, Alu - Oxide, Alu - Oxid, Sandy Calcined Metallurgical Grade Alumina, Sandy Calcined Alumina, Sandy Alumina Calcined Alumina, Smelter Grade Alumina, Smelting Grade Alumina, Metallurgical Grade Alumina
- Aluminium oxide
- Aluminium Oxide Powder
- Aluminium Oxide
- Alutab
- B Class Alumina
- BCF
- BFA
- BLACK ALUMINIUM
- Black Fused Alumina
- BROWN /WHITE ALUMINIUM OXIDE (FUSED ALUMINA)
- Brown corundum
- BROWN FUSED ALUMINA
- Brown Fused Alumina (BFA)
- Brown Fused Alumina
- Brown Fused Aluminium
- Brown fused aluminium oxide
- Brown Fused Aluminium Oxide
- BRWON FUSED ALUMINA OXIDE
- BZ
- Calcined Alumina
- Calcined alumina GKE
- Calcined alumina GKM
- Calcined alumina GKT
- Calcined Alumina, Smelter Grade Alumina, Smelting Grade Alumina Metallurgical Grade Alumina, Alumar Alumina
- Catalox
- Ceralox
- Chlorocel
- COMPALOX®
- CORINDON AMAX BLANC
- CORINDON AMAXICOR BLANC
- CORINDON BLANC
- Corindón
- Corindón blanco
- Corindón marrón
- Corundum
- CS-331 carrier types
- CTR carrier
- D10-10
- Dispal R 14N4-80 Alumina
- DMRJ
- Dryocel
- Durocel
- Dynocel
- EDR
- EK
- EK8A
- FESITI
- Fluorocel
- FO
- FR
- Fumed alumina
- FUSED ALUMINA
- Fused Alumina
- Fused aluminium oxide
- Fused Aluminium oxide (Corundum)
- FWA
- Hydrocel
- In pure form: TK-xx
- KKD
- KKW
- MARTIPOL®
- MARTOXID®
- MARTOXIN®
- Maxcel
- Microcrystalline Ceramic Abrasives
- Mirinae® A-1000D Alumina Powder
- Monocrystalline Fused Alumina
- Nabalox
- Normalkorund
- OPL
- OSO
- PC
- Peroxcel
- PINK FUSED ALUMINA
- Pink Fused Aluminium Oxide
- Polycel
- Puralox
- RB
- RB, Corindone Rosso-bruno
- RBT9
- Reactive alumina
- Reactive Alumina
- RG
- Rod
- Ruby Fused Alumina
- SA
- SCT
- SE

- SE250
- Semifriable Fused Alumina
- SGA, SC-1, SC-13, SC-0, ESPD or alumina dust
- Siralox
- Smelter Grade Alumina, Smelting Grade Alumina Metallurgical Grade Alumina, Worsley alumina
- SO200
- Spectra® Optic White SP-9001M
- Spent activated alumina
- SRSK
- SynDol
- Tabular Alumina
- Tabular alumina ALFA TAB
- Tabular oxide
- Tengda
- The substance is placed on the market both as a substance in pure form and as a part of the chemical matrix of an inorganic catalyst (i.e. regarded as a preparation according to Guidance on substance identification).
- Trade name for the substance when constituting a part of the catalyst, see section 3.4 for tradenames on mixtures containing the substance
- Treibacher Alodur
- WA
- WFA
- WFA, White fused alumina
- White corundum
- White Fused Alumina
- WHITE FUSED ALUMINA
- White Fused Alumina (WFA)
- White Fused Alumina
- White fused aluminium oxide
- White Fused Aluminium Oxide
- WRG
- WSK
- ZIRCONIA ALUMINA
- ZPSK
- ZR

