

Date: 25 February 2014

Supersedes: 20 May 2013

1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Trade name / substance name ETHANOL FUEL E85

Company product code E85

REACH registration number Mixture, no registration number

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

Intended use Motor fuel
Not to be used as cleaning agent or solvent

1.3 Details of the supplier of the safety data sheet

Manufacturer, importer, other undertaking

North European Oil Trade Oy

Street address Salomonkatu 17 B

Postcode and post office 00100 Helsinki

Post-office box PL 55

Postcode and post office 00088 S-RYHMÄ

Telephone +358 10 768 0850

E-mail address +358 10 768 0859

Finnish Business ID (Y code) 1801056-5

1.4 Emergency telephone number

09-471977 tai 09-4711
Poison Information centre (in Finland), PL 790 (Tukholmankatu 17)
00029 HUS

European Emergency Number 112

2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

1272/2008 (CLP)

Flam. Liq. 1, H224
Skin Irrit. 2, H315
STOT SE 3, H336
Asp. Tox. 1, H304
Carc. 1B, H350
Muta. 1B, H340
Repr. 2, H361d
Aquatic Chronic 2, H411

67/548/ETY – 1999/45/EY (DSD/DPD)

F+, T, N: R12-38-45-62-63-65-67-51/53

2.2 Label elements

1272/2008 (CLP)

GHS02-GHS07-GHS08-GHS09



Signal word: **DANGER**

Includes: Gasoline

Hazard statements

H224	Extremely flammable liquid and vapour.
H315	Skin irritant.
H336	May cause drowsiness or dizziness.
H304	May be fatal if swallowed and enters airways.
H350	May cause cancer.
H340	May cause genetic defects.
H361d	Suspected of damaging the unborn child.
H411	Toxic to aquatic life with long lasting effects.

Precautionary statements

P210	Keep away from heat/sparks/open flames/hot surfaces – No smoking.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310	IF SWALLOWED: Immediately call a POISON CENTRE or doctor/physician
P331	Do NOT induce vomiting.
P403+P233	Stored in a well-ventilated place. Keep container tightly closed.
P273	Avoid release to the environment.

2.3 Other hazards

Highly volatile. Vapours are heavier than air and may form explosive mixtures with air.

May ignite on surfaces if the surface temperature is higher than the flash point. Vapours in the tank may ignite if the temperature rises above flash point and the air/gas mixture concentration is within the explosion limits. Electrostatic sparks are possible in connection with pumping. Electrostatic sparks may cause fire.

Risk of soil and groundwater contamination.

3: COMPOSITION/INFORMATION ON INGREDIENTS

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3.2 Hazardous ingredients

Name of the ingredient	CAS number	EINECS number	REACH registration number	Concentration	Classification
Ethanol	64-17-5	200-578-6	01-2119457610 43	70 – 85 %	CLP: Flam. Liq. 2, H225 DSD/DPD: F: R11
Gasoline	86290-81-5	289-220-8	01-2119471335-39	15 – 30 %	CLP: Flam. Liq. 1, H224; Asp. Tox. 1, H304; Skin Irrit. 2, H315; STOT SE 3, H336; Muta. 1B, H340; Carc. 1B, H350; Repr. 2, H361fd, Aquatic Chronic 2, H411 DSD/DPD: F+, T, N: R12-38-45-46-62-63-65-67-51/53
Methyl-tert-butyl ether (MTBE)	1634-04-4	216-653-1	01-2119452786-27	< 7 %	CLP: Flam. Liq. 2, H225; Skin Irrit. 2, H315 DSD/DPD: F, Xi: R11-38
Ethyl-tert-butyl ether (ETBE)	637-92-3	211-309-7	01-2119452785-29	< 7 %	CLP: Flam. Liq. 2, H225; STOT SE 3, H336 DSD/DPD: F: R11-67
Tert-amyl-methyl ether (TAME)	994-05-8	213-611-4	01-2119453236-41	< 7 %	CLP: Flam. Liq. 2, H225; Acute Tox. 4, H302; STOT SE 3, H336 DSD/DPD: F, Xn: R11-22-67
Tert-amyl-ethyl ether (TAEE)	919-94-8	-	01-2119489926-16	≤ 3 %	CLP: Flam. Liq. 2, H225; Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H336 DSD/DPD: F, Xi: R11-36/38-67
Butane	67-56-1	200-659-6	01-2119433307 44	≤ 5 %	CLP: Flam. Gas 1, H220; Press. Gas DSD/DPD: F+: R12
Isobutanol	78-83-1	201-148-0	-	ca. 0,4 %	CLP: Flam. Liq. 3, H226; STOT SE 3, H335; Skin Irrit. 2, H315; Eye Dam. 1, H318; STOT SE 3, H336 DSD/DPD: Xi: R10-37/38-41-67
Gasoline component (CAS 86890-81-5) contains:					

