

Safety Data Sheet

According to Regulation (EU) No. 830/2015

Revision date: 28/09/2017 Version: 3.0

Supersedes: 01/10/2013

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

1.1. Product identifier

Product form : Mixture

Trade name : Eni Arnica 104/FR

Product code : 2580
Formula : 2809-2017
Product group : Trade 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, Consumer use

Industrial/Professional use spec : Wide dispersive use

Used in closed systems

Use of the substance/mixture : Hydraulic fluid

Do not use the product for any purposes that have not been advised by the

manufacturer.

Function or use category : Lubricants and additives

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

ENI S.p.A.

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Contact:

Refining & Marketing

Via Laurentina 449 00142 ROMA Italy Tel (+39) 06 59881 Fax (+39) 06 59885700

Competent person responsible for the Safety Data Sheet (Reg. EC nr. 1907/2006): SDSInfo@eni.com

1.4. Emergency telephone number

Emergency number : CNIT +39 0382 24444 (24h) (IT + EN)

Poison centre (UK):

National Poisons Information Service Edinburgh (24h)

(+44) 844 892 0111 0870 600 6266 (UK only) (Source: UN-WHO)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [EU-GHS / CLP]

STOT RE 2 H373

Full text of hazard classes and H-statements : see section 16

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Adverse physicochemical, human health and environmental effects

May cause damage to organs through prolonged or repeated exposure. For specific information about the toxicological/ecotoxicological properties and classification of this product, see Sect. 11 and/or Sect. 12.

2.2. **Label elements**

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)

: Warning

CLP Signal word

Hazardous ingredients and/or with

Hazard statements (CLP)

: Contains: Ethandiol relevant occupational exposure limits

: H373 - May cause damage to organs (kidneys) through prolonged or repeated

exposure (oral).

Precautionary statements (CLP)

: P101 - If medical advice is needed, have product container or label at hand.

P102 - Keep out of reach of children.

P260 - Do not breathe Fumes, mist, spray, Vapours. P314 - Get medical advice/attention if you feel unwell.

P501 - Dispose of contents and container to according to national or local

regulations.

Security closing plug for children

Tactile warning

: Applicable

: No

Other:

: (Not applicable - Classified as dangerous according to (EC) No 1272/2008) General advice

Other hazards (not relevant for classification)

Physical/chemical

: If the product is handled or used at high temperature, contact with hot product or vapours may cause burns, While not normally combustible, if water content is lost (as in a fire), this material may release flammable vapours if exposed to high temperature.

Health

: Any substance, in case of accidents involving pressurized circuits and the like, may be accidentally injected under the skin, even without external damage. In such a case, the victim should be brought to an hospital as soon as possible, to get specialized medical treatment.

Environment : None Contaminants : None

(air contaminants or other substances)

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

SECTION 3: Composition/information on ingredients

Substances

Not applicable

Mixtures

Composition/information on ingredients : Mixture of water and ethylene glycol, with anticorrosion and antifoam additives.

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Hazardous ingredients and/or with relevant occupational exposure limits : See table

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [EU-GHS / CLP]
Ethandiol	(CAS-No.) 107-21-1 (EC-No.) 203-473-3 (EC Index-No.) 603-027-00-1 (REACH-no) 01-2119456816-28	>= 20 - < 25	Acute Tox. 4 (Oral), H302 STOT RE 2, H373
morpholine	(CAS-No.) 110-91-8 (EC-No.) 203-815-1 (EC Index-No.) 613-028-00-9 (REACH-no) N/D	>= 0,5 - < 1	Flam. Liq. 3, H226 Acute Tox. 4 (Oral), H302 Acute Tox. 3 (Dermal), H311 Acute Tox. 4 (Inhalation), H332 Skin Corr. 1B, H314
2-aminoethanol	(CAS-No.) 141-43-5 (EC-No.) 205-483-3 (EC Index-No.) 603-030-00-8 (REACH-no) 01-2119486455-28	>= 0,5 - < 1	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Dermal), H312 Acute Tox. 4 (Inhalation), H332 Skin Corr. 1B, H314 STOT SE 3, H335 Aquatic Chronic 3, H412

Specific concentration limits:

Name	Product identifier	Specific concentration limits
2-aminoethanol	(CAS-No.) 141-43-5 (EC-No.) 205-483-3 (EC Index-No.) 603-030-00-8 (REACH-no) 01-2119486455-28	(C >= 5) STOT SE 3, H335

Full text of H-statements: see section 16

SECTION 4: First aid measures

Description of first aid measures

First-aid measures general

First-aid measures after inhalation

: In case of doubt or persistent symptoms, consult always a physician.

: In case of disturbances owing to inhalation of vapours or mists, remove the victim from exposure; keep at rest; if necessary, seek medical attention. If casualty is unconscious and not breathing: ensure that there is no obstruction to breathing and give artificial respiration by trained personnel. Place in the recovery position.

First-aid measures after skin contact

: Take off contaminated clothing and shoes. Wash thoroughly with soap and water. If inflammation or irritation persists, seek medical advice. Wash contaminated clothing before reuse.

First-aid measures after eye contact

: Remove contact lenses, if present and easy to do so. Rinse eyes thoroughly for at least 15 minutes. Keep eyelids well apart. If irritation, blurred vision or swelling occurs and persists, obtain medical advice from a specialist.