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	4 studies submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed																
<p>⚠ No automatically processable data submitted</p> <table border="1"> <tr> <td>Studies with data</td> <td>⚠</td> <td>📄</td> <td>📄</td> <td>📄</td> <td>📄</td> <td>Data waiving</td> <td>⚠ No data available</td> </tr> <tr> <td>Weight of evidence</td> <td>4</td> <td></td> <td></td> <td></td> <td></td> <td>no waivers</td> <td></td> </tr> </table>					Studies with data	⚠	📄	📄	📄	📄	Data waiving	⚠ No data available	Weight of evidence	4					no waivers	
Studies with data	⚠	📄	📄	📄	📄	Data waiving	⚠ No data available													
Weight of evidence	4					no waivers														
Melting/freezing point																				
Study results	14 studies submitted 4 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed																
<p>R Melting / freezing point 1 200 - 2 054 °C [6]</p> <table border="1"> <tr> <td>Studies with data</td> <td>⚠</td> <td>📄</td> <td>📄</td> <td>📄</td> <td>📄</td> <td>Data waiving</td> <td>⚠ No data available</td> </tr> <tr> <td>Weight of evidence</td> <td>14</td> <td></td> <td></td> <td></td> <td></td> <td>no waivers</td> <td></td> </tr> </table>					Studies with data	⚠	📄	📄	📄	📄	Data waiving	⚠ No data available	Weight of evidence	14					no waivers	
Studies with data	⚠	📄	📄	📄	📄	Data waiving	⚠ No data available													
Weight of evidence	14					no waivers														
Boiling point																				
Study results	12 studies submitted 4 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed																
<p>R Boiling point 2 977 °C [4]</p> <table border="1"> <tr> <td>Studies with data</td> <td>⚠</td> <td>📄</td> <td>📄</td> <td>📄</td> <td>📄</td> <td>Data waiving</td> <td>⚠ No data available</td> </tr> <tr> <td>Weight of evidence</td> <td>12</td> <td></td> <td></td> <td></td> <td></td> <td>no waivers</td> <td></td> </tr> </table>					Studies with data	⚠	📄	📄	📄	📄	Data waiving	⚠ No data available	Weight of evidence	12					no waivers	
Studies with data	⚠	📄	📄	📄	📄	Data waiving	⚠ No data available													
Weight of evidence	12					no waivers														
Density																				
Study results	16 studies submitted 4 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed																
<p>R Relative density 3.5 - 4 [4]</p> <table border="1"> <tr> <td>Studies with data</td> <td>⚠</td> <td>📄</td> <td>📄</td> <td>📄</td> <td>📄</td> <td>Data waiving</td> <td>⚠ No data available</td> </tr> <tr> <td>Weight of evidence</td> <td>16</td> <td></td> <td></td> <td></td> <td></td> <td>no waivers</td> <td></td> </tr> </table>					Studies with data	⚠	📄	📄	📄	📄	Data waiving	⚠ No data available	Weight of evidence	16					no waivers	
Studies with data	⚠	📄	📄	📄	📄	Data waiving	⚠ No data available													
Weight of evidence	16					no waivers														
Vapour pressure																				
Study results	8 studies submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed																
<p>⚠ No automatically processable data submitted</p> <table border="1"> <tr> <td>Studies with data</td> <td>⚠</td> <td>📄</td> <td>📄</td> <td>📄</td> <td>📄</td> <td>Data waiving</td> <td>⚠ No data available</td> </tr> <tr> <td>Weight of evidence</td> <td>8</td> <td></td> <td></td> <td></td> <td></td> <td>no waivers</td> <td></td> </tr> </table>					Studies with data	⚠	📄	📄	📄	📄	Data waiving	⚠ No data available	Weight of evidence	8					no waivers	
Studies with data	⚠	📄	📄	📄	📄	Data waiving	⚠ No data available													
Weight of evidence	8					no waivers														

