



NITROERG

Location of activity:

ul. Chemików 133, 43-150 Bieruń, POLAND, tel. (+48) 32 21 60 101, fax (+48) 32 21 60 379
Explosives tel. (+48) 32 21 60 135, Plastic Products tel. (+48) 32 21 60 361

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NITROERG Spółka Akcyjna, ul. Chemików 133, 43-150 Bieruń, POLAND

www.nitroerg.pl, nitroerg@nitroerg.pl

1 PRODUCT AND COMPANY IDENTIFICATION

1.1 Product name:

NITROCET 50

(2-ETHYLHEXYL NITRATE; NITRIC ACID, 2-ETHYLHEXYL ESTER, ISOOCTYL NITRATE)

Chemical formula:

C₈H₁₇ONO₂

Trade symbol:

Nitrocet 50

Name according to IUPAC:

2-Ethylhexylnitrate (2EHN)

1.2 Application of the preparation

Nitrocet 50 is used as an additive of the fuel oil and heating oil.

1.3 Manufacturer

**NITROERG S.A.
Chemików 133
43-150 BIERUŃ
POLAND**

1.4 Emergency telephone

+48 (032) 39 28 000

2 COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name of the product: 2-ethylhexyl nitrate

Substance classification: Xn, N, R: 20/21, 44, 53

CAS number: 27247-96-7

EINECS number: 248-363-6

**UN number: 3082 - ENVIRONMENTALLY HAZARDOUS
SUBSTANCES, LIQUID, N.O.S.**

3 HAZARDS IDENTIFICATION:

Xn - Hazardous to health

3.1 Toxicological hazard

Irritating in case of inhalation or skin contact.

Harmful if ingested.

N - harmful to the environment

3.2 Ecotoxicological hazard

Substance has a slight harmful effect on the live organisms, however because it is lighter than water and insoluble in water may form an organic layer on water surface which hinderan oxygen access.



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Additional hazards

3.3 Fire hazard

Flammable substance and vapours.

3.4 Explosion hazard

When heated in closed containers, the risk of pressurized explosion occurs. If heated over 100 °C autocatalytic, exothermic decomposition may occur, which causes violent increase of the temperature and pressure.

4 FIRST-AID MEASURES

After inhalation: Move the affected person away from the exposure area. Keep at rest in any assumed position. Call a doctor.

After skin contact: Remove clothes, wash the skin with plenty of warm, running water. In case of changes on skin, seek medical advice.

After eyes contact: Rinse at least 15 minutes with plenty of cool, preferably running water (avoid strong water flow for the risk of mechanical corneal damage).

Call a doctor. Attention: Persons exposed for eyes contamination should be advised on necessity and method of immediately eye rinsing.

After ingestion: Do not induce vomiting. Call a doctor.

5 FIRE FIGHTING MEASURES

Heating in closed container may cause explosion. In case of thermal decomposition the risk of the nitrogen oxides emission occurs.

Inform about danger.

Remove all persons that are not involved in liquidation of damage from the hazard area, give evacuation orders, if necessary.

Call fire brigade and police.

Extinguishing media: carbon dioxide, extinguishing powders, foams, water spray

Unsuitable extinguishing media: water jet

Small fire: Fight the fire using dry powder or carbon-dioxide extinguisher (carbon dioxide).

Large fire: Extinguish the burning containers or spilled substance with foam or water spray. Cool the containers exposed to fire or high temperatures with water. If it is possible remove the transport tanks from the hazard area.

Special protective equipment

Wear protective, gas-tight clothing with respiratory protection apparatus.

Attention: During combustion and decomposition toxic reaction products may be released.



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6 ACCIDENTAL RELEASE MEASURES

Eliminate sources of ignition (extinguish open flame, no smoking); protect sink basin. Avoid direct contact with releasing substance, dilute vapours with water spray. If it is possible, remove the leakage (seal, place the damaged packing in an emergency container). Collect the spilled substance to a closing container, pick the residue with absorbent material (e.g. wood sawdust, kieselguhr). If the product has penetrated water courses, drains or has contaminated the plants, inform the local authorities. Use personal protection measures as given in Section 8.