First-aid measures after ingestion

: Rinse mouth thoroughly with water. Do not induce vomiting. Give nothing to drink. In case of spontaneous vomiting, keep head low, to avoid the risk of aspiration into the lungs. Get medical advice/attention.

Most important symptoms and effects, both acute and delayed

Symptoms/effects after inhalation

: None under normal conditions at ambient temperatures.

Symptoms/effects after skin contact

: None under normal conditions at ambient temperatures. : Contact with eyes may cause a light transient irritation.

Symptoms/effects after eye contact Symptoms/effects after ingestion

: Ingestion of significant quantities (see sect. 11) may cause kidney damages, coma

and death. The effects may be delayed.

Symptoms/effects upon intravenous administration

: No information available.

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Chronic symptoms

 May cause damage to kidneys through prolonged or repeated exposure if swallowed.

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

Treat symptomatically. Obtain medical attention if casualty has an altered state of consciousness or if symptoms do not resolve.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

: Small-size fires: carbon dioxide, dry chemicals, foam. Large fires: foam or water

fog (mist). These means should be used by trained personnel only.

Unsuitable extinguishing media : Do not use direct water jets on the burning product.

5.2. Special hazards arising from the substance or mixture

Fire hazard

: Not flammable.

Explosion hazard

: Heat may build pressure in tank and containers, rupturing closed vessels,

spreading fire and increasing risk of burns and injuries.

Combustion products

: Incomplete combustion will generate poisonous carbon monoxide, carbon dioxide

and other toxic gases, Oxygenated compounds (aldehydes, etc.)

5.3. Advice for firefighters

Firefighting instructions

: Shut off source of product, if possible. If possible, move containers and drums away from danger area. Spilled product which is not burning should be covered with sand or foam. Use water sprays to cool containers and surfaces exposed to the flames. If the fire cannot be controlled, evacuate area.

Special protective equipment for

firefighters

: Personal protection equipment for firefighters (see also sect. 8). Self-contained breathing apparatus. EN 469. EN 443. EN 659. Do not enter fire area without

proper protective equipment, including respiratory protection.

: In case of fire, do not discharge residual product, waste materials and runoff water: collect separately and use a proper treatment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures

Other information

: Stop or contain leak at the source, if safe to do so. Eliminate all ignition sources if safe to do so (e.g. electricity, sparks, fires, flares). Avoid direct contact with released material.

6.1.1. For non-emergency personnel

Protective equipment

: See Section 8.

Emergency procedures

: Alert emergency personnel. Except in case of small spillages, the feasibility of any actions should always be assessed and advised, if possible, by a trained, competent person in charge of managing the emergency. Only qualified personnel equipped with suitable protective equipment may intervene.

6.1.2. For emergency responders

Protective equipment

: Small spillages: normal antistatic working clothes are usually adequate. Large spillages: full body suit of chemically resistant and antistatic material. if necessary heat resistant and insulated. Work gloves (preferably gauntlets) providing adequate chemical resistance. Gloves made of PVA are not water-resistant, and are not suitable for emergency use. If contact with hot product is possible or anticipated, gloves should be heat-resistant and thermally insulated. Work helmet. Antistatic non-skid safety shoes or boots. Goggles and /or face shield, if splashes or contact with eyes is possible or anticipated. Respiratory protection: a half or full-face respirator with filter(s) for organic vapours (AX), or a Self-contained Breathing Apparatus (SCBA) can be used according to the extent of spill and predictable amount of exposure. If the situation cannot be completely assessed, or if an oxygen deficiency is possible, only SCBA's should be used.

Emergency procedures

: Notify local authorities according to relevant regulations.

6.2. Environmental precautions

Prevent product from entering sewers, rivers or other bodies of water. In case of contamination of environment compartments (soil, subsoil, surface or underground waters), remove contaminated soil when possible, and in any case treat all involved compartments in accordance with local regulations.

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6.3. Methods and material for containment and cleaning up

For containment

: Contain spilled liquid with sand, earth or other suitable absorbents. Recover free liquid in suitable containers. Clean contaminated area. Dispose of according to local regulations. If in water: This product is soluble in water, and usually no special measures are feasible. If possible, collect spilled product with mechanical means. Notify official Authorities when required. Dispose of in accordance with relevant local regulations. Do not use solvents or dispersants, unless specifically advised by an expert, and, if required, approved by local authorities.

Methods for cleaning up

: Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. This material and its container must be disposed of in a safe way, and according to local legislation.

Other information

: Local regulations may also prescribe or limit actions to be taken. Recommended measures are based on the most likely spillage scenarios for this material; however, local conditions (wind, air temperature, wave/current direction and speed) may significantly influence the choice of appropriate actions. For this reason, local experts should be consulted when necessary.

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 good ventilation in process area to prevent formation of vapour. Store the
- product in cool, well ventilated surroundings.

 Hygiene measures : Avoid contact with skin. Do not breathe fume
 - : Avoid contact with skin. Do not breathe fume/ mist/ vapours. Do not ingest. Do not eat, drink or smoke when using this product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions

: Store in dry, well ventilated area. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. If the product is supplied in containers: Keep only in the original container or in a suitable container for this kind of product. Keep containers tightly closed and properly labelled.

