

according to Regulation (EC) No 1907/2006

NATURAL 4-HYDROXY-2,5-DIMETHYL-3(2H)-FURANONE 20% IN ETHANOL

Revision date: 02.04.2025 Product code: 317460 Page 1 of 13

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

1.1. Product identifier

NATURAL 4-HYDROXY-2,5-DIMETHYL-3(2H)-FURANONE 20% IN ETHANOL

UFI: YC6C-6WMC-300U-W7EC

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

Use of the substance/mixture

For Flavour use for food and feed only

1.3. Details of the supplier of the safety data sheet

Company name: Axxence Aromatic GmbH

Street: Tackenweide 28

Place: D-46446 Emmerich am Rhein

Telephone: + 49 2822 68561 0 Telefax: + 49 2822 68561 39

E-mail: info@axxence.com

Contact person: Safety Team Telephone: + 49 2822 68561 0

E-mail: safety-documentation@axxence.com

Internet: www.axxence.de
Responsible Department: Safety Management

1.4. Emergency telephone +49 2822 68561 99

number:

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008

Flam. Liq. 2; H225 Skin Corr. 1B; H314 Eye Dam. 1; H318 Skin Sens. 1; H317

Full text of hazard statements: see SECTION 16.

2.2. Label elements

Regulation (EC) No 1272/2008

Hazard components for labelling

NATURAL 4-HYDROXY-2,5-DIMETHYL-3(2H)-FURANONE

Signal word: Danger

Pictograms:







Hazard statements

H225 Highly flammable liquid and vapour.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.

Precautionary statements

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No

smoking.

P233 Keep container tightly closed.

P240 Ground and bond container and receiving equipment.
P241 Use explosion-proof electrical/ventilating/lighting equipment.



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P242 Use non-sparking tools.

P243 Take action to prevent static discharges.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P264 Wash hands thoroughly after handling.

P272 Contaminated work clothing should not be allowed out of the workplace.

P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing

protection.

P302+P352 IF ON SKIN: Wash with plenty of Water and soap.

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with

water or shower.

P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
P362+P364 Take off contaminated clothing and wash it before reuse.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P310 Immediately call a POISON CENTER/doctor.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if

present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER/doctor.

P370+P378 In case of fire: Use Extinguishing powder / Carbon dioxide (CO2) to extinguish.

P403+P235 Store in a well-ventilated place. Keep cool.

P405 Store locked up.

P501 Dispose of contents/container to organic waste.

2.3. Other hazards

Contains no substances of very high concern (SVHC) which are included in the Candidate List according to Article 59 of REACH.

Contains no substances of very high concern (SVHC) which are subject to authorisation according to Annex XIV of REACH.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Relevant ingredients

CAS No	Chemical name			Quantity	
	EC No	Index No	REACH No		
	Classification (Regulation (EC) No	1272/2008)			
64-17-5	ethanol, ethyl alcohol				
	200-578-6	603-002-00-5	01-2119457610-43		
	Flam. Liq. 2, Eye Irrit. 2; H225 H319				
3658-77-3	NATURAL 4-HYDROXY-2,5-DIMETHYL-3(2H)-FURANONE			20 - 22,5 %	
	222-908-8				
	Acute Tox. 4, Skin Corr. 1B, Eye Dam. 1, Skin Sens. 1A; H302 H314 H318 H317				

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

Specific Conc. Limits, M-factors and ATE

CAS No	EC No	Chemical name	Quantity	
	Specific Conc. Limits, M-factors and ATE			
64-17-5	200-578-6	ethanol, ethyl alcohol	77,5 - 80 %	
	inhalation: LC50 = 121 mg/l (vapours); dermal: LD50 = 17100 mg/kg; oral: LD50 = 10470 mg/kg			
3658-77-3	222-908-8	NATURAL 4-HYDROXY-2,5-DIMETHYL-3(2H)-FURANONE	20 - 22,5 %	
	oral: LD50 = 1608 mg/kg			

SECTION 4: First aid measures



according to Regulation (EC) No 1907/2006

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4.1. Description of first aid measures

General information

First aider: Pay attention to self-protection! Remove affected person from the danger area and lay down.

After inhalation

Provide fresh air. When in doubt or if symptoms are observed, get medical advice.