7 HANDLING AND STORAGE

7.1 Handling Apply protection measures while using: do not eat and drink, avoid the contact with the substance, avoid inhaling vapours, observe personal hygiene, use personal protective measures (see section 8), work in well-ventilated rooms, avoid the contact of the substance with an open flame and temperature exceeding 45°C. Storage area should be unheated.

7.2 Storage: In steel containers, away from sources of heat and other flammable products. It is recommended to place storage containers in open, ventilated area, away from apartment buildings. Do not install any heating system. It is recommended to install fire and heat detection system. To minimize the leakage impact and the product penetration to the environment there should be a safety tray below the containers with a minimal capacity that can cover the container content and the water possibly used for possible fire-fighting or emergency cooling of the container.

7.3 Loading and unloading: Use the equipment that poses no risk of product heating. Transport of Nitrocet by pump should always be conducted in controlled conditions and all valves must be open before the pump starts to work. Do not pump the substance when the outlet valve is open because it can cause overheating of the product in pump. Avoid pumping in closed loop to prevent product heating.

7.4 Transport by pipeline: Use not insulated pipeline of mild steel or stainless steel. All steam and electric couplings must be physically disconnected. If it is possible use a pipeline destined only for 2-ethylhexylnitrate. Transport from container to container can be carried out using pneumatic pumping system with nitrogen and air.

7.5 Valves: It is recommended to use a fully opened ball valve of stainless steel. You can also use conventional ball, gate and butterfly valves of stainless steel, cast iron and cast steel. Do not use copper, zinc and its alloys, aluminium and majority of plastics.

8 EXPOSURE CONTROLS/ PERSONAL PROTECTION

8.1 Personal Protection Measures

Respiratory protection: If the substance concentration is fixed, known and amounts to less than 1 ppm, respiratory protection is not necessary. In situations, when the substance concentration is not known or exceeds 1 ppm, use personal protection measures of the highest recommended protection class: gas-tight, electrostatic clothing with respiratory protective equipment. The personal protection measures should be chosen considering the substance concentration in the workplace, during an exposition and considering the employee's activities on the basis of "Personal protection measures" catalogue publishing by Central Institute for Labour Protection.



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Eye protection: glasses or face shield.

Hand protection: wear suitable long gloves of neoprene or nitrile rubber if the skin contact is likely.

Skin protection: wear protective clothing protecting against the substance penetration if the skin contact is likely.

8.2 Types of exposure - hygienic standards

| | |
|-------|-----------------------|
| NDS | 3.5 mg/m ³ |
| NDSch | 7 mg/m ³ |
| NDSP | not specified |
| DSB | not specified |

NDS-highest permissible concentration, **NDSch**-short-term, **NDSP**-threshold (Poland)

8.3 Methods of exposure assessment at workplace

PN-Z-04008.07:2002 Air purity protection. Sampling methods. General resolutions. Principles of air sampling in work place and interpretation of results.

Determination of AIO content by gas chromatography method.

PN- Polish Standard

8.4 Requirements for ventilation

General room ventilation is necessary. Suction hole of the local ventilation at working surface or below. Exhausts of general ventilation in upper part of the room and at the floor level.

9 PHYSICAL AND CHEMICAL PROPERTIES

| | |
|---------------------------------------|-------------------------------|
| Molecular weight | 175.23 |
| Physical state at 20 °C | liquid |
| Colour | colourless |
| Odour | characteristic |
| Freezing point | < -45 °C |
| Flash point | > 70 °C (in closed container) |
| Auto/Self ignition temperature | 130 °C (decomposition) |
| Boiling point | > 100 °C (decomposition) |
| Decomposition temperature | > 100 °C |
| Solubility in water at 20 °C | 12.6 g/m ³ |
| Density at 20 °C | 960 kg/m ³ |
| Density of technical product at 20 °C | 960÷963 kg/m ³ |
| Vapour pressure at 20 °C | 27 Pa |
| Vapour pressure at 40 °C | 40÷53 Pa |
| Vapour pressure at 82 °C | 1.33 kPa |
| Kinematic viscosity at 20 °C | 1.8 cSt |
| Vaporization heat: | 368 kJ/kg |
| Upper explosion limit in air: | 0.25 % v/v |

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10 STABILITY AND REACTIVITY

The substance is stable in ambient temperature.