Incompatible products

: Oxidizing agent.

Incompatible materials

: None in normal conditions.

Storage temperature

: 5 - 40 °C

Storage area

: Storage area layout, tank design, equipment and operating procedures must comply with the relevant European, national or local legislation. Storage installations should be designed with adequate bunds so as to prevent ground and water pollution in case of leaks or spills. Cleaning, inspection and maintenance of internal structure of storage tanks must be done only by properly equipped and qualified personnel as defined by national, local or company regulations.

Packaging materials

: Keep only in the original container. Do not cut, weld, bore, burn or incinerate emptied containers, unless they have been cleaned and declared safe.

7.3. Specific end use(s)

No information available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Ethandiol (107-21-1)		
EU	IOELV TWA (mg/m³)	52 mg/m³ Vapours
EU	IOELV TWA (ppm)	20 ppm
EU	IOELV STEL (mg/m³)	104 mg/m³ Vapours
EU	IOELV STEL (ppm)	40 ppm
Austria	MAK (mg/m³)	26 mg/m³ Vapours
Austria	MAK (ppm)	10 ppm
Austria	MAK Short time value (mg/m³)	52 mg/m³ Vapours
Austria	MAK Short time value (ppm)	20 ppm
Belgium	Limit value (mg/m³)	52 mg/m³ (Inhalable aerosol)
Belgium	Short time value (mg/m³)	104 mg/m³ (Inhalable aerosol)
Denmark	Grænseværdi (langvarig) (mg/m³)	26 mg/m³ (Inhalable aerosol)
Denmark	Grænseværdi (langvarig) (ppm)	10 ppm

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Denmark	Grænseværdi (kortvarig) (mg/m³)	52 mg/m³ (Inhalable aerosol)
Denmark	Grænseværdi (kortvarig) (ppm)	20 ppm
France	VME (mg/m³)	52 mg/m³ Vapours
France	VME (ppm)	20 ppm
France	VLE (mg/m³)	104 mg/m³ Vapours
France	VLE (ppm)	40 ppm
Germany	TRGS 900 Occupational exposure limit value (mg/m³)	26 mg/m³ (Inhalable aerosol) (15 min)
Germany	TRGS 900 Occupational exposure limit value (ppm)	10 ppm
Germany	TRGS 900 Limitation of exposure peaks (mg/m³)	52 mg/m³ (Inhalable aerosol) (15 min)
Germany	TRGS 900 Limitation of exposure peaks (ppm)	20 ppm
Ireland	OEL (8 hours ref) (mg/m³)	52 mg/m³ Vapours
Ireland	OEL (8 hours ref) (ppm)	20 ppm
Ireland	OEL (15 min ref) (mg/m3)	104 mg/m³ Vapours
Ireland	OEL (15 min ref) (ppm)	40 ppm
Italy	OEL TWA (mg/m³)	52 mg/m³ Skin
,	, ,	20 ppm Skin
Italy	OEL TWA (ppm)	''
Italy	OEL STEL (mg/m³)	104 mg/m³ Skin
Italy	OEL STEL (ppm)	40 ppm Skin
Netherlands	MAC TGG 8h (mg/m³)	52 mg/m ³ Vapours
Netherlands	MAC TGG 15 min (mg/m³)	104 mg/m³ Vapours
Poland	NDS (mg/m³)	15 mg/m³ (Inhalable aerosol)
Spain	VLA-ED (mg/m³)	52 mg/m³ (Inhalable aerosol)
Spain	VLA-EC (mg/m³)	104 mg/m³ (Inhalable aerosol)
Spain	Notes	skin
Sweden	Nivågränsvärde (NVG) (mg/m3)	25 mg/m ³ Vapours
Sweden	Nivågränsvärde (NVG) (ppm)	10 ppm
Sweden	Kortidsvärde (KTV) (mg/m3)	50 mg/m ³ Vapours
Sweden	Kortidsvärde (KTV) (ppm)	20 ppm
United Kingdom	WEL TWA (mg/m³)	52 mg/m³ (Inhalable aerosol)
United Kingdom	WEL TWA (ppm)	20 ppm
United Kingdom	WEL STEL (mg/m³)	104 mg/m³ (Inhalable aerosol)
United Kingdom	WEL STEL (ppm)	40 ppm
Switzerland	MAK (mg/m³)	26 mg/m³ (Inhalable aerosol)
Switzerland Switzerland	MAK (ppm) VLE (mg/m³)	10 ppm (Inhalable aerosol) 52 mg/m³ (Inhalable aerosol)
Switzerland	VLE (mg/m³) VLE (ppm)	20 ppm (Inhalable aerosol)
USA - ACGIH	ACGIH TLV®-STEL Ceiling (mg/m³)	100 mg/m ³
morpholine (110-91-8)		
EU	IOELV TWA (mg/m³)	36 mg/m ³
EU	IOELV TWA (ppm)	10 ppm
EU	IOELV STEL (mg/m³)	72 mg/m ³
EU	IOELV STEL (ppm)	20 ppm
Austria	MAK (mg/m³)	36 mg/m³
Austria	MAK (ppm)	10 ppm
Austria	MAK Short time value (mg/m³)	36 mg/m ³
Austria	MAK Short time value (ppm)	10 ppm
Belgium	Limit value (mg/m³)	36 mg/m ³
Belgium	Limit value (ppm)	10 ppm
Belgium	Short time value (mg/m³)	72 mg/m ³
Belgium	Short time value (ppm)	20 ppm