Partition coefficient		Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
Study results	2 studies submitted 0 studies processed			
⚠ No automatically processable data submitted		Studies with data	Data waiving Other: 2	⚠ No data available
Water solubility		Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
Study results	12 studies submitted 2 studies processed			
<input checked="" type="checkbox"/> Water solubility (mass/vol.) 20 µg/L @ 20 °C and pH 6 - 7 [2]		Studies with data	Data waiving no waivers	⚠ No data available
		Key study : 2 Weight of evidence : 10		
Solubility in organic solvents / Fat solubility				⚠ Data not provided by the registrant
Surface tension		Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
Study results	2 studies submitted 0 studies processed			
⚠ No automatically processable data submitted		Studies with data	Data waiving Other: 2	⚠ No data available
Flash point		Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
Study results	2 studies submitted 0 studies processed			
⚠ No automatically processable data submitted		Studies with data	Data waiving Sci. unjustified: 2	⚠ No data available
Auto flammability		Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
Study results	2 studies submitted 0 studies processed			
⚠ No automatically processable data submitted		Studies with data	Data waiving Sci. unjustified: 2	⚠ No data available
Flammability		Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
Study results	2 studies submitted 0 studies processed			
⚠ No automatically processable data submitted		Studies with data	Data waiving Sci. unjustified: 2	⚠ No data available
Explosiveness		Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
Study results	2 studies submitted 0 studies processed			
⚠ No automatically processable data submitted		Studies with data	Data waiving Sci. unjustified: 2	⚠ No data available
Oxidising		Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
Study results	2 studies submitted 0 studies processed			
⚠ No automatically processable data submitted		Studies with data	Data waiving Sci. unjustified: 2	⚠ No data available
Oxidation reduction potential				⚠ Data not provided by the registrant
pH				⚠ Data not provided by the registrant

Dissociation constant

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	Data waiving Sci. unjustified	2
			⚠ No data available	

Viscosity

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	Data waiving Sci. unjustified	2
			⚠ No data available	

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 ⚠ Data not provided by the registrant

Hydrolysis

Study results	2 studies submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
⚠ Study data not processed for final profile		Studies with data	Data waiving Sci. unjustified	2
			⚠ No data available	

Phototransformation in water ⚠ Data not provided by the registrant

Phototransformation in soil ⚠ Data not provided by the registrant

Biodegradation in water - screening tests

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	Data waiving Sci. unjustified	2
			⚠ 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 final profile		Studies with data	Data waiving Sci. unjustified	2
			⚠ No data available	

Bioaccumulation: aquatic / sediment

Study results	2 studies submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
⚠ Study data not processed for final profile		Studies with data	Data waiving Exposure cons.	2
			⚠ No data available	

Bioaccumulation: terrestrial ⚠ Data not provided by the registrant

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	Data waiving Sci. unjustified	2
			⚠ No data available	

Henry's law constant (H)												
Study results	2 studies submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed								
<input type="checkbox"/> No automatically processable data submitted												
Studies with data <table border="1"> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Data waiving <table border="1"> <tr> <td colspan="2"><input type="checkbox"/> No data available</td> </tr> <tr> <td>Sci. unjustified</td> <td>2</td> </tr> </table>			<input type="checkbox"/> No data available		Sci. unjustified	2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>									
<input type="checkbox"/> No data available												
Sci. unjustified	2											

Distribution modelling												
Study results	2 studies submitted 0 studies processed	Type of Study provided	<input type="checkbox"/> No summary exists for this scientific endpoint									
<input type="checkbox"/> No automatically processable data submitted												
Studies with data <table border="1"> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Data waiving <table border="1"> <tr> <td colspan="2"><input type="checkbox"/> No data available</td> </tr> <tr> <td>Sci. unjustified</td> <td>2</td> </tr> </table>			<input type="checkbox"/> No data available		Sci. unjustified	2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>									
<input type="checkbox"/> No data available												
Sci. unjustified	2											

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)

Summaries 3 summaries submitted
3 summaries 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		Hazard for Air	
Freshwater	No data: aquatic toxicity unlikely (2)	Air	No hazard identified (1)
Marine water	No data: aquatic toxicity unlikely (2)	Hazard for Terrestrial Organism	
Intermittent releases (freshwater)	No data: aquatic toxicity unlikely (2)	Soil	No or insufficient data available at present (3)
Sewage treatment plant (STP)	20 mg/L (2)	Hazard for Predators	
Sediment (freshwater)	No or insufficient data available at present (3)	Secondary poisoning	No or insufficient data available at present (3)
Sediment (marine water)	No or insufficient data available at present (3)		

