

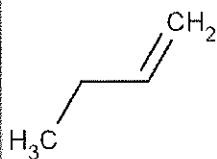
But-1-ene

Substance identity

EC / List no.: 203-449-2

CAS no.: 106-98-9

Mol. formula: C₄H₈



Hazard classification & labelling



Danger! According to the **harmonised classification and labelling** (CLP00) approved by the European Union, this substance is an extremely flammable gas.

Additionally, the classification provided by companies to ECHA in **REACH registrations** identifies that this substance is a flammable gas.

About this substance

This substance is manufactured and/or imported in the European Economic Area in 100 000 - 1 000 000 tonnes per year.

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

Consumer Uses

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

Article service life

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

Widespread uses by professional workers

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

Formulation or re-packing

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

Uses at industrial sites

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

Manufacture

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

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



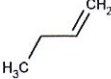
about INFOCARD - Last updated: 01/12/2017

But-1-ene



Brief Profile - Last updated: 30/01/2018

Substance Description

Substance Identity


	EC / List name: But-1-ene	SMILES:	CCC=C
	IUPAC name: but-1-ene	InChI:	InChI=1S/C4H8/c1-3-4-2/h3H,1,4H2,2H3 AuxInfo=1/0/N:1,4,2,3/rA:4CCCC/rB:d1:s2;s3/rC:1.3 324,-7722,0;2.6649,0,0;3.9973,-7722,0;
	Other names	Type of substance:	Mono constituent substance
EC / List no.:	203-449-2	Origin:	Organic
CAS no.:	106-98-9	Registered compositions: 27	
Index number:	601-012-00-4	Of which contain:	4 impurities relevant for classification 0 additives relevant for classification
Molecular formula:	C4H8	Substance Listed:	EINECS (European Inventory of Existing Commercial chemical Substances) List

Hazard classification & labelling



Danger! According to the harmonised classification and labelling (CLP00) approved by the European Union, this substance is an extremely flammable gas.

Additionally, the classification provided by companies to ECHA in REACH registrations identifies that this substance is a flammable gas.



Breakdown of all 569 C&L notifications submitted to ECHA

Flam. Gas 1	H220	✓
Flam. Gas 1	H221	
Not Classified		
Press. Gas		✓

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

Evaluation

Dossier Evaluation:

Substance Evaluation:

Authorisation

Candidate List:

Annex XIV (Manufacture)
List:

Restriction

Annex XVII (Restriction)
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 100 000 - 1 000 000 tonnes per year.

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

Consumer Uses

This substance is used in the following products: fuels, adhesives and sealants, air care products, anti-freeze products, biocides (e.g. disinfectants, pest control products), coating products, lubricants and greases, plant protection products, perfumes and fragrances, polishes and waxes, washing & cleaning products, cosmetics and personal care products and polymers.

Other release to the environment of this substance is likely to occur from: 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), indoor use as reactive substance and outdoor use as reactive substance.

Article service life

This substance is used in the following activities or processes at workplace: production of mixtures or articles by tableting, compression, extrusion or pelletisation.

Release to the environment of this substance can occur from industrial use: for thermoplastic manufacture 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: vehicles and machinery, mechanical appliances and electrical/electronic products (e.g. computers, cameras, lamps, refrigerators, washing machines). This substance can be found in products with material based on: plastic (e.g. food packaging and storage, toys, mobile phones) and rubber (e.g. tyres, shoes, toys).

Widespread uses by professional workers

This substance is used in the following products: polymers.

This substance is used for the manufacture of: plastic products.

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, closed batch processing in synthesis or formulation, mixing in open batch processes, transfer of substance into small containers, closed processes with no likelihood of exposure, closed, continuous processes with occasional controlled exposure, calendaring operations, the low energy manipulation of substances bound in materials or articles, batch processing in synthesis or formulation with opportunity for exposure, treatment of articles by dipping and pouring, high energy work-up of substances bound in materials or articles (e.g. hot rolling/forming, grinding, mechanical cutting, drilling or sanding), in materials as fuel sources, with limited exposure to unburned product to be expected, non-industrial spraying and blowing agents in manufacture of foam.

Other release to the environment of this substance is likely to occur from: outdoor use, indoor use (e.g. machine wash liquids/detergents, automotive care products, paints and coating or adhesives, fragrances and air fresheners) and outdoor use in close systems with minimal release (e.g. hydraulic liquids in automotive suspension, lubricants in motor oil and break fluids).

Formulation or re-packing

This substance is used in the following products: polymers.

