

**SAFETY DATA SHEET
ACCORDING TO Regulation (EC) No. 1907/2006**

Date of Issue: 10.10.2007

Version: 3.3

Revision Date: 16.05.2017

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**1.1 Product identifier**Product name: **PERUNIT E – underground explosive**

Other name: NEXIT, VIDEXIT E

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

Explosive for blasting operations. Do not use for other purposes.

1.3 Details of the supplier of the safety data sheet

| | | |
|---------------------------|---------|------------------|
| Explosia a.s. | tel.: | +420 466 825 200 |
| 530 02 Pardubice - Semtin | fax: | +420 466 822 966 |
| Czech Republic | e-mail: | sds@explosia.cz |

1.4 Emergency telephone number

Producer:

tel.: +420 466 824 402

fax: +420 466 824 448

National advisory body:

Toxicological Information Centre (TIS): Hospital for Occupational Diseases, Na Bojišti 1171/1, 128 21 Prague 2, tel. 224 919 293, 224 915 402 or 224 914 575

SECTION 2: HAZARDS IDENTIFICATION**2.1 Classification of the substance or mixture****2.1.1 Classification according to Regulation (EC) No 1272/2008**

Expl. 1.1; H201

Acute Tox. 1; H310

Acute Tox. 2; H300+H330

Eye Irrit. 2; H319

STOT RE 2; H373

Aquatic Chronic 3; H412

2.1.2 Additional information

For full text of all classifications and Hazard- statements see section 16.

2.2 Label elements**Hazard pictograms:****Signal word:**

Danger.

Components of mixture for introducing on label:

Ammonium nitrate, Ethyleneglycol dinitrate, Glycerol trinitrate, Monoethyleneglycol

Hazard statements:

H201 Explosive; mass explosion hazard.

Precautionary statements:

P501 Dispose of contents/container to national regulations for disposal of explosives.

Additional information on label:

-

Note:

Directive 1272/2008 stipulates in Annex 1, Art. 1.3.5 that explosives placed on the market with a view to obtaining an explosive or pyrotechnic effect shall be labelled and packaged in accordance with the requirements for explosives only, therefore the manufacturer marks the product on the basis of recommendations of the National Advisory Body with elements used for explosibility.

2.3 Other hazards

The product does not meet the criteria for PBT, vPvB.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Description of the mixture:

Mixture of ammonium nitrate, ethyleneglycol dinitrate, glycerol trinitrate, monoethyleneglycol, nitrocellulose and other components not classified as dangerous.

Hazardous ingredients:

| Identification name | CAS No ES No Index No Registration No | Content % | Classification according to (ES) 1272/2008 (CLP) |
|--------------------------|--|-----------|--|
| Ammonium nitrate | 6484-52-2 229-347-8 - 01-2119490981-27-XXXX | cca 60.0 | Ox. Sol. 3; H272 Eye Irrit. 2; H319 |
| Ethyleneglycol dinitrate | 628-96-6 211-063-0 603-032-00-9 01-2119492860-31-XXXX | cca 20.0 | Unst. Expl.; H200 Acute Tox. 1, H310 Acute Tox. 2, H300+H330 STOT RE 2; H373 |
| Glycerol trinitrate | 55-63-0 200-240-8 603-034-00-X 01-2119488893-18-XXXX | cca 10.0 | Unst. Expl., H200 Acute Tox. 1, H310 Acute Tox. 2, H300+H330 STOT RE 2, H373 Aquatic Chronic 2, H411 |
| Monoethyleneglycol | 107-21-1 203-473-3 603-027-00-1 01-2119456816-28-XXXX | cca 2.5 | Acute Tox. 4; H302 STOT RE 2, H373 |
| Nitrocellulose | 9004-70-0 - 603-037-00-6 - | cca 1.2 | Expl. 1.1; H201 |

For full text of Hazard- statements see section 16.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General notes:

In all cases keep the victim at physical and psychic rest and keep warm. Never give anything to an unconscious person. In heavy cases, always after contact with eyes and if swallowed, seek medical advice.

Following inhalation:

Break off the exposition. Move the victim to fresh air (not on the sun). If not breathing, give artificial respiration.

Following skin contact:

Remove contaminated clothing. Wash affected area with water and soap and use skin protective cream.