Short-term toxicity to fish

Study results	51 studies submitted 42 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed												
<input checked="" type="checkbox"/> Results																
LC50 (16 days) 430 - 3 910 µg/L [12] LC50 (8 days) 22.4 mg/L [3] LC50 (4 days) 78 - 218 644.1 µg/L [62] LC50 (4 days) 2.9 µmol/L [1] LC50 (72 h) 10 - 19.3 mg/L [6]		Studies with data <table border="1"> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Weight of evidence</td> <td>34</td> <td></td> <td>8</td> </tr> <tr> <td>Other</td> <td>3</td> <td></td> <td>6</td> </tr> </table>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Weight of evidence	34		8	Other	3		6
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>													
Weight of evidence	34		8													
Other	3		6													
		Data waiving <table border="1"> <tr> <td colspan="2"><input type="checkbox"/> No data available</td> </tr> <tr> <td colspan="2">no waivers</td> </tr> </table>			<input type="checkbox"/> No data available		no waivers									
<input type="checkbox"/> No data available																
no waivers																

Long-term toxicity to fish

Study results	36 studies submitted 30 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed												
<input checked="" type="checkbox"/> Results																
NOEC (60 days) 88 - 350 µg/L [12] NOEC (33 days) 71.5 - 558.1 µg/L [7] NOEC (30 days) 57 - 88 µg/L [9] NOEC (28 days) 4.7 - 23.1 mg/L [12] NOEC (7 days) 25.1 - 56 480 µg/L [41]		Studies with data <table border="1"> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Weight of evidence</td> <td>28</td> <td></td> <td>2</td> </tr> <tr> <td>Other</td> <td>2</td> <td></td> <td>4</td> </tr> </table>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Weight of evidence	28		2	Other	2		4
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>													
Weight of evidence	28		2													
Other	2		4													
		Data waiving <table border="1"> <tr> <td colspan="2"><input type="checkbox"/> No data available</td> </tr> <tr> <td colspan="2">no waivers</td> </tr> </table>			<input type="checkbox"/> No data available		no waivers									
<input type="checkbox"/> No data available																
no waivers																

Short-term toxicity to aquatic invertebrates

Study results	39 studies submitted 36 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed												
<input checked="" type="checkbox"/> Results																
EC50 (48 h) 1.5 - 2.56 mg/L [9] LC50 (4 days) 22 - 30.6 mg/L [6] LC50 (48 h) 5.7 - 99 600 µg/L [51] NOEC (4 days) 22.6 mg/L [3] NOEC (48 h) 5 - 672 µg/L [21]		Studies with data <table border="1"> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Weight of evidence</td> <td>36</td> <td></td> <td></td> </tr> <tr> <td>Other</td> <td>1</td> <td></td> <td>2</td> </tr> </table>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Weight of evidence	36			Other	1		2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>													
Weight of evidence	36															
Other	1		2													
		Data waiving <table border="1"> <tr> <td colspan="2"><input type="checkbox"/> No data available</td> </tr> <tr> <td colspan="2">no waivers</td> </tr> </table>			<input type="checkbox"/> No data available		no waivers									
<input type="checkbox"/> No data available																
no waivers																

Long-term toxicity to aquatic invertebrates

Study results	42 studies submitted 36 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed									
<p>[P/R] Results</p> <p>NOEC (42 days) 232.6 - 453.8 µg/L [4]</p> <p>NOEC (30 days) 1.092 - 2.099 mg/L [2]</p> <p>NOEC (28 days) 53.1 - 4 281.8 µg/L [7]</p> <p>NOEC (21 days) 76 - 600 µg/L [7]</p> <p>NOEC (17 days) 962.5 µg/L [1]</p>		<p>Studies with data</p> <table border="1"> <tr> <td>▲</td> <td>📄</td> <td>📄</td> <td>📄</td> <td>📄</td> </tr> </table> <p>Weight of evidence</p> <table border="1"> <tr> <td>34</td> <td>2</td> </tr> </table> <p>Other</p> <table border="1"> <tr> <td>2</td> <td>4</td> </tr> </table>	▲	📄	📄	📄	📄	34	2	2	4	<p>Data waiving</p> <p>▲ No data available</p> <p>no waivers</p>	
▲	📄	📄	📄	📄									
34	2												
2	4												