After contact with skin

After contact with skin, wash immediately with plenty of water and soap. Take off immediately all contaminated clothing and wash it before reuse. Medical treatment necessary.

After contact with eyes

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist.

After ingestion

Rinse mouth immediately and drink 1 glass of of water. Do NOT induce vomiting. Adverse human health effects and symptoms: Gastric perforation. Call a physician immediately. Do not allow a neutralisation agent to be drunk

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

No information available.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

Water spray jet, Carbon dioxide (CO2), Foam, Extinguishing powder.

5.2. Special hazards arising from the substance or mixture

Highly flammable. Vapours can form explosive mixtures with air.

5.3. Advice for firefighters

Wear a self-contained breathing apparatus and chemical protective clothing. Full protection suit.

Additional information

Use water spray jet to protect personnel and to cool endangered containers. Suppress gases/vapours/mists with water spray jet. Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General advice

Remove all sources of ignition. Do not breathe gas/fumes/vapour/spray. Avoid contact with skin, eyes and clothes. Use personal protection equipment.

6.2. Environmental precautions

Do not allow uncontrolled discharge of product into the environment. Explosion risk.

6.3. Methods and material for containment and cleaning up

For cleaning up

Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents). Treat the recovered material as prescribed in the section on waste disposal.

Other information

Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents). Treat the recovered material as prescribed in the section on waste disposal.



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6.4. Reference to other sections

Safe handling: see section 7

Personal protection equipment: see section 8

Disposal: see section 13

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling

If handled uncovered, arrangements with local exhaust ventilation have to be used. Do not breathe gas/fumes/vapour/spray.

Advice on protection against fire and explosion

Keep away from sources of ignition - No smoking. Take precautionary measures against static discharges. Vapours can form explosive mixtures with air.

Advice on general occupational hygiene

Remove contaminated, saturated clothing immediately. Draw up and observe skin protection programme. Wash hands and face before breaks and after work and take a shower if necessary. When using do not eat, drink, smoke, sniff. Remove contaminated, saturated clothing immediately. Draw up and observe skin protection programme. Wash hands and face before breaks and after work and take a shower if necessary. When using do not eat, drink, smoke, sniff.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Keep container tightly closed. Keep locked up. Store in a place accessible by authorized persons only. Provide adequate ventilation as well as local exhaustion at critical locations. Keep in a cool, well-ventilated place. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Hints on joint storage

Do not store together with: Oxidizing agent. Pyrophoric or self-heating substances.

7.3. Specific end use(s)

For Flavour use for food and feed only

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

DNEL/DMEL values

CAS No	Name of agent				
DNEL type	DNEL type		Effect	Value	
64-17-5	ethanol, ethyl alcohol				
Worker DNEL, long-term		inhalation	systemic	380-950 mg/m³	
Worker DNEL, long-term		dermal	systemic	343 mg/kg bw/day	
Consumer DNEL, long-term		inhalation	systemic	114 mg/m³	
Consumer DNEL, long-term		dermal	systemic	206 mg/kg bw/day	
Consumer DNEL, long-term		oral	systemic	87 mg/kg bw/day	
Worker DNEL, acute		inhalation	local	1900 mg/m³	
Consumer DNEL, acute		inhalation	local	950 mg/m³	



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PNEC values

CAS No	Name of agent			
Environment	al compartment	Value		
64-17-5	ethanol, ethyl alcohol			
Freshwater		0,96 mg/l		
Marine water	r	0,79 mg/l		
Freshwater s	sediment	3,6 mg/kg		
Marine sediment		2,9 mg/kg		
Secondary poisoning		380 mg/kg		
Micro-organisms in sewage treatment plants (STP)		580 mg/l		
Soil		0,63 mg/kg		

8.2. Exposure controls









Appropriate engineering controls

If handled uncovered, arrangements with local exhaust ventilation have to be used. Do not breathe gas/fumes/vapour/spray.

Individual protection measures, such as personal protective equipment

Eye/face protection

Suitable eye protection: goggles.

Hand protection

When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits. The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves. Suitable gloves type Butyl caoutchouc (butyl rubber) / FKM (fluoro rubber)

Skin protection

Flame-retardant protective clothing. Wear anti-static footwear and clothing

Respiratory protection

In case of inadequate ventilation wear respiratory protection.

