

Material Safety Data Sheet

in accordance with Regulation (EC) No.
1907/2006



Trade name: Noa FireEx 8.o S

Revised: Aug 12th, 2013

Version: 1.0.5

Page 1 of 11

1. Name of the substance or preparation and company name

Trade name: Noa Fire-Ex 8.o S
Product Usage: Extinguishing agent for developing fires
Contents: Liquid mixture of 90% water and 10% FireAde 2000 – Climate Control Alcohol Resistant (AR) without gaseous blowing agent
Manufacturer/Supplier: Tectro SMT GmbH
Thrasoltstr. 46
D-55439 Saarburg
Germany
Phone: +49 / 6581 / 912-0
Fax: +49 / 6581 / 912-410
Contact: feuerloescher@tectro.de
Emergency number: +49 6131 / 232466 (Mainz poisoning emergency number)

2. Potential Hazards

2.1 Classification:

none, product is not a pressure vessel within the meaning of the Directives 97/23/EC (Pressure Equipment Directive) and 1999/36/EC (TPED)

2.1.1 Additional hazard warnings for persons and the environment:

At the working concentration of max. 10% FireAde 2000 – Climate Control Alcohol Resistant (AR), no toxic effects are to be expected

The content is a non-combustible liquid. Flammable after evaporation of the water

Low toxicity to aquatic organisms (water hazard class 1)

3. Composition / information about ingredients

3.1 Chemical Characterisation:

Aqueous concentrate of glycerol, detergents and a binary alcohol

3.2 Hazardous Ingredients:

3.2.1 Classification in accordance with Directive 67/548/EEC in combination with Annex VI, tab. 3.2 of Regulation (EC) 1272/2008 (GHS and/or CLP Regulation)

Substance	CAS no.	EINECS no.	Labelling	R-phrases	% w/w
2-methyl-pentane-2,4-diol	107-41-5	203-84-0	Xi	36/38	< 1
Synonyms: 2-methyl-2,4-pentanediol; hexylene glycol; α,α,α' -trimethyltrimethylene glycol; $CH_3-CH(OH)CH_2-C(CH_3)_2OH$					
Sodium decyl sulphate	142-87-0	205-568-5	Xn	22-38-41	< 0.1
Sodium octyl sulphate	142-31-4	205-535-5	Xi	38-41	< 0.1

Text of the R-phrases: see Chapter 16

3.2.2 GHS classification of hazardous ingredients in accordance with Regulation (EC) No 1272/2008

Substance	Property
2-methyl-pentane-2,4-diol	Serious eye irritation, category 2: H319

Material Safety Data Sheet

in accordance with Regulation (EC) No.
1907/2006

Trade name: Noa FireEx 8.o S
Revised: Aug 12th, 2013

Version: 1.0.5

Page 2 of 11

Causes skin irritation, category 2: H315



Signal word: «Danger»

Sodium decyl sulphate

Acutely toxic (if swallowed), category 4: H302

Causes serious eye damage, category 1: H318

Causes skin irritation, category 2: H315



Signal word: «Danger»

Sodium octyl sulphate

Causes serious eye damage, category 1: H318

Causes skin irritation, category 2: H315



Signal word: «Danger»

Text of the H-phrases: see Chapter 16

3.3 Other Ingredients

Substance	CAS no.	EINECS no.	Labelling	R-phrases	% (w/w)
Water	7732-18-5	231-791-2	n.a.	36/38	> 90
Glycerol	56-81-5	200-289-5	Antifreeze, natural substance	22-38-41	< 4%

Synonyms: 1,2,3-trihydroxypropane; 1,2,3-propanetriol; glycerin(e)

4. First aid measures

General information: In the Fire-Ex, the extinguishing agent FireAde 2000 – Climate Control Alcohol Resistant (AR) is used at a concentration of 10%.

After inhalation of aerosols: In case of irritation of the respiratory tract, immediately remove affected person to fresh air. In case of persistent discomfort, seek medical treatment. Only relevant in case of inhalation of aerosols, since only water evaporates to a significant degree.

After contact with skin: Remove contaminated clothing. Wash skin with plenty of water and soap. In case of persistent irritation, consult physician.

After eye contact: Rinse eyes under running water for at least 15 minutes. Consult physician.

After ingestion: Rinse mouth, disgorge liquid again. If the person is conscious, immediately cause him/her to drink plenty of water. Do not induce vomiting. Provide medical care. Poisoning symptoms may occur with delay.