Toxicity to aquatic algae and cyanobacteria

Study results	30 studies submitted 30 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed							
<p>[P/R] Results</p> <p>EC50 (4 days) 5.4 - 570 µg/L [15]</p> <p>EC50 (72 h) 16.9 - 4 980 µg/L [69]</p> <p>NOEC (72 h) 4 - 600 µg/L [25]</p> <p>LOEC (72 h) 400 - 1 000 µg/L [10]</p> <p>EC10 (72 h) 203 - 3 155 000 ng/L [69]</p>		<p>Studies with data</p> <table border="1"> <tr> <td>▲</td> <td>📄</td> <td>📄</td> <td>📄</td> <td>📄</td> </tr> </table> <p>Weight of evidence</p> <table border="1"> <tr> <td>30</td> <td></td> </tr> </table>	▲	📄	📄	📄	📄	30		<p>Data waiving</p> <p>▲ No data available</p> <p>no waivers</p>	
▲	📄	📄	📄	📄							
30											

Toxicity to aquatic plants other than algae

Study results	4 studies submitted 4 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed							
<p>[P/R] Results</p> <p>EC50 (7 days) 8.643 - 15.966 mg/L [3]</p> <p>NOEC (7 days) 2.76 mg/L [3]</p> <p>NOEC (4 days) 45.7 mg/L [3]</p> <p>LOEC (7 days) 5.314 mg/L [3]</p> <p>EC10 (7 days) 2.175 - 4.545 mg/L [3]</p>		<p>Studies with data</p> <table border="1"> <tr> <td>▲</td> <td>📄</td> <td>📄</td> <td>📄</td> <td>📄</td> </tr> </table> <p>Weight of evidence</p> <table border="1"> <tr> <td>4</td> <td></td> </tr> </table>	▲	📄	📄	📄	📄	4		<p>Data waiving</p> <p>▲ No data available</p> <p>no waivers</p>	
▲	📄	📄	📄	📄							
4											

Toxicity to microorganisms

Study results	2 studies submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed							
<p>▲ No automatically processable data submitted</p>		<p>Studies with data</p> <table border="1"> <tr> <td>▲</td> <td>📄</td> <td>📄</td> <td>📄</td> <td>📄</td> </tr> </table>	▲	📄	📄	📄	📄	<p>Data waiving</p> <p>▲ No data available</p> <p>Sci. unjustified</p> <table border="1"> <tr> <td>2</td> <td></td> </tr> </table>	2		
▲	📄	📄	📄	📄							
2											

Sediment toxicity

Study results	2 studies submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed							
<p>▲ No automatically processable data submitted</p>		<p>Studies with data</p> <table border="1"> <tr> <td>▲</td> <td>📄</td> <td>📄</td> <td>📄</td> <td>📄</td> </tr> </table>	▲	📄	📄	📄	📄	<p>Data waiving</p> <p>▲ No data available</p> <p>Sci. unjustified</p> <table border="1"> <tr> <td>2</td> <td></td> </tr> </table>	2		
▲	📄	📄	📄	📄							
2											

Toxicity to terrestrial macroorganisms except arthropods

Study results	7 studies submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed							
<p>▲ No automatically processable data submitted</p>		<p>Studies with data</p> <table border="1"> <tr> <td>▲</td> <td>📄</td> <td>📄</td> <td>📄</td> <td>📄</td> </tr> </table>	▲	📄	📄	📄	📄	<p>Data waiving</p> <p>▲ No data available</p> <p>Sci. unjustified</p> <table border="1"> <tr> <td>2</td> <td></td> </tr> </table>	2		
▲	📄	📄	📄	📄							
2											