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Benzene	71-43-2	200-753-7		≤ 1 %	CLP: Flam. Liq. 2, H225; Carc. 1A, H350; Muta. 1B, H340; STOT RE 1, H372; Asp. Tox. 1, H304; Eye Irrit. 2, H319; Skin Irrit. 2, H315 DSD/DPD: T, F: R11-36/38-48/23/24/25-45-46-65
Toluene	108-88-3	203-625-9		4,5 – 15 %	CLP: Flam. Liq. 2, H225; Repr. 2, H361d; Asp. Tox. 1, H304; STOT RE 2, H373; STOT SE 3, H336; Skin Irrit. 2, H315 DSD/DPD: F, Xn: R11-38-48/20-63-65-67
n-Hexane	110-54-3	203-777-6		< 5 %	CLP: Flam. Liq. 2, H225; Repr. 2, H361f; Asp. Tox. 1, H304; STOT RE 2, H373; STOT SE 3, H336; Skin Irrit. 2, H315; Aquatic Chronic 2, H411 DSD/DPD: F, Xn, N: R11-38-48/20-62-65-67-51/53

3.3 Other information

Mixture of petroleum products, ethanol, isobutanol and additives. MTBE, ETBE and TAME concentration ≤ 4.5 vol%, total ethers ≤ 4.5 vol%.

4: FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation

In case of product inhalation, remove the patient to fresh air. If rapid recovery does not follow, seek medical advice.

Skin contact

Remove contaminated clothing. In case of skin contact, rinse immediately with plenty of water for several minutes, followed by washing of the affected areas with soap and water. If redness, swelling, pain and/or other skin reactions occur, consult a physician.

Eye contact

Rinse immediately with plenty of water for at least 15 minutes, also under the eyelids. If prolonged irritation, blurred vision or other symptoms occur, consult an eye specialist.

Ingestion

DO NOT INDUCE VOMITING: seek medical advice immediately. If spontaneous vomiting occurs, help to keep the victim's head down so that aspiration into the lungs will not occur (danger of chemical pneumonitis). If any of the following symptoms should occur within the next six hours, immediately seek medical advice: fever (> 37 °C), breathing difficulties, dyspnoea, continued coughing or wheezing. Do not give the patient anything to eat.

4.2 Most important symptoms and effects, both acute and delayed

Harmful by inhalation. Aspiration into the lungs may cause fatal chemical pneumonitis. If the product has found its way to the lungs, the following symptoms are possible: coughing, asphyxia, wheezing, breathing difficulties, dyspnoea, shortness of breath, and/or fever. Respiratory symptoms may occur immediately or several hours after exposure.

4.3 Indication of any immediate medical attention and special treatment needed

Symptomatic treatment.