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

Release to the environment of this substance can occur from industrial use: formulation of mixtures, manufacturing of the substance, formulation in materials, in processing aids at industrial sites, in the production of articles, as an intermediate step in further manufacturing of another substance (use of intermediates), as processing aid, for thermoplastic manufacture, as processing aid and of substances in closed systems with minimal release.

Uses at industrial sites

This substance is used in the following products: polymers, fillers, putties, plasters, modelling clay and fuels. 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, municipal supply (e.g. electricity, steam, gas, water) and sewage treatment and building & construction work. This substance is used for the manufacture of: chemicals and plastic products.

This substance is used in the following activities or processes at workplace: transfer of chemicals, closed, continuous processes with occasional controlled exposure, closed batch processing in synthesis or formulation, closed processes with no likelihood of exposure, batch processing in synthesis or formulation with opportunity for exposure, transfer of substance into small containers, production of mixtures or articles by tableting, compression, extrusion or pelletisation, mixing in open batch processes, calendaring operations, laboratory work, the low energy manipulation of substances bound in materials or articles, treatment of articles by dipping and pouring, high energy work-up of substances bound in materials or articles (e.g. hot rolling/forming, grinding, mechanical cutting, drilling or sanding), in materials as fuel sources, with limited exposure to unburned product to be expected, industrial spraying and manual maintenance (cleaning and repair) of machinery.

Release to the environment of this substance can occur from industrial use: as an intermediate step in further manufacturing of another substance (use of intermediates), in processing aids at industrial sites, for thermoplastic manufacture, as processing aid, manufacturing of the substance, of substances in closed systems with minimal release, in the production of articles, as processing aid, formulation of mixtures and formulation in materials.

Manufacture

This substance is used in the following activities or processes at workplace: transfer of chemicals, closed processes with no likelihood of exposure, closed, continuous processes with occasional controlled exposure, closed batch processing in synthesis or formulation, batch processing in synthesis or formulation with opportunity for exposure, laboratory work and transfer of substance into small containers.

Release to the environment of this substance can occur from industrial use: manufacturing of the substance, in processing aids at industrial sites, formulation of mixtures, formulation in materials, in the production of articles, as an intermediate step in further manufacturing of another substance (use of intermediates), as processing aid, for thermoplastic manufacture, as processing aid and of substances in closed systems with minimal release.

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: take actions to prevent static discharges; keep away from heat, sparks, open flames and/or hot surfaces – No smoking.

Response statements

In case of incident: In case of leakage eliminate all ignition sources. In case of leaking gas fire do not extinguish unless leak can be stopped safely.

Storage statements

Store this substance protected from sunlight and in a well-ventilated place.

