

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Article
Product name : Altro Flexiflow Classic Hardener
Product code : FFS__H
Product group : End product

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Main use category : Industrial use, Professional use
Use of the substance/mixture : Polyurethane Hardener - Industrial floor coating

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Manufacturer

Altro Resin Systems
Unit 3 Station Road Industrial Estate
Station Road
GB- DT2 0AE Maiden Newton Dorchester
T 01300 320620
sds@altro.com - www.altro.com

1.4. Emergency telephone number

Emergency number : 01462 480480
Monday - Friday 09:00 - 17:00

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to GB CLP (SI 2019:720 as amended)

Acute toxicity (inhalation:dust,mist) Category 4	H332
Skin corrosion/irritation, Category 2	H315
Serious eye damage/eye irritation, Category 2	H319
Respiratory sensitisation, Category 1	H334
Skin sensitisation, Category 1	H317
Carcinogenicity, Category 2	H351
Specific target organ toxicity – Single exposure, Category 3, Respiratory tract irritation	H335
Specific target organ toxicity – Repeated exposure, Category 2	H373

Full text of H- and EUH-statements: see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

Labelling according to GB CLP (SI 2019:720 as amended)

Hazard pictograms (GB CLP) :  
GHS07 GHS08

Signal word (GB CLP) : Danger

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According REACH Regulation 1907/2006 as retained in UK law by UK REACH SI 2019 No. 758 as amended

Contains	: Diphenylmethane-4,4-Diisocyanate (MDI) Isomers; Reaction mass of 4,4-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate
Hazard statements (GB CLP)	: H315 - Causes skin irritation. H317 - May cause an allergic skin reaction. H319 - Causes serious eye irritation. H332 - Harmful if inhaled. H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled. H335 - May cause respiratory irritation. H351 - Suspected of causing cancer. H373 - May cause damage to organs through prolonged or repeated exposure.
Precautionary statements (GB CLP)	: P201 - Obtain special instructions before use. P202 - Do not handle until all safety precautions have been read and understood. P260 - Do not breathe fume, vapours. P264 - Wash hands thoroughly after handling. P271 - Use only outdoors or in a well-ventilated area. P272 - Contaminated work clothing should not be allowed out of the workplace.

2.3. Other hazards

Results of PBT and vPvB assessment

This substance does not meet the PBT criteria of UK REACH regulation, annex XIII

This substance does not meet the vPvB criteria of UK REACH regulation, annex XIII

Component	
Substance(s) not meeting the PBT criteria of UK REACH regulation, in accordance with Annex XIII	Diphenylmethane-4,4-Diisocyanate (MDI) Isomers (9016-87-9), Reaction mass of 4,4-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate (26447-40-5)
Substance(s) not meeting the vPvB criteria of UK REACH regulation, in accordance with Annex XIII	Diphenylmethane-4,4-Diisocyanate (MDI) Isomers (9016-87-9), Reaction mass of 4,4-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate (26447-40-5)

Results of Endocrine Disruptor assessment

The substance is not included in the list established in accordance with Article 59(1) of UK REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in GB BPR and GB PPP

Component	
Substance(s) not considered as endocrine disrupting. They are not included in the list established in accordance with Article 59(1) of UK REACH for having endocrine disrupting properties, nor identified as having endocrine disrupting properties in accordance with the criteria set out in GB BPR and GB PPP	Reaction mass of 4,4-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate(26447-40-5), Diphenylmethane-4,4-Diisocyanate (MDI) Isomers(9016-87-9)

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

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According REACH Regulation 1907/2006 as retained in UK law by UK REACH SI 2019 No. 758 as amended

3.2. Mixtures

Name	Product identifier	%	Classification according to GB CLP (SI 2019:720 as amended)
Reaction mass of 4,4-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate substance with workplace exposure limit(s)	CAS-No.: 26447-40-5 EC-No.: 905-806-4 UK Index-No.: 615-005-00-9	≥ 50	Acute Tox. 4 (Inhalation), H332 (ATE=1.5 mg/l/4h) Acute Tox. 4 (Inhalation:dust,mist), H332 (ATE=1.5 mg/l/4h) Skin Irrit. 2, H315 Eye Irrit. 2, H319 Resp. Sens. 1, H334 Skin Sens. 1, H317 Carc. 2, H351 STOT SE 3, H335 STOT RE 2, H373
Diphenylmethane-4,4-Diisocyanate (MDI) Isomers	CAS-No.: 9016-87-9 EC-No.: 618-498-9	≥ 15 – < 50	Acute Tox. 4 (Inhalation:dust,mist), H332 (ATE=1.5 mg/l/4h) Skin Irrit. 2, H315 Eye Irrit. 2, H319 Resp. Sens. 1, H334 Skin Sens. 1, H317 Carc. 2, H351 STOT SE 3, H335 STOT RE 2, H373