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Denmark	Grænseværdi (langvarig) (mg/m³)	70 mg/m³
Denmark	(5 5) (5.)	
	Grænseværdi (langvarig) (ppm)	20 ppm
Denmark	Grænseværdi (kortvarig) (mg/m³)	140 mg/m³
Denmark	Grænseværdi (kortvarig) (ppm)	40 ppm
Finland	HTP-arvo (8h) (mg/m³)	36 mg/m ³
Finland	HTP-arvo (8h) (ppm)	10 ppm
Finland	HTP-arvo (15 min) (mg/m³)	72 mg/m³
Finland	HTP-arvo (15 min) (ppm)	20 ppm
France	VME (mg/m³)	72 mg/m³
France	VME (ppm)	20 ppm
France	VLE (mg/m³)	36 mg/m ³
France	VLE (ppm)	10 ppm
Germany	TRGS 900 Occupational exposure limit value (mg/m³)	36 mg/m³
Germany	TRGS 900 Occupational exposure limit value (ppm)	10 ppm
Germany	TRGS 900 Limitation of exposure peaks (mg/m³)	72 mg/m³
Germany	TRGS 900 Limitation of exposure peaks (ppm)	20 ppm
Hungary	AK-érték	36 mg/m ³
Hungary	CK-érték	72 mg/m³
Ireland	OEL (8 hours ref) (mg/m³)	36 mg/m³
Ireland	OEL (8 hours ref) (ppm)	10 ppm
Ireland	OEL (15 min ref) (mg/m3)	72 mg/m³
Ireland	OEL (15 min ref) (ppm)	20 ppm
Italy	OEL TWA (mg/m³)	36 mg/m ³
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Italy	OEL TWA (ppm)	10 ppm
Italy	OEL STEL (mg/m³)	72 mg/m³
Italy	OEL STEL (ppm)	20 ppm
Latvia	OEL TWA (mg/m³)	36 mg/m³
Latvia	OEL TWA (ppm)	10 ppm
Latvia	OEL STEL (mg/m³)	72 mg/m³
Latvia	OEL STEL (ppm)	20 ppm
Netherlands	MAC TGG 8h (mg/m³)	36 mg/m ³
Netherlands	MAC TGG 15 min (mg/m³)	72 mg/m³
Spain	VLA-ED (mg/m³)	36 mg/m ³
Spain	VLA-ED (ppm)	10 ppm
Spain	VLA-EC (mg/m³)	72 mg/m ³
Spain	VLA-EC (ppm)	20 ppm
Sweden	Nivågränsvärde (NVG) (mg/m3)	35 mg/m ³
Sweden	Nivågränsvärde (NVG) (ppm)	10 ppm
Sweden	Kortidsvärde (KTV) (mg/m3)	72 mg/m³
Sweden	Kortidsvärde (KTV) (ppm)	20 ppm
United Kingdom	WEL TWA (mg/m³)	36 mg/m³
United Kingdom	WEL TWA (ppm)	10 ppm
United Kingdom	WEL STEL (mg/m³)	72 mg/m ³
United Kingdom	WEL STEL (ppm)	20 ppm
Switzerland	MAK (mg/m³)	36 mg/m ³
Switzerland	MAK (ppm)	10 ppm
Switzerland	VLE (mg/m³)	72 mg/m ³

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Switzerland	VLE (ppm)	20 ppm
USA - ACGIH	ACGIH TLV®-TWA (ppm)	20 ppm
2-aminoethanol (14	1-43-5)	
EU	IOELV TWA (mg/m³)	2,5 mg/m³
EU	IOELV TWA (ppm)	1 ppm
EU	IOELV STEL (mg/m³)	7,6 mg/m ³
EU	IOELV STEL (ppm)	3 ppm
Austria	MAK (mg/m³)	2,5 mg/m ³
Austria	MAK (ppm)	1 ppm
Austria	MAK Short time value (mg/m³)	7,6 mg/m ³
Austria	MAK Short time value (ppm)	3 ppm
Belgium	Limit value (mg/m³)	2,5 mg/m ³
Belgium Belgium	Limit value (ppm) Short time value (mg/m³)	1 ppm 7,6 mg/m ³
Belgium	Short time value (mg/m²) Short time value (ppm)	3 ppm
Denmark	Grænseværdi (langvarig) (mg/m³)	2,5 mg/m ³
Denmark		
	Grænseværdi (langvarig) (ppm)	1 ppm
Denmark	Grænseværdi (kortvarig) (mg/m³)	5 mg/m ³
Denmark	Grænseværdi (kortvarig) (ppm)	2 ppm
Finland	HTP-arvo (8h) (mg/m³)	2,5 mg/m ³
Finland	HTP-arvo (8h) (ppm)	1 ppm
Finland	HTP-arvo (15 min) (mg/m³)	7,6 mg/m³
Finland	HTP-arvo (15 min) (ppm)	3 ppm
France	VME (mg/m³)	7,6 mg/m³
France	VME (ppm)	3 ppm
France	VLE (mg/m³)	2,5 mg/m ³
France	VLE (ppm)	1 ppm
Germany	TRGS 900 Occupational exposure limit value (mg/m³)	0,5 mg/m ³
Germany	TRGS 900 Occupational exposure limit value (ppm)	0,2 ppm
Germany	TRGS 900 Limitation of exposure peaks (mg/m³)	0,5 mg/m ³
Germany	TRGS 900 Limitation of exposure peaks (ppm)	0,2 ppm
Hungary	CK-érték	2,5 mg/m ³
Hungary	MK-érték	7,6 mg/m³
Ireland	OEL (8 hours ref) (mg/m³)	2,5 mg/m³
Ireland	OEL (8 hours ref) (ppm)	1 ppm
Ireland	OEL (15 min ref) (mg/m3)	7,6 mg/m ³
Ireland	OEL (15 min ref) (ppm)	3 ppm
Italy	OEL TWA (mg/m³)	2,5 mg/m ³
Italy	OEL TWA (mg/m)	1 ppm
•	** * *	
Italy	OEL STEL (mg/m³)	7,6 mg/m³
Italy	OEL STEL (ppm)	3 ppm
Latvia	OEL TWA (mg/m³)	0,5 mg/m ³
Latvia	OEL TWA (ppm)	0,2 ppm
Latvia	OEL STEL (mg/m³)	7,6 mg/m ³
Latvia	OEL STEL (ppm)	3 ppm
Netherlands	MAC TGG 15 min (mg/m³)	2,5 mg/m³
Netherlands	MAC C (mg/m³)	7,6 mg/m ³
Poland	NDSCh (mg/m³)	2,5 mg/m ³