Toxicity to terrestrial arthropods

Study results	2 studies submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed							
<p>▲ No automatically processable data submitted</p>		<p>Studies with data</p> <table border="1"> <tr> <td>▲</td> <td>📄</td> <td>📄</td> <td>📄</td> <td>📄</td> </tr> </table>	▲	📄	📄	📄	📄	<p>Data waiving</p> <p>▲ No data available</p> <p>Sci. unjustified</p> <table border="1"> <tr> <td>2</td> <td></td> </tr> </table>	2		
▲	📄	📄	📄	📄							
2											

Toxicity to terrestrial plants

Study results	2 studies submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed							
<p>▲ No automatically processable data submitted</p>		<p>Studies with data</p> <table border="1"> <tr> <td>▲</td> <td>📄</td> <td>📄</td> <td>📄</td> <td>📄</td> </tr> </table>	▲	📄	📄	📄	📄	<p>Data waiving</p> <p>▲ No data available</p> <p>Sci. unjustified</p> <table border="1"> <tr> <td>2</td> <td></td> </tr> </table>	2		
▲	📄	📄	📄	📄							
2											

Toxicity to soil microorganisms

Study results	2 studies submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
<input type="checkbox"/> No automatically processable data submitted		Studies with data <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Data waiving Sci. unjustified	<input type="checkbox"/> No data available
			2	

Toxicity to birds

Study results	2 studies submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
<input type="checkbox"/> No automatically processable data submitted		Studies with data <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Data waiving Sci. unjustified	<input type="checkbox"/> No data available
			2	

Toxicity to mammals

Study results	2 studies submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
<input type="checkbox"/> No automatically processable data submitted		Studies with data <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Data waiving Sci. unjustified	<input type="checkbox"/> No data available
			2	

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

2 summaries submitted
2 summaries 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
Systemic Effects		
Long-term:	(DNEL) 15.63 mg/m ³	repeated dose toxicity
Acute /short term:	No hazard identified	
Local Effects		
Long-term:	(DNEL) 15.63 mg/m ³	repeated dose toxicity
Acute /short term:		

Data for the GENERAL POPULATION

INHALATION Exposure	Threshold	Most sensitive study
Systemic Effects		
Long-term:	-	-
Acute /short term:	-	-
Local Effects		
Long-term:	-	-
Acute /short term:	-	-

DERMAL Exposure	Threshold	Most sensitive study
Systemic Effects		
Long-term:		
Acute /short term:		
Local Effects		
Long-term:		
Acute /short term:		

DERMAL Exposure	Threshold	Most sensitive study
Systemic Effects		
Long-term:		
Acute /short term:		
Local Effects		
Long-term:		
Acute /short term:		

EYE Exposure	Threshold	Most sensitive study
No hazard identified		

ORAL Exposure	Threshold	Most sensitive study
Systemic Effects		
Long-term:	(DNEL) 3.29 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	0 summaries submitted 0 summaries processed																								
<p>Study data not processed for brief profile</p>	<p>Study data: basic toxicokinetics</p> <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>4</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>1</td> <td></td> </tr> <tr> <td>Other</td> <td></td> <td></td> <td></td> <td>1</td> <td></td> </tr> </tbody> </table>	Studies with data					Data waiving	Key study	4				no waivers	Supporting study	4			1		Other				1		<p>No data available</p>	
Studies with data					Data waiving																						
Key study	4				no waivers																						
Supporting study	4			1																							
Other				1																							
<p>Study data not processed for brief profile</p>	<p>Study data: dermal absorption</p> <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></td> <td></td> <td></td> <td>2</td> <td>no waivers</td> </tr> </tbody> </table>	Studies with data					Data waiving	Key study				2	no waivers														
Studies with data					Data waiving																						
Key study				2	no waivers																						