Information for physician: After large-scale contamination or wetting of injured skin: Apply polyethylene

Material Safety Data Sheet

in accordance with Regulation (EC) No.
1907/2006



Trade name: Noa FireEx 8.o S
Revised: Aug 12th, 2013

Version: 1.0.5

Page 3 of 11

glycol (e.g. Lutrol, PEG₄₀₀) and leave on for several minutes, then rinse off with water. Provide medical care. After inhalation of the substance, deliberate inhalation of water vapour and administration of a glucocorticoid aerosol are indicated.

5. Fire-fighting measures

Suitable extinguishing media: The content is a non-combustible liquid. Flammable after evaporation of the water (> 90% water content).

Further information: The product is an extinguishing agent.

6. Measures in case of accidental release

Personal safety precautions: not necessary

Measures for protection of the environment: If possible, do not allow to enter the soil, surface water and groundwater in undiluted form. Flush the amount of liquid contained in the Fire-Ex 8.o S with 20 litres of water.

Procedures for removal / absorption: Aspirate larger quantities. Use adsorbents (sand, clay, cat litter or other adsorbents for water) to remove spills. Contaminated materials should be discarded (see Chap. 13).

7. Handling and storage

Precautions for safe handling: Avoid skin and eye contact.

Precautions for fire and explosion protection: n.a.

Storage: Container does not hold compressed gas. Store between 0 °C and 50 °C. Protect from heat and sunlight. VCI storage class: 12.

Precautions for combined storage: Not necessary

Further information on storage conditions: None

8. Exposure control and personal protective equipment

8.1 *Additional information for the design of technical systems:* none

8.2 *Components with occupational exposure limits to be monitored:*

Glycerol

- CAS number: 56-81-5

- Safety limit value: 50 mg/m³ (E)

- Peak limit: 2 (average of 4 15-minute measurements at intervals of 1 hour each)

- Type/origin: Non-binding recommendation of the MAC Commission

- Biological limit value (BLV): none

- Notes: C

- Year: 2010

Material Safety Data Sheet

in accordance with Regulation (EC) No.
1907/2006



Trade name: Noa FireEx 8.o S
Revised: Aug 12th, 2013

Version: 1.0.5

Page 4 of 11

2-methyl-pentane-2,4-diol

- CAS number: 107-41-5
- Safety limit value: 49 mg/m³ (10 ml/m³)
- Peak limit: 2 (average of 4 15-minute measurements at intervals of 1 hour each)
- Type/origin: Non-binding recommendation of the MAC Commission
- Biological limit value (BLV): none
- Notes: none
- Year: 2010

Explanations:

- OEL occupational exposure limit (replaces the MAC and TLV values)
- BLV biological limit value, replaces the BEL value (see TRGS 903)
- Peak limit Exceedance factor X: The concentration may exceed the OEL by a factor of X for no more than 15 minutes. Exceedance factor =X=: The concentration must never exceed the OEL by a factor of more than X (momentary value). (I): Category I: Substances for which the local effect determines the limit, or sensitizing substances. (II): Category II: Resorptively effective substances.
- (E): Inspirable dust fraction
- (A): Inspirable dust, alveolar fraction
- Sampling time point b: End of exposition and/or shift
- Sampling time point c: After long-term exposure: after several previous shifts.
- Notes: H: Substance is absorbed through the skin
S: Sensitizing substance
Y: A risk of embryotoxicity is not to be expected as long as the OEL and BLV are complied with.
C: as Y
D: There are either no data for the assessment of teratogenic effects, or the available data are inadequate for a classification into one of the groups A, B or C.

8.3 Components of personal protective equipment:

For fire-fighting, select personal protective equipment appropriate for the burning materials.

Respiratory protection: not required if the room is properly ventilated

Hand protection: not required if the material is handled properly When intensive contact is to be expected, wear gloves certified according to DIN EN 374 (consultation by glove manufacturers). If this is not possible for safety reasons (e.g. work on rotating machines): Use skin protection cream. Consult company physician for the type of the skin protection cream.

Note: Contrary to Announcement 220 and REACH, indication of the glove mate-

Material Safety Data Sheet

in accordance with Regulation (EC) No.
1907/2006



Trade name: Noa FireEx 8.o S
Revised: Aug 12th, 2013

Version: 1.0.5

Page 5 of 11

rial is not sufficient. The penetration time will depend not only on the glove material, but also on the manufacturing process of the gloves. This is why consultation with the glove manufacturers is important. For the product, rubber or plastic gloves will generally be sufficient.

Eye protection : not required if the material is handled properly When intensive contact is to be expected, wear safety goggles with lateral protection.