Following eye contact:

Rinse with water for at least 15 minutes. Move to the physician, while continue rinsing.

Following ingestion:

Rinse mouth with fresh water, give to drink some 0.2-0.3 l water containing active carbon (e.g. 5 tbs Carbsorb) and within not more than one hour induce vomiting (meaningless if induced later). Give active carbon repeatedly, no matter if the vomiting was induced or not. Seek medical advice. Do not induce vomiting in case of unconsciousness, convulsions or bad physical conditions.

4.2 Most important symptoms and effects, both acute and delayed

The mixture causes headaches, pain in abdomen, dizziness, nausea.

4.3 Indication of any immediate medical attention and special treatment needed

No data.

SECTION 5: FIREFIGHTING MEASURES**5.1 Extinguishing media**

Suitable extinguishing media: water spray. Adapt extinguishing media to the kind of fire.

Unsuitable extinguishing media: powders.

5.2 Special hazards arising from the substance or mixture

In case of burning: extreme danger of explosion. Try to prevent the spread of fire. If there is a danger of affecting the product by fire do not extinguish. Warn surroundings of danger of explosion and evacuate immediately to a safe distance.

In case of burning, toxic and irritant gases are formed.

5.3 Advice for fire-fighters

Self-contained breathing apparatus and protective clothing conforming to EN 469.

SECTION 6: ACCIDENTAL RELEASE MEASURES**6.1 Personal precautions, protective equipment and emergency procedures**

Avoid the free movement of persons in contaminated area. Wear personal protective equipment. Avoid spreading of the product. Avoid contact of spilled material with open fire, electric sparks and aggressive chemical compounds.

6.2 Environmental precautions

Avoid discharge to surface- and groundwater. If it is not possible, inform police and fire-fighters.

6.3 Methods and material for containment and cleaning up

Sweep up spilled material and place in impermeable packages. Flush spill area with plenty of water. Dispose by explosion only in the place approved for disposal of explosives in accordance with national regulations relating to explosives.

6.4 Reference to other sections

More detailed disposal instructions see section 13, personal protective equipment see section 8.

SECTION 7: HANDLING AND STORAGE**7.1 Precautions for safe handling**

Handle in accordance with regulations relating to explosives. Keep away from open flame, heat, do not eat, drink or smoke. Maximum care should be taken during handling (lifting, transferring, opening of containers) and transportation. Keep away from combustible material. Take precautionary measures against static discharges. Observe personal hygiene measures. Wear suitable protective clothing and gloves. Wash with water and soap thoroughly after handling. Ensure drink water for the first-aid.

7.2 Conditions for safe storage, including any incompatibilities

Store according to national regulations relating to explosives.

Maximum relative humidity 75 %. Recommended storage temperature -10 to +25 °C.

7.3 Specific end use(s)

Blasting operations. Observe safety regulations for processing of explosives. To be used within 12 months after manufacturing.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Exposition limits according to Czech government statute No. 361/2007 Sb. in actual version

Occupational exposure limit values:

| Substance / State | Long term mg/m ³ | Short term mg/m ³ |
|---|--------------------------------|---------------------------------|
| Glycerol trinitrate / Czech republic | PEL: 0.5 | NPK-P: 1.0 |
| Ethyleneglycol dinitrate / Czech republic | PEL: 0.5 | NPK-P: 1.0 |
| Monoethyleneglycol / Czech republic | PEL: 50 | NPK-P: 100 |

8.1.2 Monitoring procedures

To ensure observance of Czech government statute 361/2007 Sb. and to observe obligations included.

8.1.3 Biological limit values

Not determined in Czech Republic and European Union.