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Poland	NDSP (mg/m³)	7,5 mg/m³
Spain	VLA-ED (mg/m³)	2,5 mg/m³
Spain	VLA-ED (ppm)	1 ppm
Spain	VLA-EC (mg/m³)	7,6 mg/m ³
Spain	VLA-EC (ppm)	3 ppm
Spain	Notes	Skin
Sweden	Nivågränsvärde (NVG) (mg/m3)	2,5 mg/m ³
Sweden	Nivågränsvärde (NVG) (ppm)	1 ppm
Sweden	Kortidsvärde (KTV) (mg/m3)	7,6 mg/m³
Sweden	Kortidsvärde (KTV) (ppm)	3 ppm
United Kingdom	WEL TWA (mg/m³)	2,5 mg/m ³
United Kingdom	WEL TWA (ppm)	1 ppm
United Kingdom	WEL STEL (mg/m³)	7,6 mg/m ³
United Kingdom	WEL STEL (ppm)	3 ppm
Switzerland	MAK (mg/m³)	5 mg/m ³
Switzerland	MAK (ppm)	2 ppm
Switzerland	VLE (mg/m³)	10 mg/m³
Switzerland	VLE (ppm)	4 ppm
Canada (Quebec)	VECD (ppm)	6 ppm
Canada (Quebec)	VEMP (ppm)	3 ppm
USA - ACGIH	ACGIH TLV®-TWA (ppm)	3 ppm
USA - ACGIH	ACGIH TLV®-STEL (ppm)	6 ppm
USA - NIOSH	NIOSH REL (TWA) (ppm)	3 ppm
USA - NIOSH	NIOSH REL (STEL) (ppm)	6 ppm

Ethandiol (107-21-1)	
DNEL/DMEL (Workers)	
Long-term - systemic effects, dermal	106 mg/kg bodyweight/day
Long-term - local effects, inhalation	35 mg/m³
DNEL/DMEL (General population)	
Acute - local effects, inhalation	7 mg/m³
Long-term - systemic effects, dermal	53 mg/kg bodyweight/day
PNEC (Water)	
PNEC aqua (freshwater)	10 mg/l
PNEC aqua (marine water)	1 mg/l
PNEC aqua (intermittent, freshwater)	10 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	37 mg/kg dwt
PNEC sediment (marine water)	3,7 mg/kg dwt
PNEC (Soil)	
PNEC soil	1,53 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	199,5 mg/l

Monitoring methods

[:] Monitoring procedures should be chosen according to the indications set by national authorities or labour contracts, Refer to relevant legislation and in any case to the good practice of industrial hygiene.

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Note

: The Derived No Effect Level (DNEL) is an estimated safe level of exposure that is derived from toxicity data in accord with specific guidance within the European REACH regulation. The DNEL may differ from an Occupational Exposure Limit (OEL) for the same chemical. OELs may be recommended by an individual company, a governmental regulatory body or an expert organization, such as the Scientific Committee for Occupational Exposure Limits (SCOEL) or the American Conference of Governmental Industrial Hygienists (ACGIH). OELs are considered to be safe exposure levels for a typical worker in an occupational setting for an 8-hour work shift, 40 hour work week, as a time weighted average (TWA) or a 15 minute shortterm exposure limit (STEL). While also considered to be protective of health, OELs are derived by a process different from that of REACH.

Exposure controls

Appropriate engineering controls

: Ensure good ventilation of the work station. Minimize exposure to mists/vapours/aerosol.

Personal protective equipment (for industrial or professional use)

: Gloves. Protective clothing. Safety glasses. Safety shoes or boots.