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
- Ashland Services BV (0311), Marten Meesweg 8-10 3068 AV Rotterdam Netherlands
- B-Lands Consulting (811117-5), World Trade Center, 5 Place Robert Schuman - BP1510 38025 Grenoble France France
- Basell Sales & Marketing B.V., Groot Handelsgebouw Unit A4.004 Stationsplein 45 3013 AK Rotterdam Netherlands
- BiPRO GmbH, Grauertstrasse 12 81545 Munich Germany
- Boottman Chemical Safety Ltd 016, Diss Business Centre IP21 4HD Diss Norfolk United Kingdom
- Borealis AG, Wagramerstrasse 17-19 1220 Wien Austria
- Braskem Netherlands B.V., Weena 00240, C 9th floor NL - 3012 NJ Rotterdam Netherlands
- BSM-OR-polymers-Equistar, Delftseplein 27E 3013 AA Rotterdam Netherlands
- Cabot Performance Materials Belgium SPRL, rue Prévochamps, 78 4860 Pepinster Belgium
- Charles River Laboratories Den Bosch B.V. OR16, Hambakenwetering 7 5231DD 's-Hertogenbosch Netherlands
- Chemours Netherlands B.V., Baanhoekweg 22 3313 LA Dordrecht Netherlands
- Chemsafe Srl on behalf of Tabriz Petrochemical Company (T.P.C.), Via Ribes 5 10010 Colletterto Giacosa TO Italy
- Chemservice GmbH - (P9S8), Hermannsheimer Hauptstrasse 1b 67550 Worms Germany
- Chemservice GmbH - (UT4A), Hermannsheimer Hauptstrasse 1b 67550 Worms Germany
- Chemservice GmbH - (V5TU), Hermannsheimer Hauptstrasse 1b 67550 Worms Germany
- Chemservice S.A. (J8P5), 5, an de Laengten 6776 Grevenmacher Luxembourg
- Chemservice S.A. (R7L9), 5, an de Laengten 6776 Grevenmacher Luxembourg
- Chevron Phillips Chemicals International N.V. - OR CPC, Airport Plaza, Stockholm Building Da Vincilaan 19 1831 Diegem Belgium
- DOW BENELUX B.V. - OR1, Postbus 48 4530 AA Terneuzen Netherlands
- DOW BENELUX B.V. - OR2, Postbus 48 4530 AA Terneuzen Netherlands
- DOW BENELUX B.V. OR-6, Postbus 48 NL-4530 AA Terneuzen Netherlands
- DOW BENELUX B.V. OR -30, Postbus 48 4530 AA Terneuzen Netherlands
- Dow Silicones Belgium SPRL OR-1, PSRC - rue Jules Bordet Parc industriel C 7180 Seneffe Belgium
- Dr. Knoell Consult - OR - B15, Dynamostr. 19 68165 Mannheim Germany
- EMERAUDE INTERNATIONAL, 2 rue de la Tour des Dames 75009 Paris France
- Envigo Consulting Limited, Woolley Road Alconbury PE28 4HS Huntingdon Cambridgeshire United Kingdom
- Envigo Research Limited 211, Shardlow Business Park London Road DE72 2GD Shardlow Derbyshire United Kingdom
- Envigo Research Limited 69, Shardlow Business Park London Road DE72 2GD Shardlow Derbyshire United Kingdom
- Evonik Degussa GmbH, Rellinghauser Strasse 1 - 11 C-ES 45128 Essen North Rhine-Westfalia Germany
- Evonik Oxeno Antwerpen N.V., Tijsmanstunnel West 2040 Antwerpen Belgium
- Evonik Performance Materials GmbH, Rellinghauser Strasse 1-11 45128 Essen Germany
- ExxonMobil Petroleum & Chemical BVBA OR05, Polderdijkweg 2030 Antwerpen Belgium
- ExxonMobil Petroleum & Chemical BVBA OR06, Polderdijkweg 2030 Antwerpen Belgium
- ExxonMobil Petroleum & Chemical BVBA OR23, Polderdijkweg 2030 Antwerpen Belgium
- Henkel Global Supply Chain B.V., Gustav Mahlerlaan 2970 1081 LA Amsterdam Netherlands
- Interlek deutschland GmbH TECH, Stangenstr. 1 70771 Leinfelden-Echterdingen Germany
- INTERTEK FRANCE, ZAC Ecoparc II 27400 HEUDEBOUVILLE France
- ITS Testing Services (UK) Ltd 16, Caleb Brett House 734 London Road RM20 3NL West Thurrock, Grays Essex United Kingdom
- ITS Testing Services (UK) Ltd 2, Caleb Brett House 734 London Road RM20 3NL West Thurrock, Grays Essex United Kingdom
- ITW Engineered Polymers, A Division of ITW Ireland, Bay 150 Shannon Industrial Estate V14 DF82 Shannon Co.Clare Ireland
- Kimberly-Clark Europe Limited, 40 London Road RH2 9QP Reigate Surrey United Kingdom
- LG Chem Europe GmbH, Lyoner str 15, Atricom C6, D-60528 Frankfurt am Main Germany
- Lubrizol Deutschland GmbH, Max-Planck-Strasse 6 27721 RITTERHUDE Germany
- Lubrizol France SAS, 25 Quai de France 76100 ROUEN France
- Lubrizol Limited, The Knowle, Nether Lane Hazelwood DE56 4AN Derby Derbyshire United Kingdom
- Lubrizol Limited 01, The Knowle, Nether Lane Hazelwood DE56 4AN Derby Derbyshire United Kingdom
- Lubrizol Limited 07, The Knowle, Nether Lane DE56 4AN Derby Derbyshire United Kingdom
- Mitsubishi International GmbH, Kennedydamm 19 40476 Düsseldorf NRW Germany
- Mitsui Chemicals Europe GmbH, Oststr. 34 40211 Dusseldorf Germany
- Muntajat B.V, 19th floor, Tower E, WTC The Hague Prinses Margrietplantsoen 78-A 2595 BR The Hague Netherlands
- Muntajat B.V, 19th Floor, Tower E, WTC The Hague Prinses Margrietplantsoen 78-A 2595 The Hague Netherlands
- Oy Nizhex Scandinavia Ltd, Wavulinintie 10 00210 HELSINKI Finland
- Petrochemical Commercial Company (UK) Ltd, 24, GROSVENOR GARDENS SW1W 0DH LONDON EUROPE United Kingdom
- PETROCHINA INTERNATIONAL (LONDON) CO., LTD, 5 Wilton Road SW1V 1AN LONDON United Kingdom
- Ravago Distribution SA, Rue de Merl 76-78 L-2146 Luxembourg Luxembourg
- REACHLaw Ltd, Vänrikinkuja 3 JK 21 02600 Espoo Finland
- REACHLaw Ltd, Vänrikinkuja 3 JK 21 FI-02600 Espoo Finland
- REACHLaw Ltd., Vänrikinkuja 3 JK 21 02600 Espoo Finland
- SABIC Innovative Plastics BV, Plasticslaan 1 4612 PX Bergen op Zoom Netherlands Netherlands
- SABIC Petrochemicals B.V., Europaboulevard 1 6135 LD Sittard Netherlands
- SCAS Europe S.A./N.V., Leonardo Da Vincilaan 19 B-1831 Diegem Belgium
- Shell Chemicals Europe B.V., Weena 70 3012 CM Rotterdam Netherlands
- Shell Chemicals UK Limited, Shell Centre York Road SE1 7NA London London United Kingdom
- Sinopec Europa GmbH, Messe Turm, Friedrich-Ebert-Anlage 49 60308 Frankfurt am Main Germany
- Sumitomo Deutschland GmbH, Georg-Glock-Str. 8 40474 Düsseldorf Germany
- TER HELL & Co. GmbH, Boersenbruecke 2 20457 Hamburg Germany
- TÜV SÜD Iberia S.A.U. (052), C/ Frederic Mompou 4A, 1º 4º 08960 Sant Just Desvern (BCN) Barcelona Spain
- versalis S.p.A., Pzza Boldrini 1 20097 San Donato Milanese MILANO Italy
- Vinmar International B.V., Neptunusstraat 27-19 2132JA Hoofddorp Netherlands
- [Confidential], [Confidential]