Thermal hazards

Flame-retardant protective clothing. Wear anti-static footwear and clothing.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state: Liquid

Colour:

Odour: characteristic

Melting point/freezing point:

Boiling point or initial boiling point and

>78 °C

boiling range:

Flammability: not applicable not applicable

Lower explosion limits: 3,1 vol. %
Upper explosion limits: 27,7 vol. %
Flash point: >13 °C



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Auto-ignition temperature: 368 °C

Decomposition temperature: not determined pH-Value: not determined

Solubility in other solvents

not determined

Partition coefficient n-octanol/water: not determined Vapour pressure: 58 hPa

(at 20 °C)

Vapour pressure: 293 hPa

(at 50 °C)

Density: 0,86 g/cm³
Relative vapour density: not determined

9.2. Other information

Information with regard to physical hazard classes

Explosive properties

not explosive according to EU A.14

Oxidizing properties

The product is not: oxidising.

Other safety characteristics

Evaporation rate: not determined Solvent content: 80,00 % Solid content: 20,00 %

SECTION 10: Stability and reactivity

10.1. Reactivity

Highly flammable.

10.2. Chemical stability

The product is stable under storage at normal ambient temperatures.

10.3. Possibility of hazardous reactions

No known hazardous reactions.

10.4. Conditions to avoid

Keep away from sources of heat (e.g. hot surfaces), sparks and open flames. Vapours can form explosive mixtures with air.

10.5. Incompatible materials

No information available.

10.6. Hazardous decomposition products

No known hazardous decomposition products.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity

Based on available data, the classification criteria are not met.

ATEmix calculated

ATE (oral) > 5000 mg/kg; ATE (dermal) > 2000 mg/kg; ATE (inhalation vapour) > 20 mg/l; ATE (inhalation dust/mist) > 5 mg/l



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CAS No	Chemical name					
	Exposure route	Dose		Species	Source	Method
64-17-5	ethanol, ethyl alcohol					
	oral	LD50 mg/kg	10470	Rat	REACH Dossier	OECD 401
	dermal	LD50 mg/kg	17100	Rabbit	REACH Dossier	
	inhalation (4 h) vapour	LC50	121 mg/l	Rat	REACH Dossier	OECD 403
3658-77-3	NATURAL 4-HYDROXY-2,5-DIMETHYL-3(2H)-FURANONE					
	oral	LD50 mg/kg	1608	Mouse	REACH registration	OECD Guideline 401

Irritation and corrosivity

Skin corrosion/irritation: Causes severe skin burns and eye damage.

Serious eye damage/eye irritation: Causes serious eye damage.

Sensitising effects

May cause an allergic skin reaction. (NATURAL 4-HYDROXY-2,5-DIMETHYL-3(2H)-FURANONE)

Carcinogenic/mutagenic/toxic effects for reproduction

Germ cell mutagenicity: Based on available data, the classification criteria are not met.

Carcinogenicity: Based on available data, the classification criteria are not met.

Reproductive toxicity: Based on available data, the classification criteria are not met.

STOT-single exposure

Based on available data, the classification criteria are not met.

STOT-repeated exposure

Based on available data, the classification criteria are not met.

Aspiration hazard

Based on available data, the classification criteria are not met.

11.2. Information on other hazards

Endocrine disrupting properties

No information available.

Further information

The mixture is classified as hazardous according to regulation (EC) No 1272/2008 [CLP].

SECTION 12: Ecological information

12.1. Toxicity

The product is not: Ecotoxic.



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CAS No	Chemical name						
	Aquatic toxicity	Dose		[h] [d]	Species	Source	Method
64-17-5	ethanol, ethyl alcohol						
	Acute fish toxicity	LC50 mg/l	14200	96 h	Pimephales promelas (fathead minnow)	REACH Dossier	US EPA method E03-05
	Acute algae toxicity	ErC50	275 mg/l	72 h	Chlorella vulgaris	REACH Dossier	OECD 201
	Acute crustacea toxicity	EC50 mg/l	5012	48 h	Ceriodaphnia spec	REACH Dossier	ASTM E729-80
	Fish toxicity	NOEC	250 mg/l	5 d	Danio rerio (zebrafish)	REACH Dossier	OECD 212
	Crustacea toxicity	NOEC	9,6 mg/l	9 d	Daphnia magna	REACH Dossier	
	Acute bacteria toxicity	EC50 mg/l ()	>1000	3 h	Activated sludge	REACH Dossier	OECD 209
3658-77-3	NATURAL 4-HYDROXY-2,5-DIMETHYL-3(2H)-FURANONE						
	Acute algae toxicity	ErC50	194 mg/l	72 h	Desmodesmus subspicatus	REACH Registration	OECD 201
	Acute crustacea toxicity	EC50	6,8 mg/l		Daphnia magna (Big water flea)	REACH Registration	OECD 202