Hand protection

: Protective gloves. Adequate materials: nitrile (NBR) or PVC with a protection index > 5 (permeation time > 240 mins). Use gloves respecting all the conditions and within the limits set by the manufacturer. Replace gloves immediately in case of cuts, holes or other signs of damages or degradation. If necessary, refer to the EN 374 standard. Thickness of glove material: > 0,4 mm. Personal hygiene is a key element for an effective hand care. Gloves must be worn only with clean hands. After wearing gloves, hands must be carefully washed and dried.

Eye protection

Safety glasses. DIN EN 166. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure

Skin and body protection

: Long-sleeved overalls. If necessary, refer to the EN 340 and related standards, for definition of characteristics and performance according to the risk rating of the area. Wash contaminated clothing before reuse.

Respiratory protection

: Not necessary with sufficient ventilation. Independently from other possible actions (technical modifications, operating procedures, and other means to limit the exposure of workers), personal protection equipment can be used according to necessity. Open or well ventilated spaces: if the product is handled without adequate containment: use full or half-face masks with adequate filter for mists and organic vapours. (EN 136/140/145). Closed or confined areas (e.g. tank interiors): the use of protection measures for airways (masks or self-contained breathing apparatus), must be assessed according to the specific activity, as well as level and duration of predicted exposure. (EN 136/140/145). Combination filter device (DIN EN 141)

Thermal hazard protection

: If contact with hot product is possible or anticipated, gloves should be heatresistant and thermally insulated.

Environmental exposure controls

: Storage areas/installations should be designed with adequate bunds so as to prevent ground and water pollution in case of leaks or spills. Do not discharge the product into the environment. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Consumer exposure controls

: No special requirements necessary, if handled at room temperature.

Hygiene measures

General protective and hygienic measures : Avoid contact with skin and eyes, Do not breathe vapours or mists, Do not clean hands with dirty or oil-soaked rags, Do not keep dirty rags in the overall pockets, Do not drink, eat or smoke with dirty hands, Wash hands with water and mild soap, do not use solvents or other irritant products which have a defatting effect on the skin, Do not re-use clothes, if they are still contaminated.

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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid

Appearance : Liquid, bright & clear.

Molecular mass : Not applicable for mixtures

Colour : No data available

Odour : Glycol.

Odour threshold : No data available pH : No data available Relative evaporation rate : No data available

(butylacetate=1)

Melting point : No data available Freezing point : No data available

Boiling point : > 188 °C (ASTM D 1120)

Flash point : $> 60 \, ^{\circ}\text{C}$

Auto-ignition temperature : No data available
Decomposition temperature : No data available
Flammability (solid, gas) : No data available
Vapour pressure : No data available
Relative vapour density at 20 °C : No data available
Relative density : No data available

Density : 1050 kg/m³ (ASTM D 1298)

Solubility : Water: Complete.
Log Pow : No data available

Viscosity, kinematic : 43 mm²/s (40°C) (ASTM D 445)

Viscosity, dynamic : No data available

Explosive properties : None.

Oxidising properties : None.

Explosive limits : 3 - 53 vol % (Ethylene glycol)

9.2. Other information

Additional information : No data available

The above data (9.1 - 9.2) are typical values and do not constitute a specification.

SECTION 10: Stability and reactivity

10.1. Reactivity

This mixture does not offer any further hazard for reactivity, except what is reported in the following paragraphs.

10.2. Chemical stability

Stable product, according to its intrinsic properties (in normal conditions of storage and handling).

10.3. Possibility of hazardous reactions

None (in normal conditions of storage and handling).

10.4. Conditions to avoid

Keep away from open flames, hot surfaces and sources of ignition.

10.5. Incompatible materials

Strong oxidants. Strong acids. Strong bases.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced. Thermal decomposition generates: Oxygenated compounds (aldehydes, etc.), Carbon dioxide, Carbon monoxide.

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SECTION 11: Toxicological info	
11.1. Information on toxicological ef	fects
Acute toxicity	: Not classified (Based on available data, the classification criteria are not met)
	(according to composition) The toxic (fatal) dose for pure ethylene glycol has been estimated 1.4 ml/kg wt (about 100 ml for an adult person). The effects may be delayed.
ATE (oral)	2050 mg/kg bodyweight
ATE (dermal)	33300 mg/kg bodyweight
Ethandiol (107-21-1)	
LD50 oral rat	7712 mg/kg bodyweight
LD50 dermal	> 3500 mg/kg (mouse)
LC50 inhalation rat (mg/l)	> 2,5 mg/l (6h)
morpholine (110-91-8)	
LD50 oral rat	1900 mg/kg bodyweight
LD50 dermal rabbit	500 mg/kg bodyweight
2-aminoethanol (141-43-5)	3, 3 , 3
LD50 oral rat	1089 - 1515 mg/kg bodyweight
LD50 dermal rat	2504 - 2881 mg/kg bodyweight
LC50 inhalation rat (mg/l)	1,3 mg/l/4h
Skin corrosion/irritation	: Slightly irritant but not relevant for classification (Based on available data, the classification criteria are not met)
	(according to composition)
Serious eye damage/irritation	: Slightly irritant but not relevant for classification (Based on available data, the classification criteria are not met)
	(according to composition)
Respiratory or skin sensitisation	: Not classified (Based on available data, the classification criteria are not met)
	(according to composition)
Germ cell mutagenicity	: Not classified (Based on available data, the classification criteria are not met)
	(according to composition)
Carcinogenicity - Description	: Not classified (Based on available data, the classification criteria are not met)
	(according to composition)
Ethandiol (107-21-1)	
NOAEL (chronic, oral, animal/male, 2 years)	1500 mg/kg bodyweight Mouse
Reproductive toxicity	: Not classified (Based on available data, the classification criteria are not met)
	(according to composition)
STOT-single exposure	: Not classified (Based on available data, the classification criteria are not met)
• ,	(according to composition) This product contains components with a Specific Concentration Limit (SCL).
STOT-repeated exposure	: May cause damage to kidneys through prolonged or repeated exposure if swallowed.
	(according to composition) The ethylene glycol present in this formulation may cause intoxication, central nervous system depression (incoordination, dizziness), respiratory failure, liver arkidney damage.
Ethandiol (107-21-1)	
NOAEL (oral, rat, 90 days)	150 mg/kg bodyweight/day 12 months.
morpholine (110-91-8)	
LOAEL (oral, rat, 90 days)	500 mg/kg bodyweight/day
2-aminoethanol (141-43-5)	, J. J. 11. 1 . J. 11. 1
NOAEL (oral, rat, 90 days)	300 mg/kg bodyweight/day
NOAEC (inhalation,rat, vapour, 90 days)	10 mg/m ³