Inactive

- Henkel Italia Operations S.r.L., Via Amoretti 78 20157 Mailand Italy
- Henkel Sweden Operations AB, Torsgatan 12 PO Box 12033 600-12 Norrköping Sweden
- Henkel Technologies France SAS, 161 Rue De Silly 92100 Boulogne-Billancourt France

Other names

IUPAC names

-
- 1 Butene
- 1-Butene
- 1-Butene (in cylinder without valve) [To use this product charged in cylinder, a valve is required which is sold separately (Product Code:V0030)]
- But-1-ene
- Butene
- Butene 1-
- Butene, mixed isomers
- BUTENE-1

Regulatory processes names

- But-1-ene

Trade names

- 1-Butene
- 1-Butylene
- alpha-Butylene
- But-1-ene
- Butene
- Butene-1
- Engage polyolefin elastomers
- n-Butylene
- Wire&cable product ranges

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	17 studies submitted 2 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
C Physical state at 20 °C and 1013 hPa Gaseous (100%) [2]		Studies with data	Data waiving no waivers	No data available
C Odour Other (100%) [2]		Key study 2		
		Supporting study 1		
C Substance type Organic (100%) [2]		Other 14		

Melting/freezing point

Study results	21 studies submitted 2 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
R Melting / freezing point -185 °C [2]		Studies with data	Data waiving no waivers	No data available
		Key study 2		
		Supporting study 1		
		Other 18		

Boiling point

Study results	21 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 no waivers	No data available
		Key study 2		
		Supporting study 1		
		Other 18		

Density

Study results	15 studies submitted 2 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
R Density 0.588 - 0.59 g/cm³ @ 25 °C [2]		Studies with data	Data waiving no waivers	No data available
		Key study 2		
		Supporting study 1		
		Other 12		

Vapour pressure

Study results	22 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
		Supporting study 1		
		Other 18		

Partition coefficient

Study results	15 studies submitted 2 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
R Log Pow 2.4 [2]		Studies with data	Data waiving no waivers	No data available
		Key study 2		
		Supporting study 1		
		Other 12		

Water solubility

Study results	14 studies submitted 2 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
R Water solubility (mass/vol.) 222 mg/L @ 25 °C [2]		Studies with data	Data waiving no waivers	No data available
		Key study 2		
		Other 12		

Solubility in organic solvents / fat solubility										
Study results	1 study 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> </tr> </table>	⚠	📄	📊	📈	<p>Data waiving</p> <table border="1"> <tr> <td>Other</td> <td>1</td> </tr> </table>	Other	1	<p>⚠ No data available</p>
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Other	1									

Surface tension										
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> </tr> </table>	⚠	📄	📊	📈	<p>Data waiving</p> <table border="1"> <tr> <td>Other</td> <td>2</td> </tr> </table>	Other	2	<p>⚠ No data available</p>
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Other	2									