8.1.4 DNEL and PNEC values

| Ammonium nitrate | | | | | | | | CAS 6484-52-2 |
|--------------------|----------------|-----------------------|------------------|-----------------------|-------------------------|---------------|------------------------|---------------|
| DNEL | | | | | | | | |
| Users | Route of study | | Effects | | Time of exposure | | Value | |
| Workers | Inhalation | | Systemic effects | | Long-term | | 37.6 mg/m ³ | |
| Workers | Dermal | | Systemic effects | | Long-term | | 21.3 mg/kg/den | |
| General population | Inhalation | | Systemic effects | | Long-term | | 11.1 mg/m ³ | |
| General population | Dermal | | Systemic effects | | Long-term | | 12.8 mg/kg/den | |
| General population | Oral | | Systemic effects | | Long-term | | 12.8 mg/kg/den | |
| PNEC | | | | | | | | |
| Freshwater | Marine water | Intermittent releases | STP | Sediment (freshwater) | Sediment (marine water) | Soil | Secondary poisoning | |
| 0.45 mg/l | 0.045 mg/l | 4.5 mg/l | 18 mg/l | not available | not available | not available | No potential | |

| Glycerol trinitrate | | | | | | | | CAS 55-63-0 |
|---------------------|----------------|-----------------------|------------------|-----------------------|-------------------------|---------------|---------------------|-------------|
| DNEL | | | | | | | | |
| Users | Route of study | | Effects | | Time of exposure | | Value | |
| Workers | Dermal | | Systemic effects | | Long-term | | 0.5 mg/kg/day | |
| Workers | Dermal | | Systemic effects | | Acute/short term | | 2.5 mg/kg/day | |
| General population | Oral | | Systemic effects | | Long-term | | 0.5 mg/kg/day | |
| PNEC | | | | | | | | |
| Freshwater | Marine water | Intermittent releases | STP | Sediment (freshwater) | Sediment (marine water) | Soil | Secondary poisoning | |
| 0.0198 mg/l | not available | 0.0198 mg/l | not available | not available | not available | not available | No potential | |

| Ethylenglykol | | | | | | | | CAS 107-21-1 |
|--------------------|----------------|-----------------------|------------------|-----------------------|-------------------------|--------------|----------------------|---------------------|
| DNEL | | | | | | | | |
| Users | Route of study | | Effects | | Time of exposure | | Hodnota | |
| Workers | Inhalation | | Systemic effects | | Long-term | | 35 mg/m ³ | |
| Workers | Dermal | | Systemic effects | | Long-term | | 106 mg/kg/day | |
| General population | Inhalation | | Systemic effects | | Long-term | | 7 mg/m ³ | |
| General population | Dermal | | Systemic effects | | Long-term | | 53 mg/kg/den | |
| PNEC | | | | | | | | |
| Freshwater | Marine water | Intermittent releases | STP | Sediment (freshwater) | Sediment (marine water) | Air | Soil | Secondary poisoning |
| 10 mg/l | 1 mg/l | 10 mg/l | 199.5 mg/l | 37 mg/kg | 3.7 mg/kg | No potential | 1.53 mg/kg | No potential |

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Process enclosures, local exhaust, general ventilation.

8.2.2 Personal protective equipment

Protective clothing shall be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. All used personal protective equipment should conform Regulation 2016/425/EU.

Eye and face protection - chemical goggles;

Skin protection - protective gloves depending on operation conforming EN 374, protective clothing, boots, cap;

Respiratory protection – in case of fumes discharge use respiratory protection mask with filter A2.

8.2.3 Environmental exposure controls

Avoid release to the environment. If it is impossible, substance should be removed safely from the place of leakage. In case of leakage of substance to air or water sources, soil or sewer system, inform relevant authorities about leakage.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

| | |
|--|-------------------------------------|
| Appearance: | plastic material of red colour |
| Odour: | characteristic odour of nitroesters |
| Odour threshold: | not available |
| pH : | not available |
| Melting point/freezing point: | not applicable |
| Initial boiling point and boiling range: | not applicable |
| Flash point: | not applicable |
| Evaporation rate: | not applicable |
| Flammability: | not applicable - explosive |
| Upper flammability or explosive limits: | not applicable |
| Lower flammability or explosive limits: | not applicable |
| Vapour pressure: | not applicable |
| Vapour density: | not applicable |
| Relative density: | not available |
| Solubility: | insoluble in water |
| Partition coefficient: n-octanol/water: | not available |
| Auto-ignition temperature: | not applicable - explosive |
| Decomposition temperature: | not applicable |
| Viscosity: | not applicable |
| Explosive properties: | Expl. 1.1 |
| Oxidising properties: | not applicable – explosive |

9.2 Other information

Flash point: > 190 °C.

Bulk density: 1,30 g/cm³.

Impact sensitivity: min. 5 J.