Body protection : not required if the material is handled properly When intensive contact is to be expected, wear waterproof protective clothing and rubber boots if contamination of the clothing cannot be excluded.

General protective measures: Avoid contact with eyes and skin.

Information on workplace hygiene: Do not eat, drink, smoke or snuff at work. Before any breaks and after end of work, wash your hands.

9. Physical and chemical properties

9.1 Appearance

Consistency: liquid

9.2 Safety-related data

Melting point: Approximately 0°C

Boiling point: Approximately 100°C

Flash point: No ignition

Ignition temperature: n.a.

Auto-ignition temperature: n.a.

Explosion limits: n.a.

Vapour pressure: almost like water

Density: almost like water

Bulk density: n.a.

Solubility in water: miscible

pH value: Almost like water (7.92 for concentrate, note by MPA: will be reduced by atmospheric carbon dioxide.)

Volatile components: Water

Solubility in organic solvents: not determined

n-octanol/water partition coefficient: not determined

Kinematic viscosity: not determined

Surface tension: not determined

Interfacial tension: not determined

Material Safety Data Sheet

in accordance with Regulation (EC) No.
1907/2006



Trade name: Noa FireEx 8.o S
Revised: Aug 12th, 2013

Version: 1.0.5

Page 6 of 11

10. Stability and reactivity

- Thermal decomposition:* > 200 °C
- Materials to be avoided:* Strong oxidants (halogens, nitriles, hydrogen peroxide, perchloric acid, aqua regia, etc.), hydrides
- Hazardous reactions:* None known
- Hazardous decomposition products:* After evaporation of the water: Carbon monoxide, carbon dioxide, various hydrocarbons and small quantities of sulphur compounds; upon combustion, particularly sulphur dioxide.
- Hazardous polymerization reactions:* none
- Freezing point:* If the product is stored below 0°C, the extinguishing agent will freeze. When this happens, the container housing will bulge outwards. When melting, the extinguishing agent may segregate and must then be mixed again by shaking. As the case may be, the base of the container housing may no longer fully bulge back.

11. Toxicology information

11.1 Product data:

11.1.1 Toxicokinetics, metabolism and distribution:

The main uptake routes are via the respiratory system in the form of aerosols and via the skin. For glycerol, an excretion rate of 2 g in 8 hours has been calculated (GESTIS). The metabolites of glycerol are utilized to form glucose, glycogen and fat. The active ingredient 2-methyl-pentane-2,4-diol is eliminated during a period of 10 days after uptake.

11.1.2 Toxicity:

There are currently no studies on the toxicity of the extinguishing agent. Based on the toxicity of the ingredients, the following toxicities must be expected:

- Acute toxicity:* The product can cause eye and skin irritation upon contact, and nausea and diarrhoea if swallowed in larger quantities. When used properly, no toxic symptoms are to be expected.
- Acute oral toxicity:* LD₅₀ (rat, orally): > 5000 mg/kg
- Acute inhalative toxicity:* Currently no data available.
- Acute dermal toxicity:* In some persons with skin conditions (eczema), the patch test showed skin reactions to the ingredient 2-methyl-pentane-2,4-diol already at concentrations as low as 1% (GESTIS).
- After inhalation:* Because of the low vapour pressure of the ingredients (with the exception of water), only the inhalation of aerosols is relevant: Irritation of the respiratory tract.
- After contact with skin:* Slight irritation after intensive skin contact possible. The ingredient glycerol can be absorbed through the skin.
- After eye contact:* Irritation, also caused by aerosols.
- After ingestion:* The ingredient glycerol is quickly absorbed in the gastrointestinal tract. After uptake of very high doses (> 700 mg/kg body weight), nausea and diarrhoea are

Material Safety Data Sheet

in accordance with Regulation (EC) No.
1907/2006



Trade name: Noa FireEx 8.o S
Revised: Aug 12th, 2013

Version: 1.0.5

Page 7 of 11

	most likely to be expected; with some delay headaches, dizziness, renal pain and increased diuresis may also occur.
<i>Sensitization:</i>	No evidence of sensitization. In humans, glycerol yields a negative patch test (IUCLID).
<i>Mutagenicity:</i>	No evidence of mutagenicity. Ames test for glycerol (in vitro) negative (IUCLID).
<i>Reproductive toxicity:</i>	There is no evidence of reproductive toxicity.
<i>Cancerogenicity:</i>	No evidence of cancerogenicity. In the ACGIH, NIOSH and IARC lists and the TRGS 905, the ingredients are not classified as carcinogenic. <i>Chronic toxicity:</i> Uptake of high doses may result in kidney damage.
<i>Practical experiences:</i>	No reports of poisoning in application known.