5: FIREFIGHTING MEASURES

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5.1	Extinguishing media
	Suitable extinguishing media Foam or powder. Sand or earth is suitable for extinguishing of minor fires. Heavy foam and water mist should only be used by professional firefighters.
	Unsuitable extinguishing media Powerful water jet.
5.2	Special hazards arising from the substance or mixture
	Flammable liquid and vapour. Explosion risk due to pressure increase if product containers or tanks are subjected to fire. Hazardous combustion gases may contain: a complex mixture of airborne solid and liquid particles and gases (smoke), carbon monoxide, sulphur oxides, various organic and inorganic compounds. Carbon dioxide formation is possible in case of incomplete combustion. The product floats and can be reignited to burn on water surface.
5.3	Advice for firefighters
	Cool product containers and tanks near the fire with water spray from a sufficiently safe distance. Prevent the water used from reaching surface and ground waters.
6: ACCIDENTAL RELEASE MEASURES	
6.1	Personal precautions, protective equipment and emergency procedures
	Evacuate people upwind from the spill area. Ensure adequate ventilation, especially indoors. Vapours are heavier than air and spread along the surface of the ground. Keep unauthorised personnel from entering the danger zone. Avoid skin contact and oil mist aspiration. Use appropriate personal protection equipment. Remove all ignition sources. Take precautionary measures to avoid electrostatic discharges. Ensure grounding of electrical equipment.
6.2	Environmental precautions
	Stop the leak if it can be done safely. Prevent contamination of the environment by the product and firefighting water. Liquid product must be contained before it contaminates sewers, soil and waterways. Immediately notify the local authorities about any damage.
6.3	Methods and material for containment and cleaning up
	Immediately start clean-up of the liquid product and contaminated soil. The liquid is to be collected by pumping; small volumes can be absorbed with inert materials (e.g. sand, diatomaceous earth, commercial absorbent) and collected in tightly closable containers for proper disposal. Pay attention to the fire and health hazards caused by the product. If possible, extensive leaks into water bodies should be limited by floating booms or other mechanical means. Use of dispersants should be co-ordinated with an expert; where appropriate, local authorities must approve their use.
6.4	Reference to other sections
	Safe handling: see Section 7. Personal protective equipment: see Section 8. Disposal: see Section 13.
7 : HANDLING AND STORAGE	
7.1	Precautions for safe handling
	Handle and store away from all sources of heat or ignition. Take precautionary measures (grounding) against static discharges. Concentrations in air must be kept below any lower explosive limits. Only use in closed systems or ensure adequate ventilation (use process enclosures or local exhaust ventilation if necessary). Avoid inhalation of vapours and contact with skin, eyes or clothing. Wash hands after handling. Eating, drinking, and smoking are prohibited while handling the product. If required, use personal protective equipment. During tank operations follow special instructions (risk of oxygen displacement, ethers and hydrocarbons).
7.2	Conditions for safe storage, including any incompatibilities
	Store in containers and areas suitable for the storage of combustible liquids. Small product batches are

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stored in tightly sealed containers impermeable to hydrocarbons. Recommended container materials or coatings: mild steel, stainless steel Do not store in unmarked containers or vessels. Store away from all sources of heat or ignition and food and drink.

Use appropriate protective structures, such as collecting pools, loading/unloading station surfacing and sewerage systems to prevent leakage into the environment.

7.3 Specific end use(s)

None reported.

8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

National occupational exposure limit values

Petroleum spirits, group 3	100 mg/m ³ (8 h) HTP 2011/FIN
Benzene	1 ppm (8 h), 3.25 mg/m ³ (8 h) 48 mg/m ³ (15 min) Note: skin (can absorb through skin), binding limit value Vna 716/2000/FIN
n-Hexane	20 ppm (8 h), 72 mg/m ³ (8 h) Note: skin (can absorb through skin) HTP 2011/FIN
Methyl-tert-butyl ether	50 ppm (8 h) 100 ppm (15 min) HTP 2011/FIN
Ethyl-tert-butyl ether	5 ppm (8 h), 25 mg/m ³ (8 h) HTP 2011/FIN
Tert-amyl-methyl ether	20 ppm (8 h), 84 mg/m ³ (8 h) HTP 2011/FIN
Toluene	25 ppm (8 h), 81 mg/m ³ (8 h) 100 ppm (15 min), 380 mg/m ³ (15 min) Note: skin (can absorb through skin) HTP 2011/FIN
Ethanol	1,000 ppm (8 h), 1,900 mg/m ³ (8 h) 1,300 ppm (15 min), 2,500 mg/m ³ (15 min) HTP 2011/FIN
Butane	800 ppm (8 h) 1000 ppm (15 min), HTP 2012/FIN

Other limit values

Biological toluene limit: blood toluene concentration 500 nmol/l (BIOL 2011/FIN).

Individual limit values can be applied for hydrocarbons.

Occupational exposure monitoring method: SFS-EN 689, SFS-3861.

DNEL

No product chemical safety assessment carried out.

Substance	Exposure type	DNEL	Effect type	Exposed population
Gasoline	Inhalation, acute	1,300 mg/m ³ (15 min)	Systemic	Workers
	Inhalation, acute	1,100 mg/m ³ (15 min)	Local	
	Inhalation, chronic	840 mg/m ³ (8 h)		
	Inhalation, acute	1,200 mg/m ³ (15 min)	Systemic	General population exposed via the environment
	Inhalation, acute	640 mg/m ³ (15 min)	Local	
	Inhalation, chronic	180 mg/m ³ (24 h)		

PNEC

Unknown.