Acute toxicity

Study results	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed																		
<p>oral</p> <p>12 studies submitted 6 studies processed</p> <p>P/R Results LD50 10 000 - 15 900 mg/kg bw (rat) [6]</p> <p>M/C Interpretations of results Not classified [6]</p>	<p>oral</p> <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>6</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>2</td> <td></td> </tr> </tbody> </table>	Studies with data					Data waiving	Key study	6				no waivers	Supporting study	4			2		<p>No data available</p>	
Studies with data					Data waiving																
Key study	6				no waivers																
Supporting study	4			2																	
<p>inhalation</p> <p>7 studies submitted 6 studies processed</p> <p>P/R Results LC50 (4 h) 888 - 2 300 mg/m³ air (rat) [4] LC50 (60 min) 7.6 mg/L air (rat) [2] LC0 (4 h) 888 mg/m³ air (rat) [2]</p> <p>M/C Interpretations of results Not classified [6]</p>	<p>inhalation</p> <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>4</td> <td></td> <td></td> <td>2</td> <td>no waivers</td> </tr> <tr> <td>Supporting study</td> <td></td> <td></td> <td></td> <td>1</td> <td></td> </tr> </tbody> </table>	Studies with data					Data waiving	Key study	4			2	no waivers	Supporting study				1			
Studies with data					Data waiving																
Key study	4			2	no waivers																
Supporting study				1																	
<p>dermal</p> <p>2 studies submitted 0 studies processed</p> <p>No automatically processable data submitted</p>	<p>dermal</p> <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</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>2</td> </tr> </tbody> </table>	Studies with data					Data waiving						Sci. unjustified						2		
Studies with data					Data waiving																
					Sci. unjustified																
					2																
<p>other routes</p> <p>0 studies submitted 0 studies processed</p> <p>No data available</p>	<p>other routes</p> <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																

Irritation / corrosion

Study results	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed																								
<p>Study data: skin</p> <p>13 studies submitted 1 study processed</p> <p>Study data: skin</p> <p>⚠ No data available</p>	<p>Study data: skin</p> <table border="1"> <tr> <td>Studies with data</td> <td>⚠</td> <td>📄</td> <td>📊</td> <td>⚠</td> <td>Data waiving</td> </tr> <tr> <td>Key study</td> <td>6</td> <td></td> <td></td> <td></td> <td>no waivers</td> </tr> <tr> <td>Supporting study</td> <td></td> <td></td> <td></td> <td>3</td> <td></td> </tr> <tr> <td>Other</td> <td></td> <td></td> <td></td> <td>1</td> <td></td> </tr> </table>	Studies with data	⚠	📄	📊	⚠	Data waiving	Key study	6				no waivers	Supporting study				3		Other				1			
Studies with data	⚠	📄	📊	⚠	Data waiving																						
Key study	6				no waivers																						
Supporting study				3																							
Other				1																							
<p>Study data: eye</p> <p>13 studies submitted 0 studies processed</p> <p>Study data: eye</p> <p>⚠ Study data not processed for brief profile</p>	<p>Study data: eye</p> <table border="1"> <tr> <td>Studies with data</td> <td>⚠</td> <td>📄</td> <td>📊</td> <td>⚠</td> <td>Data waiving</td> </tr> <tr> <td>Key study</td> <td>4</td> <td></td> <td></td> <td></td> <td>no waivers</td> </tr> <tr> <td>Supporting study</td> <td>3</td> <td></td> <td></td> <td>3</td> <td></td> </tr> </table>	Studies with data	⚠	📄	📊	⚠	Data waiving	Key study	4				no waivers	Supporting study	3			3									
Studies with data	⚠	📄	📊	⚠	Data waiving																						
Key study	4				no waivers																						
Supporting study	3			3																							