Flash point										
Study results	14 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> </tr> </table>	⚠	📄	📊	📈	<p>Data waiving</p> <table border="1"> <tr> <td>Other</td> <td>2</td> </tr> </table>	Other	2	<p>⚠ No data available</p>
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Auto flammability										
Study results	15 studies submitted 2 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed						
<p>R Autoflammability / self-ignition 385 °C [2]</p>		<p>Studies with data</p> <table border="1"> <tr> <td>⚠</td> <td>📄</td> <td>📊</td> <td>📈</td> </tr> </table>	⚠	📄	📊	📈	<p>Data waiving</p> <table border="1"> <tr> <td>no waivers</td> <td></td> </tr> </table>	no waivers		<p>⚠ No data available</p>
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no waivers										
		<p>Key study</p> <table border="1"> <tr> <td>2</td> <td></td> <td></td> <td></td> </tr> </table>	2							
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		<p>Supporting study</p> <table border="1"> <tr> <td></td> <td></td> <td>1</td> <td></td> </tr> </table>			1					
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		<p>Other</p> <table border="1"> <tr> <td></td> <td></td> <td></td> <td>12</td> </tr> </table>				12				
			12							

Flammability										
Study results	3 studies submitted 2 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed						
<p>C Interpretation of results Extremely flammable (100%) [2]</p>		<p>Studies with data</p> <table border="1"> <tr> <td>⚠</td> <td>📄</td> <td>📊</td> <td>📈</td> </tr> </table>	⚠	📄	📊	📈	<p>Data waiving</p> <table border="1"> <tr> <td>no waivers</td> <td></td> </tr> </table>	no waivers		<p>⚠ No data available</p>
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		<p>Key study</p> <table border="1"> <tr> <td>2</td> <td></td> <td></td> <td></td> </tr> </table>	2							
2										
		<p>Supporting study</p> <table border="1"> <tr> <td></td> <td></td> <td>1</td> <td></td> </tr> </table>			1					
		1								

Explosiveness										
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> </tr> </table>	⚠	📄	📊	📈	<p>Data waiving</p> <table border="1"> <tr> <td>Sci. unjustified</td> <td>2</td> </tr> </table>	Sci. unjustified	2	<p>⚠ No data available</p>
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Sci. unjustified	2									

Oxidising										
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> </tr> </table>	⚠	📄	📊	📈	<p>Data waiving</p> <table border="1"> <tr> <td>Sci. unjustified</td> <td>2</td> </tr> </table>	Sci. unjustified	2	<p>⚠ No data available</p>
⚠	📄	📊	📈							
Sci. unjustified	2									

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						
<p>⚠ No automatically processable data submitted</p>		<p>Studies with data</p> <table border="1"> <tr> <td>⚠</td> <td>📄</td> <td>📊</td> <td>📈</td> </tr> </table>	⚠	📄	📊	📈	<p>Data waiving</p> <table border="1"> <tr> <td>Other</td> <td>2</td> </tr> </table>	Other	2	<p>⚠ No data available</p>
⚠	📄	📊	📈							
Other	2									

Viscosity										
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> </tr> </table>	⚠	📄	📊	📈	<p>Data waiving</p> <table border="1"> <tr> <td>Other</td> <td>2</td> </tr> </table>	Other	2	<p>⚠ No data available</p>
⚠	📄	📊	📈							
Other	2									

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	8 studies submitted 2 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
R Dissipation half life (DT50) 12 h [2]		Studies with data	Data waiving No data available	
		Key study	2	no waivers
		Other	6	

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 brief profile		Studies with data	Data waiving No data available	
		Scl. unjustified	2	

Phototransformation in water	Data not provided by the registrant
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Phototransformation in soil	Data not provided by the registrant
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Biodegradation in water - screening tests				
Study results	6 studies submitted 1 study processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
C Interpretation of results Readily biodegradable (100%) [1]		Studies with data	Data waiving No data available	
		Key study	1	no waivers
		Supporting study	1	
		Weight of evidence	2	

Biodegradation in water & sediment - simulation tests	Data not provided by the registrant
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Biodegradation in soil				
Study results	2 studies submitted 0 studies processed	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
Study data not processed for brief profile		Studies with data	Data waiving No data available	
		Other	2	

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 brief profile		Studies with data	Data waiving No data available	
		Other	2	

Bioaccumulation: terrestrial	Data not provided by the registrant
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Adsorption/desorption				
Study results	4 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 No data available	
		Key study	2	Other 2