8.2 Exposure controls

Appropriate engineering controls

If possible, handle the product in closed systems. Ensure adequate ventilation. If required, use personal protective equipment and/or process enclosures or local exhaust ventilation.

Personal protection measures

Eye/face protection

Use tight-fitting safety goggles if splashing may occur or aerosol is formed. Use a face shield, if required.

Skin protection

Wear appropriate antistatic protective clothing. If splashing may occur, use chemical-resistant gloves, footwear and apron.

Hand protection

Wear appropriate chemical-resistant, impervious protective gloves. Recommended glove materials: e.g., nitrile rubber, neoprene and PVA. Breakthrough time > 480 min, protection index 6 (EN374). Change protection gloves regularly to avoid penetration problems. Note: PVA gloves do not withstand water and are not suitable for use in case of emergency.

Respiratory protection

Wear a respirator or half mask. Respirator: combined filter for organic cases and vapours, solid and liquid particles, filter type A2-P3. If use of filtering means is incompatible with the conditions (e.g., high concentrations, oxygen-poor conditions, confined space), use compressed-air or fresh-air breathing apparatus. The filter must be changed frequently enough.

Environmental exposure controls

Prevent product entry into sewers or the environment. Precautions must be taken against leakages by constructing collecting pools and sewerage systems as well as by surfacing the loading and unloading stations.

9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

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Appearance	Clear, low viscous liquid May be coloured to red
Odour	Typical
Odour threshold	Unknown
pH	6.5 – 9.0
Melting point/freezing point	Not applicable
Initial boiling point and boiling range	25–205 °C
Flash point	ca. 0 °C (estimate)
Evaporation rate	Unknown, highly volatile.
Flammability (solid, gas)	Unknown.
Upper/lower flammability or explosive limits	1 – ca. 19 vol% (calculated)
Vapour pressure	< 70 kPa
Vapour density	> 1,6 (20 °C, air = 1)
Relative density	0.75 mg/m ³ (20 °C water = 1)
Solubility(ies)	Ethanol fully soluble in water. Other components partly soluble in water.
Partition coefficient: n-octanol/water	Petrol hydrocarbons: log P _{ow} > 3 MTBE: log P _{ow} = 1.06 ETBE: log P _{ow} = 1.48 TAME: log P _{ow} = 1.55 TAEE: log P _{ow} = 2.95–3.35 Ethanol: log P _{ow} = 0.35
Auto-ignition temperature	> 280 °C (estimate)
Decomposition temperature	Unknown.
Viscosity	< 2 mm ² /s (40 °C, water = 0.6. mm ² /s)
Explosive properties	Not classified as explosive.
Oxidising properties	Not classified as oxidising.

9.2 Other information

None reported.

10: STABILITY AND REACTIVITY

10.1 Reactivity

Not reactive under normal use and storage conditions.

10.2 Chemical stability

The product is stable under normal storage conditions.

10.3 Possibility of hazardous reactions

Explosive gas/air mixtures may form even at room temperature.

10.4 Conditions to avoid

Keep away from heat sources, fire, sparks and other ignition sources.

10.5 Incompatible materials

Strong oxidizing agents.

10.6 Hazardous decomposition products

None reported.

11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

The product has not been classified as acutely toxic. The product contains harmful and toxic ingredients.

Gasoline:

LD50, oral, rat > 5,000 mg/kg
LC50, inhalation, rat > 5,610 mg/m³
LD50, dermal, rabbit > 2,000 mg/kg

TAME:

LD50, oral, rat 1,602-2,417 mg/kg
LC50, inhalation, rat (4h) > 5,400 mg/m³
LD50, dermal, rabbit > 2,000 mg/kg

MTBE:

LD50, oral, rat > 2,000 mg/kg
LC50, inhalation, rat (4h) > 5,000 mg/m³
LD50, dermal, rabbit > 2,000 mg/kg

TAAE:

LD50, oral > 2,000 mg/kg

ETBE:

LD50, oral > 2,000 mg/kg

Ethanol:

LD50, oral, rat > 2,000 mg/kg
LC50, inhalation, rat > 5,000 mg/m³

Methanol:

LD50, oral, rat 1,187-2,769 mg/kg
LC50, inhalation, rat (4h) 128,000 mg/m³
LD50, dermal, rabbit approx. 17,100 mg/kg

Isobutanol:

LD50, oral, rat 2,460 mg/kg
LD50, dermal, rabbit 3,400 mg/m³
LC50, inhalation, rat (4h) > 10.3 – 11.9 mg/l

Butane:

LC50, inhalation, rat, 4 h > 20 % V/V

Skin corrosion/irritation

Skin irritant. Prolonged or repeated contact may cause skin irritation and drying. Vapours and mist may irritate the eyes and respiratory tract.