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SECTION 12: Ecological information

12.1. Toxicity

Other information

Ecology - general

: The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment. An uncontrolled release to the environment may nevertheless produce a contamination of different environmental compartments (soil, underground, surface water bodies, aquifers). Handle according to general working hygiene practices to avoid pollution and release into

the environment.

: None.

Ecology - water : This product is soluble in water.

ethanediol, ethylene glycol (107-21-1)	
LC50 fish 1	15380 mg/l (LC10 - 96h)
EC50 Daphnia 1	8590 mg/l (EC10 - 48h)
LC50 fish 2	72860 mg/l (Pimephales promelas)
EC50 Daphnia 2	100 mg/l
ErC50 (algae)	≥ 100 mg/l (EC10)
NOEC (chronic)	15380 - 32000 mg/l
morpholine (110-91-8)	

morpholine (110-91-8)	
LC50 fish 1	179 - 380 mg/l
EC50 Daphnia 1	45 mg/l
NOEC chronic crustacea	5 mg/l (21d)

2-aminoethanol, ethanolamine (141-43-5)	
LC50 fish 1	349 mg/l
EC50 Daphnia 1	65 mg/l
LOEC (chronic)	3,55 mg/l (41d)
NOEC chronic fish	1,24 mg/l (41d)
NOEC chronic algae	1 mg/l (72h)

12.2. Persistence and degradability

Eni Arnica 104/FR						
Persistence and degradability	The most significant constituents of the product should be considered as "readily biodegradable".					
ethanediol, ethylene glycol (107-21-1)						
Persistence and degradability	Readily biodegradable.					
Biochemical oxygen demand (BOD)	0,36 - 0,4 g O ₂ /g substance					
Chemical oxygen demand (COD)	1,21 g O ₂ /g substance					
ThOD	$1,26 \text{ g O}_2$ /g substance					

12.3. Bioaccumulative potential

Eni Arnica 104/FR					
Bioaccumulative potential Not established.					
ethanediol, ethylene glycol (107-21-1)					
, , , , ,					

12.4. Mobility in soil

Eni Arnica 104/FR	
Ecology - soil	No data available.

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12.5. Results of PBT and vPvB assessment

Eni Arnica 104/FR						
This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII						
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII						
Results of PBT-vPvB assessment	The components in this formulation do not meet the criteria for classification as PBT or vPvB. The product should be considered as "Not persistent" in the environment, according to the REACH Annex XIII criteria (point 1.1)					

12.6. Other adverse effects

Other adverse effects : None.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Do not dispose of the product, either new or used, by discharging into sewers,

tunnels, lakes or water courses. Deliver to a qualified official collector.

Sewage disposal recommendations : Do not apply industrial sludge to natural soils. Sludge should be incinerated,

contained or reclaimed. Dispose of in a safe manner in accordance with

local/national regulations.

Additional information : Do not cut, weld, drill, burn or incinerate empty containers or drums, unless they

have been cleaned, and declared safe.

Ecology - waste materials : The product as it is does not contain halogenated substances.

SECTION 14: Transport information

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

ADR	IMDG	IATA	ADN	RID			
14.1. UN number							
Not regulated for transport							
14.2. UN proper shipping name							
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			
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						
Dangerous for the	Dangerous for the	Dangerous for the	Dangerous for the	Dangerous for the			
environment : No	environment : No	environment : No	environment : No environment : No				
	Marine pollutant : No						
Other information : None.							

14.6. Special precautions for user

Special transport precautions : None.