Henry's law constant (H)	Data not provided by the registrant
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Distribution modelling				
Study results	12 studies submitted 0 studies processed	Type of Study provided	No summary exists for this scientific endpoint	
No automatically processable data submitted		Studies with data	Data waiving No data available	
		Other	6	6

Ecotoxicological information

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

Predicted No-Effect Concentration (PNEC)

R Summaries

1 summary submitted
1 summary processed

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

Hazard for Aquatic Organisms

Freshwater	No hazard identified (1)
Intermittent releases (freshwater)	No hazard identified (1)
Marine water	No hazard identified (1)
Intermittent releases (marine water)	No hazard identified (1)
Sewage treatment plant (STP)	No hazard identified (1)
Sediment (freshwater)	No hazard identified (1)
Sediment (marine water)	No hazard identified (1)

Hazard for Air

Air	No hazard identified (1)
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Hazard for Terrestrial Organism

Soil	No hazard identified (1)
------	--------------------------

Hazard for Predators

Secondary poisoning	No potential for bioaccumulation (1)
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Short-term toxicity to fish

Study results 2 studies submitted
2 studies processed

Type of Study provided

Summaries

0 summaries submitted
0 summaries processed

P/R Results
LC50 (4 days) 19 - 32.471 mg/L [2]

Studies with data
Key study 2

Data waiving
no waivers

No data available

Long-term toxicity to fish

Study results 4 studies submitted
1 study processed

Type of Study provided

Summaries

0 summaries submitted
0 summaries processed

P/R Results
NOEC (30 days) 2.286 mg/L [1]

Studies with data
Key study 2

Data waiving
Other 2

No data available

Short-term toxicity to aquatic invertebrates

Study results 2 studies submitted
2 studies processed

Type of Study provided

Summaries

0 summaries submitted
0 summaries processed

P/R Results
LC50 (48 h) 11 - 18.728 mg/L [2]

Studies with data
Key study 2

Data waiving
no waivers

No data available

Long-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
NOEC (21 days) 1.349 mg/L [1]

Studies with data
Key study 2

Data waiving
Other 2

No data available

Toxicity to aquatic algae and cyanobacteria

Study results 3 studies submitted
2 studies processed

Type of Study provided

Summaries

0 summaries submitted
0 summaries processed

P/R Results
EC50 (4 days) 6.5 - 14.882 mg/L [2]

Studies with data
Key study 2
Supporting study 1

Data waiving
no waivers

No data available

Toxicity to aquatic plants other than algae

Data not provided by the registrant

Toxicity to microorganisms

Study results 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
Other 2

No data available

Sediment toxicity				
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 Other 2
		⚠ No data available		

Endocrine disrupter testing in aquatic vertebrates - in vivo	⚠ Data not provided by the registrant
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Toxicity to terrestrial macroorganisms except arthropods				
Study results	6 studies submitted 1 study processed	Type of Study provided		Summaries 0 summaries submitted 0 summaries processed
P/R Results LC50 (14 days) 93.683 mg/kg soil dw [1]		Studies with data	<div> <div>⚠</div> <div>📄</div> <div>📊</div> <div>📈</div> </div>	Data waiving Other 4
		Key study	1	⚠ No data available
		Supporting study	1	

Toxicity to terrestrial arthropods				
Study results	4 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 Other 4
		⚠ No data available		

Toxicity to terrestrial plants				
Study results	4 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 Other 4
		⚠ No data available		

Toxicity to soil microorganisms				
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 Other 2
		⚠ No data available		

Toxicity to birds				
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 Other 2
		⚠ No data available		

Toxicity to mammals	⚠ Data not provided by the registrant
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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

Long-term: (DNEL) 769 mg/m³ repeated dose toxicity
Acute /short term: No hazard identified

Long-term: (DNEL) 768.7 mg/m³ repeated dose toxicity
Acute /short term: No hazard identified

DERMAL Exposure Threshold Most sensitive study

Long-term: No hazard identified
Acute /short term: No hazard identified

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) 163 mg/m³ repeated dose toxicity
Acute /short term: No hazard identified

Long-term: (DNEL) 229.4 mg/m³ repeated dose toxicity
Acute /short term: No hazard identified

DERMAL Exposure Threshold Most sensitive study

Long-term: No hazard identified
Acute /short term: No hazard identified

Long-term: No hazard identified
Acute /short term: No hazard identified

ORAL Exposure Threshold Most sensitive study

Long-term: No hazard identified
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