Serious eye damage/irritation

The product is not classified as irritant or damaging to eyes. However, splashes and oil mist may irritate eyes.

Respiratory or skin sensitisation

The product is not classified as sensitizer.

Germ cell mutagenicity

The product may cause genetic defects.

Carcinogenicity

The product may cause cancer.

Reproductive toxicity

The product is suspected of impairing fertility and damaging the unborn child.

STOT – single exposure

The product is classified as toxic to specific target organs in case of single exposure. Exposure to high concentrations by inhalation may cause headache, dizziness and nausea; prolonged exposure may result in unconsciousness and/or death.

STOT – repeated exposure

The product is not classified as toxic to specific target organs in case of repeated exposure. No known effects.

Aspiration hazard

The product may be fatal if swallowed and enters airways.

Other information

Ingestion may cause irritation of the gastrointestinal tract.

12: ECOLOGICAL INFORMATION

12.1 Toxicity

Toxic to aquatic life with long lasting effects.

The product mixture has not been tested. The product has been classified as hazardous to the environment based on its ingredients.

Petrol hydrocarbons:

LL50, fish: 8.2 mg/l (96 h)
EL50, shellfish: 4.5 mg/l (48 h)
EL50, shellfish: 10 mg/l (21 days)
NOELR, shellfish: 0.5 mg/l (48 h)
EL50, algae: 3.7 mg/l (96 h)
NOELR, algae: 0.5 mg/l (72 h)

MTBE:

LC50, fish: 574 mg/l (96 h)
NOEC, fish: 299 mg/l (31 days)
LC50, shellfish: 44 mg/l (96 h)
NOEC, shellfish: 26 mg/l (28 days)
LOEC, shellfish: 50 mg/l (28 days)
LC50, algae: 491 mg/l (96 h)
IC20, algae: 105 mg/l (96 h)

ETBE:

LC50, fish: 574 mg/l (96 h)
NOEC, fish: 299 mg/l (31 days)
EC50, shellfish: 37 mg/l (96 h)
NOEC, shellfish: 3.4 mg/l (28 days)
EC50, algae: 1,100 mg/l (72 h)
NOEC, algae: 7.5 mg/k (72 h)

TAME:

LC50, fish: 574 mg/l (96 h) IC20, fish: 279 mg/l (31 days)
IC25, fish: 308 mg/l (31 days)
LC50, shellfish: 14 mg/l (96 h)
NOEC, shellfish: 3.4 mg/l (28 days)
EC50, algae: 230 mg/l (72 h)
NOEC, algae: 77 mg/l (72 h)

TAAE:

LC50, fish: 240 mg/l (96 h)

IC20, fish: 279 mg/l (31 days)

IC25, fish: 308 mg/l (31 days)

EC50, shellfish: 143 mg/l (48 h)

NOEC, shellfish: 22 mg/l (21 days)

Ethanol:

LC50, fish: 14.2 mg/l (96 h)

LC50, shellfish: 5,012 mg/l (48 h)

NOEC, shellfish: 2 mg/l (10 days)

EC50, algae: 275 mg/l (3 days)

EC10, algae: 11.5 mg/l (3 days)

Methanol:

LC50, fish: 15,400 mg/l (96 h)

EC50, shellfish: >10,000 mg/l (48 h)

EC50, algae: approx. 22,000 mg/l (96 h)

12.2 Persistence and degradability

Biodegradation

Petrol hydrocarbons are biodegradable. MTBE, ETBE, TAAE and TAME are very slowly biodegradable.

Ethanol degrades quickly.

Under anaerobic conditions, the degradation is very slow. Evaporation is the quickest and most significant degradation process in surface water, sediment and soil.

Chemical degradation

Petrol, MTBE, ETBE, TAAE and TAME do not hydrolyse in water. Volatile compounds undergo atmospheric degradation. Volatile compounds are degradable by atmospheric chemistry.