Lower sensitivity to friction, electric spark, high detonation initiation sensitivity.

Soluble in acetone, ethylacetate, partly soluble in benzene and toluene.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

Explosive.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Unknown.

10.4 Conditions to avoid

Temperature above 50 °C, strong impact, friction, direct sun light.

10.5 Incompatible materials

Strong acids and alkalis.

10.6 Hazardous decomposition products

Oxides of nitrogen and carbon.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

| | |
|------------------------------------|---|
| Acute toxicity: | Fatal if swallowed (category 2), in contact with skin (category 1) or if inhaled (category 2). |
| | Ammonium nitrate LD ₅₀ : 2950 mg.kg ⁻¹ , oral, rat |
| | Glycerol trinitrate LD ₅₀ : 685 mg.kg ⁻¹ , rat, oral |
| | Glycerol trinitrate LD ₅₀ : >9 mg.kg ⁻¹ , rat, dermal |
| | Ethyleneglycol dinitrate LD ₅₀ : 616 mg.kg ⁻¹ , rat, oral |
| | Monoethyleneglycol LD ₅₀ : 7.712 mg.kg ⁻¹ , rat, oral |
| | Monoethyleneglycol LD ₅₀ : > 2.5 mg.l ⁻¹ , rat, inhalation |
| | Nitrocellulose LD ₅₀ : >5000 mg.kg ⁻¹ , rat, oral |
| Skin corrosion/irritation: | not containing these substances (or less than classification limit) |
| Serious eye damage/irritation: | Causes serious eye irritation. (Eye Irrit. 2; H319) Ammonium nitrate – irritating, rabbit, Hansen E. |
| Respiratory or skin sensitisation: | not containing these substances (or less than classification limit) |
| Germ cell mutagenicity: | not containing these substances (or less than classification limit) |
| Carcinogenicity: | not containing these substances (or less than classification limit) |
| Reproductive toxicity: | not containing these substances (or less than classification limit) |
| STOT-single exposure: | not containing these substances (or less than classification limit) |
| STOT-repeated exposure: | May cause damage to organs through prolonged or repeated exposure. STOT RE 2; H373 |
| Aspiration hazard : | not containing these substances (or less than classification limit) |

11.2 Likely routes of exposure

Through inhalation, skin exposure and ingestion.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Harmful to aquatic life with long lasting effects.

| | |
|--------------------------|---|
| Ammonium nitrate | LC ₅₀ for fish: 447 mg.l ⁻¹ (48 h) |
| Glycerol trinitrate | LC ₅₀ for fish: 3.48 mg.l ⁻¹ |
| Glycerol trinitrate | LC ₅₀ for invertebrates: 17,83 mg.l ⁻¹ (48 h) |
| Glycerol trinitrate | EC ₅₀ for algae: 1,15 mg.l ⁻¹ (96 h) |
| Ethyleneglycol dinitrate | LC ₅₀ for fish: 1.9 mg.l ⁻¹ |
| Monoethyleneglycol | LC ₅₀ for fish: 72860 mg.l ⁻¹ (96 h) |
| Monoethyleneglycol | EC ₅₀ for invertebrates: > 100 mg.l ⁻¹ (48 h) |
| Monoethyleneglycol | EC ₅₀ for algae: 6500 - 13000 mg.l ⁻¹ (96 h) |

12.2 Persistence and degradability

Not established.

12.3 Bioaccumulative potential

Not established.

12.4. Mobility in soil

Solubility of ethyleneglycol dinitrate and glycerol trinitrate in water is relatively low (5 – 6.8 g/l respectively 1.4 g/l). Nitrocellulose is practically insoluble in water.

12.5 Results of PBT and vPvB assessment

Assessment was not carried out.

12.6 Other adverse effects

Lack of data.

SECTION 13: DISPOSAL CONSIDERATIONS**13.1 Waste treatment methods**

Substance/mixture: Sweep up spilled material carefully and place in impermeable packages. Flush spill area with plenty of water. Dispose by explosion only in the place approved for disposal of explosives in accordance with national regulations relating to explosives.

Packaging: Packaging without the rest of product must be incinerated only in a hazardous waste incinerator facility under observation of official regulations.