Specific concentration limits:

Name	Product identifier	Specific concentration limits (%)
Reaction mass of 4,4-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	CAS-No.: 26447-40-5 EC-No.: 905-806-4 UK Index-No.: 615-005-00-9	(0.1 ≤ C ≤ 100) Resp. Sens. 1; H334 (5 ≤ C ≤ 100) Eye Irrit. 2; H319 (5 ≤ C ≤ 100) Skin Irrit. 2; H315 (5 ≤ C ≤ 100) STOT SE 3; H335

Full text of H- and EUH-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	: Take off all contaminated clothing and wash its before reuse.
First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing. If you feel unwell, seek medical advice.
First-aid measures after skin contact	: Take off contaminated clothing. Gently wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention.
First-aid measures after eye contact	: Immediately rinse with water for a prolonged period while holding the eyelids wide open. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
First-aid measures after ingestion	: Do not induce vomiting. Get medical advice/attention if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects after inhalation	: May cause irritation to the respiratory tract.
Symptoms/effects after skin contact	: irritation (itching, redness, blistering).
Symptoms/effects after eye contact	: Causes eye irritation. redness, itching, tears.
Symptoms/effects after ingestion	: May cause irritation to the digestive tract.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

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According REACH Regulation 1907/2006 as retained in UK law by UK REACH SI 2019 No. 758 as amended

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Carbon dioxide (CO₂). Dry powder. Foam. In case of a larger fire, water spray should be used.
- Unsuitable extinguishing media : Do not use water jet to extinguish.

5.2. Special hazards arising from the substance or mixture

- Fire hazard : In case of fire and/or explosion do not breathe fumes. On burning: release of toxic gases/vapours. Carbon oxides (CO, CO₂). Nitrogenous substances.

5.3. Advice for firefighters

- Firefighting instructions : Control run-off water by containing and keeping it out of sewers and watercourses.
- Protection during firefighting : Use self-contained breathing apparatus and chemically protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Protective equipment : Wear recommended personal protective equipment.
- Emergency procedures : Ventilate spillage area.

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

- Methods for cleaning up : Take up liquid spill into absorbent material. Take up mechanically (sweeping, shovelling) and collect in suitable container for disposal. This material and its container must be disposed of in a safe way, and as per local legislation.
- Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection". For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Provide local exhaust or general room ventilation. Avoid contact with skin and eyes. Contaminated work clothing should not be allowed out of the workplace. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Keep only in original container. Keep cool. Store in a dry place. Store in a closed container. Store in a well-ventilated place. Keep container tightly closed.
- Storage temperature : > 20 – < 35 °C
- Storage area : Avoid contact with water or humidity. If moisture enters isocyanate containers, CO₂ forms and pressure builds up.

7.3. Specific end use(s)

- 1.2. Relevant identified uses of the substance or mixture and uses advised against.

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According REACH Regulation 1907/2006 as retained in UK law by UK REACH SI 2019 No. 758 as amended

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

Reaction mass of 4,4-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate (26447-40-5)

United Kingdom - Occupational Exposure Limits

WEL TWA (OEL TWA)	0.02 mg/m ³
WEL STEL (OEL STEL)	0.07 mg/m ³

8.1.2. Recommended monitoring procedures

No additional information available

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

No additional information available

8.1.5. Control banding

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Appropriate engineering controls:

Provide local exhaust or general room ventilation. In case of insufficient ventilation, wear suitable respiratory equipment.

8.2.2. Personal protection equipment

Personal protective equipment:

Gloves. Safety glasses. Protective clothing.

Personal protective equipment symbol(s):



8.2.2.1. Eye and face protection

Eye protection:

Wear eye protection

8.2.2.2. Skin protection

Skin and body protection:

Avoid contact with skin

Hand protection:

Standard EN 374 - Protective gloves against chemicals.

Other skin protection

Materials for protective clothing:

Keep work clothing separately

8.2.2.3. Respiratory protection

Respiratory protection:

Wear suitable respiratory equipment in case of insufficient ventilation

8.2.2.4. Thermal hazards

No additional information available

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According REACH Regulation 1907/2006 as retained in UK law by UK REACH SI 2019 No. 758 as amended

8.2.3. Environmental exposure controls

Environmental exposure controls:

Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Odour	: Not available
Odour threshold	: Not available
pH	: Not available
Melting point	: Not available
Freezing point	: Not available
Boiling point	: > 200 °C
Flash point	: > 200 °C
Flammability	: Not flammable
Explosive limits	: Not available
Vapour pressure	: < 0.01 Pa @ 25°C
Vapour pressure at 50°C	: Not available
Relative vapour density at 20°C	: Not available
Relative density	: 1.22 @ 20°C
Density	: 1.21 g/cm ³ @ 20°C
Solubility	: Not available
Partition coefficient n-octanol/water (Log Kow)	: Not available
Auto-ignition temperature	: Not available
Decomposition temperature	: > 230 °C
Viscosity, kinematic	: 28.926 mm ² /s
Viscosity, dynamic	: 35 mPa·s @ 25°C
Explosive properties	: Not available

9.2. Other information

Particle characteristics	: Not applicable
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SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions of use.