11.2 Animal data for the **unmixed** ingredients

11.2.1 Glycerol

LD₅₀ (rat, orally): 12,600 mg/kg (IUCLID)

LD₅₀ (rabbit, dermal): 18,700 mg/kg (IUCLID)

11.2.2 2-methyl-pentane-2,4-diol

LD₅₀ (various rodents, orally): 2500 – 5000 mg/kg (GESTIS)

LD₅₀ (rabbit, dermal): > 7.5 – 12.5 mg/kg (24 h contact, GESTIS)

11.2.3 Sodium decyl sulphate

LD₅₀ (rat, orally): 1950 mg/kg (ChemIDplus, SDB by Solberg, Norway)

11.2.4 Sodium octyl sulphate

LD₅₀ (rat, orally): 3200 mg/kg (Merck: RTECS)

12. Ecology information

The product is slightly harmful to water (WHC 1).

12.1 Extinguishing agent for use in the Fire-Ex :

Ecotoxicological effects: No examination results available so far.

Ecotoxicological data: No examination results available so far.

Further information: None.

12.2 For the **unmixed** ingredients, the following information is available to us:

12.2.1 Glycerol

Ecotoxicological effects: Readily bio-degradable. A potential for bioaccumulation is not to be expected.

Ecotoxicological data:

Fish toxicity: *Carassius auratus:* LC₅₀: > 5,000 mg/l / 24 h (Merck)

Toxicity against daphniae: *Daphnia magna:* EC₅₀: > 10,000 mg/l / 24 h (Merck)

Toxicity against bacteria: *Pseudomonas putida:* EC₅₀: > 10,000 mg/l / 16 h (Merck)

Material Safety Data Sheet

in accordance with Regulation (EC) No.
1907/2006



Trade name: Noa FireEx 8.o S
Revised: Aug 12th, 2013

Version: 1.0.5

Page 8 of 11

Toxicity against protozoa: *Entosiphon sulcatum*: EC₅₀: 3,200 mg/l / 72 h (Merck)

Toxicity against algae: *Scenedesmus quadricauda*: IC₅₀: > 10,000 mg/l / 7 d (Merck)

Further information:

Biodegradability: > 63% / 14 d (OECD 301C), decrease: DOC >70%, BOD >60%

Distribution log P(o/w): -1.76 (calculated, Merck)

BOD: 71% of THOD / 5 d (Merck)

COD: 95% of THOD (Merck)

THOD: 1.217 g/g (Merck)

WHC: 1 (slightly harmful to water) VwVwS Annex 2, no. 116

12.2.2 2-methyl-pentane-2,4-diol

Ecotoxicological effects: Readily bio-degradable. A potential for bioaccumulation is not to be expected.

Ecotoxicological data:

Fish toxicity: *Gambusia affinis*: LC₅₀: 8,510 mg/l / 98 h (Merck)

Toxicity against daphniae: *Daphnia magna*: EC₅₀: 3,200 mg/l / 48 h (Merck)

Toxicity against bacteria: *Photobacterium phosphoreum*: EC₅₀: 3,028 mg/l / 5 min (Merck)

Further information:

Biodegradability: > 70% / 28 d (Zahn-Wellens test)

Distribution log P(o/w): 0.58 (calculated, Merck)

WHC: 1 (slightly harmful to water) VwVwS Annex 3, no. 5025 (Merck)

12.2.3 Sodium decyl sulphate

Ecotoxicological effects: Readily bio-degradable. A potential for bioaccumulation is not to be expected.

Ecotoxicological data: Currently no data available.

Further information:

WHC: 2 (harmful to water) VwVwS Annex 2, no. 664

12.2.4 Sodium octyl sulphate

Ecotoxicological effects: Readily bio-degradable. A potential for bioaccumulation is not to be expected.

Ecotoxicological data: Currently no data available.

Material Safety Data Sheet

in accordance with Regulation (EC) No.
1907/2006



Trade name: Noa FireEx 8.o S
Revised: Aug 12th, 2013

Version: 1.0.5

Page 9 of 11

Further information:

WHC: 2 (harmful to water) VwVwS Annex 2, no. 664

12.2.5 Further ingredients not mentioned previously

The other ingredients not mentioned previously amount to up to 0.04 % in Fire-Ex and are all classified as water hazard class 1.