Waste codes / waste designations according to EWC:

16 04 03 N Other waste explosives

SECTION 14: TRANSPORT INFORMATION

| | |
|---|-----------------------------|
| 14.1 UN number: | 0081 |
| 14.2 UN proper shipping name: | EXPLOSIVE, BLASTING, TYPE A |
| 14.3 Transport hazard class: | 1 |
| 14.4 Packing group: | |
| 14.5 Environmental hazards: | no |
| 14.6 Special precautions for user: | no |
| 14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code: | not applicable |
| 14.8 Other applicable information: | |
| - for ADR/RID | |
| Classification code: | 1.1D |
| Label: | 1 |
| - for IMDG | |
| EmS | F-B, S-Y |
| - for IATA | Air transport is forbidden |

SECTION 15: REGULATORY INFORMATION**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****EU Regulations:**

Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), in the wording of later regulations

Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures (CLP), in the wording of later regulations

European Waste Catalogue (EWC)

Directive 2012/18/EU of 4 July 2012 on the control of major-accident hazards involving dangerous substances – SEVESO III

15.2 Chemical safety assessment

Assessment was not carried out.

SECTION 16: OTHER INFORMATION**Changes to the previous version:**

- Version 3.1 - Mixture was classified according to Regulation no. 1272/2008/ES,
- Correction Art. 2.2 – label elements
- Version 3.2. - updated in accordance with Regulation (EC) no. 2015/830.
- Version 3.3 - updated EU Regulation, Art. 8.2.2 Personal protective equipment, Art. 7.3 - Specific end use(s)

Abbreviations:

| | |
|-------|---|
| CAS | Chemical Abstracts Service |
| EN | European standard |
| EWC | The European Waste Catalogue |
| PEL | Permissible Exposure Limit, long-term limit (8 hours) |
| NPK-P | Maximum allowable concentrations of chemicals in the workplace atmosphere, short-term limit |
| CLP | Regulation No. 1272/2008/EC |
| DNEL | Derived no-effect level |
| PNEC | Predicted no-effect concentration |
| REACH | Regulation No. 1907/2006/EC |
| PBT | Persistent, bioaccumulative and toxic |
| vPvB | very persistent and very bioaccumulative |
| ADR | The European Agreement concerning the International Carriage of Dangerous Goods by Road |
| RID | Regulations concerning the International Transport of Dangerous Goods by Rail |
| IMDG | The International Maritime Dangerous Goods |
| IATA | The International Air Transport Association |

Full text of data used for classification:

| | |
|-------------------|--|
| Acute Tox. 1 | Acute toxicity, Category 1 |
| Acute Tox. 2 | Acute toxicity, Category 2 |
| Acute Tox. 4 | Acute toxicity, Category 4 |
| Aquatic Chronic 2 | Hazardous to the aquatic environment chronic, Category 2 |
| Aquatic Chronic 3 | Hazardous to the aquatic environment chronic, Category 3 |
| Expl. 1.1 | Explosive, Division 1.1 |
| Eye Irrit. 2 | Serious eye damage/eye irritation, Category 2 |
| Ox. Sol. 3 | Oxidising solid, Category 3 |
| STOT RE 2 | Specific target organ toxicity — repeated exposure, Category 2 |
| Unst. Expl. | Unstable Explosive |

| | |
|-------------|--|
| H200 | Unstable explosives. |
| H201 | Explosive; mass explosion hazard. |
| H272 | May intensify fire; oxidiser. |
| H302 | Harmful if swallowed. |
| H310 | Fatal in contact with skin. |
| H319 | Causes serious eye irritation. |
| H373 | May cause damage to organs through prolonged or repeated exposure. |
| H300 + H330 | Fatal if swallowed or if inhaled |
| H411 | Toxic to aquatic life with long lasting effects. |
| H412 | Harmful to aquatic life with long lasting effects. |

Key literature references and sources for data

legislation, chemical databases and tables

Relevant data for classification

The mixture is classified on the basis of the conventional calculation method.

Instructions for training

For handling with the product Safety Regulations shall be elaborated, negotiated with Regional Hygienist. These Regulations shall be available in the workplace.

The information provided in this Safety Data Sheet is based on the present state of our knowledge and experience and are intended to describe our product with respect to possible safety demands. The information is not to be considered a warranty of quality specification. Recipients of our product must take responsibility for observing existing laws and regulations.