No data available
No studies submitted
No data processed

Study data: basic toxicokinetics

No data available

Study data not processed for brief profile

Studies with data
Key study 2
Supporting study 10
Weight of evidence 2
Other 2

Data waiving
no waivers

No data available
No studies submitted
No data processed

Study data: dermal absorption

Study data not processed for brief profile

Studies with data
Key study 2
Supporting study 10
Weight of evidence 2
Other 2

Data waiving
no waivers

Acute toxicity			
Study results	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
oral <div>2 studies submitted 0 studies processed</div> <div> <div>⚠ No automatically processable data submitted</div> </div>	oral <div> <div> <div>Studies with data</div> <div> <div>⚠</div> <div>📄</div> <div>📊</div> <div>📈</div> </div> </div> <div> <div>Data waiving</div> <div>Not feasible</div> <div>2</div> </div> </div> <div>⚠ No data available</div>		
inhalation <div>14 studies submitted 2 studies processed</div> <div> <div>M/C Interpretations of results</div> <div>Not classified [2]</div> </div>	inhalation <div> <div> <div>Studies with data</div> <div> <div>⚠</div> <div>📄</div> <div>📊</div> <div>📈</div> </div> </div> <div> <div>Key study</div> <div>2</div> </div> <div> <div>Supporting study</div> <div>2</div> <div>8</div> </div> <div> <div>Other</div> <div></div> <div>2</div> </div> </div> <div> <div>Data waiving</div> <div>no waivers</div> </div>		
dermal <div>2 studies submitted 0 studies processed</div> <div> <div>⚠ No automatically processable data submitted</div> </div>	dermal <div> <div> <div>Studies with data</div> <div> <div>⚠</div> <div>📄</div> <div>📊</div> <div>📈</div> </div> </div> <div> <div>Data waiving</div> <div>Not feasible</div> <div>2</div> </div> </div> <div>⚠ No data available</div>		
other routes <div>0 studies submitted 0 studies processed</div> <div> <div>⚠ No data available</div> </div>	other routes <div> <div> <div>Studies with data</div> <div> <div>⚠</div> <div>📄</div> <div>📊</div> <div>📈</div> </div> </div> <div> <div>Data waiving</div> <div>no waivers</div> </div> </div> <div>⚠ No data available</div>		






















Irritation / corrosion			
Study results	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
skin irritation <div>2 studies submitted 0 studies processed</div> <div> <div>⚠ Study data not processed for brief profile</div> </div>	Study data: skin <div> <div> <div>Studies with data</div> <div> <div>⚠</div> <div>📄</div> <div>📊</div> <div>📈</div> </div> </div> <div> <div>Data waiving</div> <div>Other</div> <div>2</div> </div> </div> <div>⚠ No data available</div>		
skin data: eye <div>2 studies submitted 0 studies processed</div> <div> <div>⚠ Study data not processed for brief profile</div> </div>	Study data: eye <div> <div> <div>Studies with data</div> <div> <div>⚠</div> <div>📄</div> <div>📊</div> <div>📈</div> </div> </div> <div> <div>Data waiving</div> <div>Other</div> <div>2</div> </div> </div> <div>⚠ No data available</div>		

Sensitisation			
Study results	Type of Study provided	Summaries	0 summaries submitted 0 summaries processed
skin irritation <div>2 studies submitted 0 studies processed</div> <div> <div>⚠ Study data not processed for brief profile</div> </div>	Study data: skin <div> <div> <div>Studies with data</div> <div> <div>⚠</div> <div>📄</div> <div>📊</div> <div>📈</div> </div> </div> <div> <div>Data waiving</div> <div>Other</div> <div>2</div> </div> </div> <div>⚠ No data available</div>		
skin data: respiratory <div>2 studies submitted 0 studies processed</div> <div> <div>⚠ Study data not processed for brief profile</div> </div>	Study data: respiratory <div> <div> <div>Studies with data</div> <div> <div>⚠</div> <div>📄</div> <div>📊</div> <div>📈</div> </div> </div> <div> <div>Data waiving</div> <div>Other</div> <div>2</div> </div> </div> <div>⚠ No data available</div>		