12.2. Persistence and degradability

The product has not been tested.

CAS No	Chemical name						
	Method	Value	d	Source			
	Evaluation	·	-	-			
64-17-5	ethanol, ethyl alcohol						
	OECD 301B	95%	28	REACH Dossier			
	Readily biodegradable (according to OECD criteria).						
	OECD 301B	84%	20	REACH Dossier			
	Readily biodegradable (according to OECD criteria).						
	OECD 301B	74%	5	REACH Dossier			
	Readily biodegradable (according to OECD criteria).						
3658-77-3	NATURAL 4-HYDROXY-2,5-DIMETHYL-3(2H)-FURANONE						
		67%	7	REACH Registration			
	Biodegradable.						
		96%	28	REACH Registration			
	Biodegradable.	-	· ·				

12.3. Bioaccumulative potential

The product has not been tested.

Partition coefficient n-octanol/water

CAS No	Chemical name	Log Pow
64-17-5	ethanol, ethyl alcohol	-0,3
3658-77-3	NATURAL 4-HYDROXY-2,5-DIMETHYL-3(2H)-FURANONE	0,95

BCF

CAS No	Chemical name	BCF	Species	Source
64-17-5	ethanol, ethyl alcohol	1-4,5	Cyprinus carpio (Common Carp)	REACH Registration

12.4. Mobility in soil

The product has not been tested.

12.5. Results of PBT and vPvB assessment



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The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

The product has not been tested.

12.6. Endocrine disrupting properties

This product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms as no components meets the criteria.

12.7. Other adverse effects

No information available.

Further information

Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal recommendations

Do not allow to enter into surface water or drains. Dispose of waste according to applicable legislation.

List of Wastes Code - residues/unused products

160305 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; off-specification batches and unused

products; organic wastes containing hazardous substances; hazardous waste

List of Wastes Code - used product

160305 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; off-specification batches and unused

products; organic wastes containing hazardous substances; hazardous waste

List of Wastes Code - contaminated packaging

150110 WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND

PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED; packaging (including separately collected municipal packaging waste); packaging containing residues of or contaminated by

hazardous substances; hazardous waste

Contaminated packaging

Wash with plenty of water. Completely emptied packages can be recycled.

SECTION 14: Transport information

Land transport (ADR/RID)

14.1. UN number or ID number: UN 2924

14.2. UN proper shipping name: FLAMMABLE LIQUID, CORROSIVE, N.O.S.

14.3. Transport hazard class(es):314.4. Packing group:IIHazard label:3+8



Classification code: FC
Special Provisions: 274
Limited quantity: 1 L
Excepted quantity: E2
Transport category: 2
Hazard No: 338
Tunnel restriction code: D/E

Other applicable information (land transport)

E2

Inland waterways transport (ADN)

14.1. UN number or ID number: UN 2924

14.2. UN proper shipping name: FLAMMABLE LIQUID, CORROSIVE, N.O.S.



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14.3. Transport hazard class(es):314.4. Packing group:IIHazard label:3+8



Classification code: FC
Special Provisions: 274
Limited quantity: 1 L
Excepted quantity: E2

Other applicable information (inland waterways transport)

E2

Marine transport (IMDG)

14.1. UN number or ID number: UN 2924

14.2. UN proper shipping name: FLAMMABLE LIQUID, CORROSIVE, N.O.S.

14.3. Transport hazard class(es):314.4. Packing group:IIHazard label:3+8



Special Provisions: 274
Limited quantity: 1 L
Excepted quantity: E2
EmS: F-E, S-C

Air transport (ICAO-TI/IATA-DGR)