10.3. Possibility of hazardous reactions

None under normal use. Decomposition may occur on exposure to conditions or materials listed below.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

Acids. Amines. Bases. Water.

10.6. Hazardous decomposition products

In combustion emits toxic fumes.

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According REACH Regulation 1907/2006 as retained in UK law by UK REACH SI 2019 No. 758 as amended

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified (Based on available data, the classification criteria are not met)
Acute toxicity (dermal) : Not classified (Based on available data, the classification criteria are not met)
Acute toxicity (inhalation) : Inhalation:dust,mist: Harmful if inhaled.

Altro Flexiflow Classic Hardener	
ATE UK (dust, mist)	1.5 mg/l/4h
Diphenylmethane-4,4-Diisocyanate (MDI) Isomers (9016-87-9)	
LD50 oral rat	10000
LD50 dermal rabbit	9400 nl/kg
LC50 Inhalation - Rat [ppm]	4500 ppm
LC50 Inhalation - Rat (Dust/Mist)	1.5 mg/l/4h
LC50 Inhalation - Rat (Vapours)	11 mg/l/4h
Reaction mass of 4,4-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate (26447-40-5)	
LD50 oral rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: other:
LC50 Inhalation - Rat	> 2.24 mg/l
Skin corrosion/irritation	: Causes skin irritation.
Serious eye damage/irritation	: Causes serious eye irritation.
Respiratory or skin sensitisation	: May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.
Germ cell mutagenicity	: Not classified (Based on available data, the classification criteria are not met)
Carcinogenicity	: Suspected of causing cancer.
Reproductive toxicity	: Not classified (Based on available data, the classification criteria are not met)
STOT-single exposure	: May cause respiratory irritation.
Diphenylmethane-4,4-Diisocyanate (MDI) Isomers (9016-87-9)	
STOT-single exposure	May cause respiratory irritation.
Reaction mass of 4,4-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate (26447-40-5)	
STOT-single exposure	May cause respiratory irritation.
STOT-repeated exposure	: May cause damage to organs through prolonged or repeated exposure.
Diphenylmethane-4,4-Diisocyanate (MDI) Isomers (9016-87-9)	
LOAEC (inhalation, rat, vapour, 90 days)	0.23 mg/m ³ air (2 years, 17 h/day, 5 days / week)
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.
Reaction mass of 4,4-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate (26447-40-5)	
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.
Aspiration hazard	: Not classified (Based on available data, the classification criteria are not met)
Altro Flexiflow Classic Hardener	
Viscosity, kinematic	28.926 mm ² /s

Other information

No additional information available

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According REACH Regulation 1907/2006 as retained in UK law by UK REACH SI 2019 No. 758 as amended

SECTION 12: Ecological information

12.1. Toxicity

Hazardous to the aquatic environment, short-term (acute) : Not classified (Based on available data, the classification criteria are not met)

Hazardous to the aquatic environment, long-term (chronic) : Not classified (Based on available data, the classification criteria are not met)

Diphenylmethane-4,4-Diisocyanate (MDI) Isomers (9016-87-9)

LC50 - Fish [1]	> 100 mg/l LL50 - Test species: Freshwater fish (Danio rerio)
EC50 - Crustacea [1]	> 9 mg/l EL50 - Test species: Daphnia magna
EC50 72h - Algae [1]	≥ 100 mg/l EL50 - Test species: Desmodesmus subspicatus
NOEC chronic crustacea	≥ 10 mg/l 21 Days - Test species: Daphnia magna

Reaction mass of 4,4-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate (26447-40-5)

NOEC (chronic)	≥ 10 mg/l Test organisms (species): Duration: '21 d'
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12.2. Persistence and degradability

Altro Flexiflow Classic Hardener

Persistence and degradability	Not rapidly degradable
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Diphenylmethane-4,4-Diisocyanate (MDI) Isomers (9016-87-9)

Persistence and degradability	Not readily biodegradable.
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Reaction mass of 4,4-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate (26447-40-5)

Persistence and degradability	Not rapidly degradable
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12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