- Overland transport

Transport regulations (ADR) : Not subject

- Transport by sea

Transport regulations (IMDG) : Not subject
Limited quantities (IMDG) : Not applicable

- Air transport

Transport regulations (IATA) : Not subject

- Inland waterway transport

Transport regulations (ADN) : Not subject

- Rail transport

Transport regulations (RID) : Not subject

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14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

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. EU-Regulations

The following restrictions are applicable according to Annex XVII of the REACH Regulation (EC) No 1907/2006:

The following feet reading and approache according to family, first or the feet regulation (20) no 2507, 2000.							
3. Liquid substances or mixtures which are regarded as dangerous in accordance with Directive 1999/45/EC or are fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008	Ethandiol - 2-aminoethanol						
3(a) Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 2.1 to 2.4, 2.6 and 2.7, 2.8 types A and B, 2.9, 2.10, 2.12, 2.13 categories 1 and 2, 2.14 categories 1 and 2, 2.15 types A to F	morpholine						
3(b) Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10	Eni Arnica 104/FR - Ethandiol - morpholine - 2-aminoethanol						
3(c) Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard class 4.1	2-aminoethanol						

No ingredients are included in the REACH Candidate list (> 0.1 % m/m).

Contains no REACH Annex XIV substances

Relevant EU Legislation

: Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH). (et sequens).

Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 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 (et sequens).

Directives 89/391/CEE, 89/654/CEE, 89/655/CEE, 89/656/CEE, 90/269/CEE, 90/270/CEE, 90/394/CEE, 90/679/CEE, 93/88/CEE, 95/63/CE, 97/42/CE, 98/24/CE, 99/38/CE, 99/92/CE, 2001/45/CE, 2003/10/CE, 2003/18/CE (Health and safety on the workplace)

Directive 98/24/EC (protection of the health and safety of workers from the risks related to chemical agents at work).

Directive 92/85/CE (measures to encourage improvements in the safety and health at work of pregnant workers and workers who have recently given birth or are breastfeeding)

Directive 2004/42/CE (Limitation of emissions of Volatile Organic Compounds) Directive 2012/18/CE (Control of major-accident hazards involving dangerous substances)

15.1.2. National regulations

National adoption of EU Directives concerning health and safety on the workplace.

Relevant national laws on protection of the health of pregnant workers (National adoption of Dir. 92/85/EEC).

National adoption of EU Directives concerning control of major-accident hazards involving dangerous substances (2012/18/CE). Relevant national laws on prevention of water pollution.

Germany

VwVwS Annex reference : Water hazard class (WGK) (D) 1, low hazard to waters (Classification according to

VwVwS, Annex 4)

WGK remark : Classification based on the components in compliance with Verwaltungsvorschrift

wassergefährdender Stoffe (VwVwS)

VbF class (D) : Not applicable.

Storage class (LGK) (D) : LGK 12 - Non-combustible liquids

12th Ordinance Implementing the Federal : Is not subject of the 12. BlmSchV (Hazardous Incident Ordinance)

Immission Control Act - 12.BImSchV

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Netherlands

Saneringsinspanningen : C - Lozing minimaliseren

SZW-lijst van kankerverwekkende stoffen : None of the components are listed SZW-lijst van mutagene stoffen : None of the components are listed NIET-limitatieve lijst van voor de : None of the components are listed

voortplanting giftige stoffen –

Borstvoeding

: None of the components are listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen –

Vruchtbaarheid

. None of the components are listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen –

Ontwikkeling

: None of the components are listed

Denmark

Recommendations Danish Regulation : Young people under 18 years are not allowed to use the product

15.2. Chemical safety assessment

For this mixture a chemical safety assessment has been not carried out

A chemical safety assessment has been carried out for the following components of this mixture:

Ethandiol 2-aminoethanol

SECTION 16: Other information

Indication of changes:

Modification according to Regulation (EC) 830/2015.

Abbreviations and acronyms:

	Complete text of the H phrases quoted in this Safety Data Sheet. These phrases are reported here for information only, and MAY NOT correspond to the classification of the product.
	N/A = not applicable
	N/D = not available
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC50	Effective concentration for 50 percent of test population (median effective concentration)
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Lethal concentration for 50 percent of test population (median lethal concentration)
LD50	Lethal dose for 50 percent of test population (median lethal dose)
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals, Regulation (EC) No 1907/2006
RID	Regulation concerning the International Carriage of Dangerous Goods by Railways
SDS	Safety Data Sheet
STP	Sewage treatment plant
vPvB	Very Persistent and Very Bioaccumulative

Data sources

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[:] This Safety Data Sheet is based on the real characteristics of the components and their combination, taking into account the information provided by the suppliers.

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Training advice : Provide adequate training to professional operators for the use of PPEs, according

to the information contained in this Safety Data Sheet.

Other information : Do not use the product for any purposes that have not been advised by the

manufacturer.

Full text of H- and EUH-statements:

Acute Tox. 3 (Dermal)	Acute toxicity (dermal), Category 3
Acute Tox. 4 (Dermal)	Acute toxicity (dermal), Category 4
Acute Tox. 4 (Inhalation)	Acute toxicity (inhal.), Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Aquatic Chronic 3	Hazardous to the aquatic environment — Chronic Hazard, Category 3
Flam. Liq. 3	Flammable liquids, Category 3
Skin Corr. 1B	Skin corrosion/irritation, Category 1B
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
H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H311	Toxic in contact with skin.
H312	Harmful in contact with skin.
H314	Causes severe skin burns and eye damage.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H373	May cause damage to organs through prolonged or repeated exposure.
H412	Harmful to aquatic life with long lasting effects.

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

			 	,	•	
STOT RE 2	H373	Calculation method				

SDS EU (REACH Annex II) eni 2015

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

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