14.1. UN number or ID number: UN 2924

14.2. UN proper shipping name: FLAMMABLE LIQUID, CORROSIVE, N.O.S.

14.3. Transport hazard class(es):314.4. Packing group:IIHazard label:3+8



Special Provisions:

Limited quantity Passenger:

Passenger LQ:

Excepted quantity:

A3

0.5 L

Y340

Excepted quantity:

E2

IATA-packing instructions - Passenger:352IATA-max. quantity - Passenger:1 LIATA-packing instructions - Cargo:363IATA-max. quantity - Cargo:5 L

14.5. Environmental hazards

ENVIRONMENTALLY HAZARDOUS: No

14.6. Special precautions for user

Warning: Combustible liquid. strongly corrosive.

14.7. Maritime transport in bulk according to IMO instruments

not applicable

SECTION 15: Regulatory information



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

EU regulatory information

Restrictions on use (REACH, annex XVII):

Entry 3, Entry 40

Directive 2010/75/EU on industrial

80 % (688 g/l)

emissions:

Directive 2004/42/EC on VOC in

100 % (860 g/l)

paints and varnishes:

Information according to Directive

P5c FLAMMABLE LIQUIDS

2012/18/EU (SEVESO III):

Additional information

To follow: 850/2004/EC, 79/117/EEC, 689/2008/EC

National regulatory information

Employment restrictions: Observe restrictions to employment for juveniles according to the 'juvenile

work protection guideline' (94/33/EC).

Water hazard class (D): 1 - slightly hazardous to water

Skin resorption/Sensitization: Causes allergic hypersensitivity reactions.

15.2. Chemical safety assessment

Chemical safety assessments for substances in this mixture were not carried out.

SECTION 16: Other information

Changes

This data sheet contains changes from the previous version in section(s): 1,2,4,5,6,7,8,9,11,13,14,15,16.



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Abbreviations and acronyms

Flam. Liq: Flammable liquid Acute Tox: Acute toxicity Skin Corr: Skin corrosion Eye Dam: Eye damage Eye Irrit: Eye irritation Skin Sens: Skin sensitisation

ADR: Accord européen sur le transport des marchandises dangereuses par Route

(European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonized System of Classification and Labelling of Chemicals EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service LC50: Lethal concentration, 50%

LD50: Lethal dose, 50%

CLP: Classification, labelling and Packaging

REACH: Registration, Evaluation and Authorization of Chemicals

GHS: Globally Harmonised System of Classification, Labelling and Packaging of Chemicals

UN: United Nations

DNEL: Derived No Effect Level
DMEL: Derived Minimal Effect Level
PNEC: Predicted No Effect Concentration

ATE: Acute toxicity estimate LL50: Lethal loading, 50% EL50: Effect loading, 50%

EC50: Effective Concentration 50%

ErC50: Effective Concentration 50%, growth rate NOEC: No Observed Effect Concentration

BCF: Bio-concentration factor

PBT: persistent, bioaccumulative, toxic vPvB: very persistent, very bioaccumulative

RID: Regulations concerning the international carriage of dangerous goods by rail

ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures)

EmS: Emergency Schedules MFAG: Medical First Aid Guide

ICAO: International Civil Aviation Organization

MARPOL: International Convention for the Prevention of Marine Pollution from Ships

IBC: Intermediate Bulk Container VOC: Volatile Organic Compounds SVHC: Substance of Very High Concern

For abbreviations and acronyms, see table at http://abbrev.esdscom.eu

For abbreviations and acronyms, see: ECHA Guidance on information requirements and chemical safety

assessment, chapter R.20 (Table of terms and abbreviations).

Classification for mixtures and used evaluation method according to Regulation (EC) No 1272/2008 [CLP]

O	
Classification	Classification procedure
Flam. Liq. 2; H225	On basis of test data
Skin Corr. 1B; H314	Calculation method
Eye Dam. 1; H318	Calculation method
Skin Sens. 1; H317	Calculation method

Relevant H and EUH statements (number and full text)



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H225	Highly flammable liquid and vapour.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eve irritation

Further Information

The information is based on the present level of our knowledge. It does not, however, give assurance of product properties and establishes no contract legal rights. The receiver of our product is singularly responsible for adhering to existing laws and regulations.

(The data for the relevant ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)