Altro Flexiflow Classic Hardener

This substance does not meet the PBT criteria of UK REACH regulation, annex XIII

This substance does not meet the vPvB criteria of UK REACH regulation, annex XIII

Component

Diphenylmethane-4,4-Diisocyanate (MDI) Isomers (9016-87-9)	This substance does not meet the PBT criteria of UK REACH regulation, annex XIII This substance does not meet the vPvB criteria of UK REACH regulation, annex XIII
Reaction mass of 4,4-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate (26447-40-5)	This substance does not meet the PBT criteria of UK REACH regulation, annex XIII This substance does not meet the vPvB criteria of UK REACH regulation, annex XIII

12.6. Other adverse effects

Ozone : Not classified (Based on available data, the classification criteria are not met)

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According REACH Regulation 1907/2006 as retained in UK law by UK REACH SI 2019 No. 758 as amended

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional waste regulation	: Disposal must be done according to official regulations.
Waste treatment methods	: Must follow special treatment according to local regulation.
HP Code	: HP5 - "Specific Target Organ Toxicity (STOT)/Aspiration Toxicity:" waste which can cause specific target organ toxicity either from a single or repeated exposure, or which cause acute toxic effects following aspiration. HP6 - "Acute Toxicity:" waste which can cause acute toxic effects following oral or dermal administration, or inhalation exposure. HP7 - "Carcinogenic:" waste which induces cancer or increases its incidence HP4 - "Irritant – skin irritation and eye damage:" waste which on application can cause skin irritation or damage to the eye. HP13 - "Sensitising:" waste which contains one or more substances known to cause sensitising effects to the skin or the respiratory organs.

SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / ADN / RID

ADR	IMDG	IATA	ADN	RID
14.1. UN number				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.2. UN proper shipping name				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Transport document description				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.3. Transport hazard class(es)				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.4. Packing group				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
No supplementary information available				

14.6. Special precautions for user

Overland transport

Not applicable

Transport by sea

Not applicable

Air transport

Not applicable

Inland waterway transport

Not applicable

Rail transport

Not applicable

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According REACH Regulation 1907/2006 as retained in UK law by UK REACH SI 2019 No. 758 as amended

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. National regulations

UK REACH Annex XVII (Restriction List)

This product contains no substance(s) listed on UK REACH Annex XVII (Restriction List) equal to or above the level of SDS disclosure

UK REACH Annex XIV (Authorisation List)

This product contains no substance(s) listed on UK REACH Annex XIV (Authorisation List) equal to or above the 0.1% level of disclosure

UK REACH Candidate List (SVHC)

This product contains no substance(s) listed on the UK REACH Candidate List (SVHC).

GB PIC Regulation (Prior Informed Consent)

This product contains no substance(s) listed on the GB PIC List equal to or above the level of SDS disclosure

POP Regulation (Persistent Organic Pollutants)

This product contains no substance(s) listed on the GB POP List equal to or above the level of SDS disclosure

Ozone Regulation (S.I. No. 168 of 2015)

This product contains no substance(s) listed on the GB Ozone Depletion List equal to or above the level of SDS disclosure

Control of Poisons and Explosives Precursors Act

This product contains no substance(s) listed as a reportable poison on the Control of Poisons and Explosives Precursors Regulations equal to or above the level of SDS disclosure

This product contains no substance(s) listed as a regulated poison on the Control of Poisons and Explosives Precursors Regulations equal to or above the level of SDS disclosure

This product contains no substance(s) listed as a reportable explosive precursor on the Control of Poisons and Explosives Precursors Regulations equal to or above the level of SDS disclosure

This substance is not listed as a regulated poison on the Control of Poisons and Explosives Precursors Regulations

Drug Precursors Regulation (EC 273/2004)

This product contains no substance(s) listed on the GB Drug Precursors List equal to or above the level of SDS disclosure

15.1.2. Other Information

15.2. Chemical safety assessment

No additional information available

SECTION 16: Other information

Full text of H- and EUH-statements:

Acute Tox. 4 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) Category 4
Carc. 2	Carcinogenicity, Category 2
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
Resp. Sens. 1	Respiratory sensitisation, Category 1
Skin Irrit. 2	Skin corrosion/irritation, Category 2
Skin Sens. 1	Skin sensitisation, Category 1
STOT RE 2	Specific target organ toxicity – Repeated exposure, Category 2
STOT SE 3	Specific target organ toxicity – Single exposure, Category 3, Respiratory tract irritation

Altro Flexiflow Classic Hardener

Safety Data Sheet

According REACH Regulation 1907/2006 as retained in UK law by UK REACH SI 2019 No. 758 as amended

Full text of H- and EUH-statements:	
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer.
H373	May cause damage to organs through prolonged or repeated exposure.

Safety Data Sheet (SDS), UK

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.