Sensitisation

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

Repeated dose toxicity

Study results	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed																								
<p>Study data: oral</p> <p>10 studies submitted 10 studies processed</p> <p>Study data: oral</p> <p>⚠ No data available</p>	<p>Study data: oral</p> <table border="1"> <tr> <td>Studies with data</td> <td>⚠</td> <td>📄</td> <td>📊</td> <td>⚠</td> <td>Data waiving</td> </tr> <tr> <td>Weight of evidence</td> <td></td> <td></td> <td></td> <td>10</td> <td>no waivers</td> </tr> </table>	Studies with data	⚠	📄	📊	⚠	Data waiving	Weight of evidence				10	no waivers														
Studies with data	⚠	📄	📊	⚠	Data waiving																						
Weight of evidence				10	no waivers																						
<p>Study data: inhalation</p> <p>12 studies submitted 2 studies processed</p> <p>Study data: inhalation</p> <p>⚠ No data available</p>	<p>Study data: inhalation</p> <table border="1"> <tr> <td>Studies with data</td> <td>⚠</td> <td>📄</td> <td>📊</td> <td>⚠</td> <td>Data waiving</td> </tr> <tr> <td>Key study</td> <td>2</td> <td></td> <td></td> <td></td> <td>no waivers</td> </tr> <tr> <td>Supporting study</td> <td>5</td> <td></td> <td></td> <td>2</td> <td></td> </tr> <tr> <td>Other</td> <td>3</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Studies with data	⚠	📄	📊	⚠	Data waiving	Key study	2				no waivers	Supporting study	5			2		Other	3						
Studies with data	⚠	📄	📊	⚠	Data waiving																						
Key study	2				no waivers																						
Supporting study	5			2																							
Other	3																										
<p>Study data: dermal</p> <p>0 studies submitted 0 studies processed</p> <p>Study data: dermal</p> <p>⚠ No data available</p>	<p>Study data: dermal</p> <table border="1"> <tr> <td>Studies with data</td> <td>⚠</td> <td>📄</td> <td>📊</td> <td>⚠</td> <td>Data waiving</td> </tr> <tr> <td>Weight of evidence</td> <td></td> <td></td> <td></td> <td></td> <td>no waivers</td> </tr> </table>	Studies with data	⚠	📄	📊	⚠	Data waiving	Weight of evidence					no waivers														
Studies with data	⚠	📄	📊	⚠	Data waiving																						
Weight of evidence					no waivers																						

[P/R] Results
 rat (i): 888 mg/m³ air [2]
 NOAEL (rat): 200 - 3 225 mg/kg bw/day [13]
 NOAEL (rat): 141 - 302 mg/kg diet [6]
 NOAEL (dog): 90 mg/kg diet [2]
 LOAEL (rat): 1 000 - 1 075 mg/kg bw/day [3]

[P/R] Results
 NOAEC (rat): 70 mg/m³ air [2]

XX

Genetic toxicity

Study results

Type of Study provided

Summaries

0 summaries submitted
0 summaries processed

Study data: in vitro

⚠ No data available

⚠ Study data not processed for brief profile

Studies with data	⚠	📄	📄	⚠
Weight of evidence				14
Other				4

Data waiving
no waivers

Study data: in vivo

Study data: in vivo

⚠ Study data not processed for brief profile

Studies with data	⚠	📄	📄	⚠
Weight of evidence				8
Other				2

Data waiving
no waivers

Carcinogenicity

Study results

10 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	⚠	📄	📄	⚠
Weight of evidence				8
Other				2

Data waiving
no waivers

⚠ No data available

Toxicity to reproduction

Study results

Type of Study provided

Summaries

0 summaries submitted
0 summaries processed

Study data: reproduction

Study data: reproduction

⚠ No data available

⚠ Study data not processed for brief profile

Studies with data	⚠	📄	📄	⚠
Key study				4
Supporting study				2
Weight of evidence				2

Data waiving
Sci. unjustified

Study data: developmental

Study data: developmental

⚠ Study data not processed for brief profile

Studies with data	⚠	📄	📄	⚠
Key study				2
Supporting study				12
Other				2

Data waiving
no waivers

Study data: other studies

Study data: other studies

⚠ Study data not processed for brief profile

Studies with data	⚠	📄	📄	⚠
-------------------	---	---	---	---

Data waiving
no waivers

Neurotoxicity

Study results

12 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
Supporting study				8
Other				2

Data waiving
no waivers

⚠ No data available

Immunotoxicity

⚠ Data not provided by the registrant