Repeated dose toxicity

Study results	Type of Study provided	Summaries																								
0 summaries submitted 0 summaries processed		0 summaries submitted 0 summaries processed																								
Study data: oral	Study data: oral	⚠ No data available																								
2 studies submitted 0 studies processed																										
⚠ No automatically processable data submitted	<table> <tr> <th>Studies with data</th><td>⚠</td><td>📄</td><td>📊</td><td>⚠</td><th>Data waiving</th></tr> <tr> <td></td><td></td><td></td><td></td><td></td><td>no waivers</td></tr> <tr> <th>Supporting study</th><td></td><td></td><td></td><td>2</td><td></td></tr> </table>	Studies with data	⚠	📄	📊	⚠	Data waiving						no waivers	Supporting study				2								
Studies with data	⚠	📄	📊	⚠	Data waiving																					
					no waivers																					
Supporting study				2																						
Study data: inhalation	Study data: inhalation																									
14 studies submitted 0 studies processed																										
⚠ No automatically processable data submitted	<table> <tr> <th>Studies with data</th><td>⚠</td><td>📄</td><td>📊</td><td>⚠</td><th>Data waiving</th></tr> <tr> <td></td><td></td><td></td><td></td><td></td><td>no waivers</td></tr> <tr> <th>Key study</th><td>2</td><td></td><td></td><td></td><td></td></tr> <tr> <th>Supporting study</th><td></td><td></td><td></td><td>12</td><td></td></tr> </table>	Studies with data	⚠	📄	📊	⚠	Data waiving						no waivers	Key study	2					Supporting study				12		
Studies with data	⚠	📄	📊	⚠	Data waiving																					
					no waivers																					
Key study	2																									
Supporting study				12																						
Study data: dermal	Study data: dermal																									
7 studies submitted 0 studies processed																										
⚠ No automatically processable data submitted	<table> <tr> <th>Studies with data</th><td>⚠</td><td>📄</td><td>📊</td><td>⚠</td><th>Data waiving</th></tr> <tr> <td></td><td></td><td></td><td></td><td></td><td>Not feasible</td></tr> <tr> <th>Supporting study</th><td></td><td></td><td></td><td>2</td><td></td></tr> </table>	Studies with data	⚠	📄	📊	⚠	Data waiving						Not feasible	Supporting study				2								
Studies with data	⚠	📄	📊	⚠	Data waiving																					
					Not feasible																					
Supporting study				2																						

Genetic toxicity

Study results	Type of Study provided	Summaries																								
0 summaries submitted 0 summaries processed		0 summaries submitted 0 summaries processed																								
Study data: in vitro	Study data: in vitro	⚠ No data available																								
26 studies submitted 0 studies processed																										
⚠ Study data not processed for brief profile	<table> <tr> <th>Studies with data</th><th></th><th></th><th></th><th></th><th>Data waiving</th></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></td><td></td><td></td><td>20</td><td></td></tr> <tr> <td>Other</td><td></td><td></td><td></td><td>4</td><td></td></tr> </table>	Studies with data					Data waiving	Key study	4				no waivers	Supporting study				20		Other				4		
Studies with data					Data waiving																					
Key study	4				no waivers																					
Supporting study				20																						
Other				4																						
Study data: in vivo	Study data: in vivo																									
4 studies submitted 0 studies processed																										
⚠ Study data not processed for brief profile	<table> <tr> <th>Studies with data</th><th></th><th></th><th></th><th></th><th>Data waiving</th></tr> <tr> <td>Supporting study</td><td></td><td></td><td></td><td>4</td><td>no waivers</td></tr> </table>	Studies with data					Data waiving	Supporting study				4	no waivers													
Studies with data					Data waiving																					
Supporting study				4	no waivers																					

Carcinogenicity

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		<table><tr><td>Studies with data</td><td>⚠</td><td>📄</td><td>📊</td><td>⚠</td><td>Data waiving</td></tr><tr><td>Supporting study</td><td></td><td></td><td></td><td>4</td><td>no waivers</td></tr></table>	Studies with data	⚠	📄	📊	⚠	Data waiving	Supporting study				4	no waivers	⚠ No data available		
Studies with data	⚠	📄	📊	⚠	Data waiving												
Supporting study				4	no waivers												

Toxicity to reproduction

Study results

Study data: reproduction

10 studies submitted
1 study processed
1 study planned

⚠ Study data not processed for brief profile

Type of Study provided

Study data: reproduction

Studies with data	⚠	📄	📊	📈	Data waiving
Key study	2				Sci. unjustified 2
Supporting study				6	

Summaries

0 summaries submitted

0 summaries processed

⚠ No data available

Study data: developmental

6 studies submitted
0 studies processed
0 studies planned

⚠ Study data not processed for brief profile

Study data: developmental

Studies with data	⚠	📄	📊	📈	Data waiving
Key study	2				no waivers
Supporting study	2			4	

Study data: other studies

0 studies submitted
0 studies processed
0 studies planned

⚠ Study data not processed for brief profile

Study data: other studies

Studies with data	⚠	📄	📊	📈	Data waiving
					no waivers

Neurotoxicity

⚠ Data not provided by the registrant

Immunotoxicity

⚠ Data not provided by the registrant

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

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