13. Disposal considerations

13.1 Product:

Recommendation: It is recommended to empty the extinguisher by spraying it empty. The extinguishing agent can be diluted with water at a ratio of 1:20 and poured into the sewage system. The emptied system can be fed into the trash. Systems that have not been emptied ought to be disposed of in accordance to official regulations.

13.2 Packagings which are not cleaned:

Recommendation: Disposal in accordance with the regulatory requirements.

14. Transport information

The Fire-Ex 8.o is not subject to the regulations for dangerous goods and not subject to the UN 1950.

Customs tariff number: 84241000

Longer transport times below 0 ° C should be avoided, otherwise freeze the extinguishing agent.

15. Regulations

15.1 There are no chemical safety assessments available to us.

15.2 Labelling according to Ordinance on Hazardous Substances/EC (Directive 1999/45/EC):

- Hazard symbols: None
- Hazard-determining component for labelling: None
- R-phrases: None
- S-phrases: 24/25 Avoid contact with eyes and skin

15.3 National German regulations:

15.3.1 Special provisions of the Ordinance on Hazardous Substances: None

15.3.2 Störfall-Verordnung: n.a.

15.3.3 TA-Luft: Item 5.2.5: Organic substances, except dusty substances:

max. mass concentration:
50 mg/m³ or max. mass flux: 0.50 kg/h (calculated as total organic carbon)

15.3.4 WHG: Water Hazard Class: slightly harmful to water (WHC 1)

15.3.5 VCI storage class: 12

Material Safety Data Sheet

in accordance with Regulation (EC) No.
1907/2006



Trade name: Noa FireEx 8.o S
Revised: Aug 12th, 2013

Version: 1.0.5

Page 10 of 11

15.3.6 Volatile compounds: Water (VOC: 0) 0)

15.4 Other regulations, restrictions and bans: None

16. Further information

Text of the R-phrases from Chapter 3:

- R 22 Harmful if swallowed.
- R 36/38 Irritating to eyes and skin
- R 38 Irritating to skin
- R 41 Danger of serious eye damage

Text of the H-phrases from Chapter 3:

- H300: Harmful if swallowed.
- H315: Causes skin irritation.
- H318: Causes severe eye injury
- H319: Causes severe eye irritation

List of abbreviations:

- ACGIH: American Conference of Governmental Industrial Hygienists
- AVV: European Waste List Directive
- BOD: Biological Oxygen Demand
- CAS No: Number of the Chemical Abstract System
- ChemIDplus: Database of the United States National Library of Medicine
- COD: Chemical Oxygen Demand
- EINECS: European Inventory of Existing Commercial Substances
- GESTIS: Substance database of the Institute for Occupational Safety and Health of the German Statutory Accident Insurance
- IARC: International Agency for Research on Cancer (World Health Organization)
- IUCLID: International Uniform Chemical Information Database
- LC₅₀: Lethal concentration for 50% of the test animals
- LD₅₀: Lethal dose for 50% of the test animals
- OEL: Occupational exposure limit
- Merck: Up-to-date material safety data sheet by Merck, Darmstadt
- MPA: Materialprüfanstalt Dresden in D-09599 Freiberg
- NIOSH: National Institute for Occupational Safety and Health (USA)

Material Safety Data Sheet

in accordance with Regulation (EC) No.
1907/2006



Trade name: Noa FireEx 8.o S

Revised: Aug 12th, 2013

Version: 1.0.5

Page 11 of 11

NTP: National Toxicology Program (USA)
OECD: Organization for Economic Cooperation and Development
OSHA: Occupational Safety and Health Administration
RTECS: Register of Toxic Effects of Chemical Substances
MSDS: Material Safety Data Sheet
TA-Luft: Technische Anleitung zur Reinhaltung der Luft (Technical Instructions on Air Quality Control)
TG: Test Guideline
THOD: Theoretical oxygen demand
TRGS: Technical rules for hazardous substances
TRK: Technical indicative concentration
VCI: Verband der Chemischen Industrie e.V.
VOC: Volatile organic carbon compounds
VwVwS: Verwaltungsvorschrift wassergefährdender Stoffe (Administrative regulation on substances hazardous to water)
WHG: Federal Water Act

The general precautions for hazardous substances are to be complied with.

The information is based on the current state of our knowledge and intended to describe the product with regard to the safety precautions to be taken. It does not constitute a warranty of any specific properties of the product described. In case of unforeseen effects or properties of the product, the material safety data sheet is not intended as a substitute for the consultation of trained professionals.