12.3 Bioaccumulative potential

Petrol hydrocarbons may be bioaccumulative ($\log K_{ow} > 3$). TAAE may be bioaccumulative ($\log K_{ow} = 2.95-3.35$). MTBE is not bioaccumulative ($BCF = 1.5 - \text{fish}$). ETBE, TAME, ethanol and methanol are not bioaccumulative ($\log Kow = -0.77 - 1.55$).

12.4 Mobility in soil

The product readily evaporates from soil and water surfaces. Some of the components are partly water-soluble and readily evaporate from water solution (MTBE, ETBE, TAAE, ethanol, TAME, benzene and toluene). The product may leach into soil and pollute groundwater. Large-molecule petrol hydrocarbons may absorb into soil or sediment organic matter ($\log Kow > 3$). Under anaerobic conditions, the degradation is very slow.

12.5 Results of PBT and vPvB assessment

The product does not contain components considered persistent, bioaccumulative or toxic (PBT). The product does not contain components considered very persistent or very bioaccumulative (vPvB).

12.6 Other adverse effects

The product forms a film on the water surface, which can affect the oxygen balance and damage the organisms.

13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Hazardous waste. Dispose of in accordance with local and national regulations.

14: TRANSPORT INFORMATION

14.1 UN number

3475

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14.2	UN proper shipping name
	ETHANOL AND GASOLINE MIXTURE
14.3	Transport hazard class(es)
	3
14.4	Packing group
	II
14.5	Environmental hazards
	Toxic to aquatic life with long lasting effects.
14.6	Special precautions to user
	Keep away from sources of heat or ignition. Avoid contact with skin or eyes and inhalation of vapours.
14.7	Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
	Not applicable

SECTION 15: REGULATORY INFORMATION

15.1	Safety, health and environmental regulations/legislation specific for the substance or mixture
	Decree on the Industrial Handling and Storage of Dangerous Chemicals (59/1999) Ministry of Trade and Industry Resolution on Combustible Liquids (313/1985)
15.2	Chemical safety assessment
	Chemical safety assessment has been performed for the following ingredients: Gasoline.

SECTION 16: OTHER INFORMATION

Changes to the previous version

Section 3. Composition/information on ingredients

Glossary of abbreviations

CLP: Regulation (EC) No. 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

DSD: Council Directive 67/548/EEC on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances.

DPD: Directive 1999/45/EC of the European Parliament and of the Council concerning the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous preparations.

OEL (HTP): Occupational exposure

DNEL: Derived No-Effect Level

EL50: Effective level: concentration that kills or immobilizes 50% of exposed organisms.

IL50: Inhibitory level: concentration that inhibits a biological function by 50%.

LD50: Lethal dose: dose that kills 50% of exposed organisms.

LL50: Lethal level: loading rate that kills 50% of exposed organisms.

NOEC: No Observable Effect Concentration.

NOELR: No Observable Effect Loading Rate.

IC20: Inhibitory level: concentration at which a monitored function is inhibited in 20 % of exposed organisms.

IC25: Inhibitory level: concentration at which a monitored function is inhibited in 25 % of exposed organisms.

Sources of information

Regulations, databases, literature

Classification procedure

Method based on ingredient classifications and concentrations (CLP)

List of relevant R and S phrases

H224	Extremely flammable liquid and vapour.
H225	Highly flammable liquid and vapour.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H315	Skin irritant.
H319	Causes serious eye irritation.

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H336	May cause drowsiness or dizziness.
H340	May cause genetic defects.
H350	May cause cancer.
H361f	Suspected of damaging fertility.
H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.
H411	Toxic to aquatic life with long lasting effects.
R11	Highly flammable.
R12	Extremely flammable.
R22	Harmful if swallowed.
R38	Irritating to skin.
R45	May cause cancer.
R62	Possible risk of impaired fertility.
R63	Possible risk of harm to the unborn child.
R65	Harmful: may cause lung damage if swallowed.
R67	Vapours may cause drowsiness and dizziness.
R23/24/25	Toxic by inhalation, in contact with skin and if swallowed.
R36/38	Irritating to eyes and skin.
R39/23/24/25	Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.
R48/20	Harmful: danger of serious damage to health by prolonged exposure through inhalation.
R51/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Training advice

Read safety data sheet.

Additional information

This safety data sheet has been prepared in accordance with Regulation (EC) No. 1907/2006 (REACH) amendment (EU) No. 453/2010. The information provided in the safety data sheet is based on current knowledge and valid national and EU legislation.