Combustion products: carbon dioxide, water and nitric oxides.

To be avoided:

- heating up to 70 °C;
- contact with heat sources, fire and sparks;
- overheating of containers leading to increased vaporization;
- contamination of the substance with acids, bases, oxidizing agents, reducing agents, amines and phosphates.

11 TOXICOLOGICAL INFORMATION

Symptoms of acute poisoning

Swallowing causes irritation of oral cavity, gullet and alimentary tract. Contact with eyes causes lacrimation, redness of eyes and conjunctivitis. Skin absorption may cause irritation. In form of vapours or mist the substance causes irritation of nose, gullet and respiratory tract.

Absorption by respiratory system, alimentary tract or skin may cause dilation of blood vessel, which result in lowering of blood pressure, headache and psychical disorders. The risk of loss of consciousness occurs. Entering of the liquid substance to lungs may cause chemical pneumonia.

Symptoms of chronic poisoning

Repeated and/or prolonged contact with skin may cause skin affections.

12 ECOLOGICAL INFORMATION

Non-volatile and practically insoluble in water substance - no risk of water pollution within the solubility limits. It stays on water surface forming a layer impermeable to oxygen.

| | |
|---|---------------|
| Permissible pollution of atmospheric air | not specified |
| Permissible pollution of inland surface water | not specified |

Toxic concentration for aquatic animal and vegetable organisms:

Classification data:

| | |
|--|------------------------|
| Acute toxicity (LC ₅₀ /96h) for <i>Danio rerio</i> fish | above solubility limit |
| Acute toxicity (EC ₅₀ /48h) for <i>Daphnia magna</i> | above solubility limit |
| Inhibition of algae growth (EC ₅₀) biomass | above solubility limit |
| Inhibition of bacterial colony growth. | no information's |

Mobility: On the basis of n-octanol/water coefficient moderate mobility/moderate affinity for soil and deposit can be anticipated.

Persistence and degradability: The substance does not show any signs of biodegradability in water. Shows hydrolysis ability.

| | |
|---|--------------|
| Half decomposition period at pH 7 in 25°C | ca. 7 days |
| Half decomposition period at pH 7 in 50°C | ca. 24 hours |



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Bioaccumulation potential: The substance is well miscible with fats and shows bioaccumulation potential.

13 DISPOSAL CONSIDERATIONS:

Destroy possible waste of isooctyl nitrate by incineration in permitted plants equipped in utilization systems of combustion gas, wet scrubbers and dust extraction systems. The substance must not be transferred to waste storage area nor treated in biological process.

14 TRANSPORT INFORMATION

ADR/RID/IMDG/IAT classification:

Material identify number: UN 3082

Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S.

Class: 9

Packing Group: III

Classification Code: M6

DOT classification (USA)

Material identify number: NA 1993

Proper shipping name: COMBUSTIBLE LIQUIDS, N.O.S. (2-ETHYLHEXYL NITRATE)

Class: Combustible liquid

Packing Group: III

TDG classification (Canada)

Material identify number: UN 3082

Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (2-ETHYLHEXYL NITRATE)

Class: Combustible liquid

Packing Group: III

15 REGULATORY INFORMATION

- Act of 11th January 2001 on chemical substance and preparation (Journal of Laws 01.11.84 with subsequent changes)
- Ordinance of the Minister of Health of 14th December 2004 amending the Ordinance on Material Safety Data Sheet of dangerous substance and chemical preparation (Journal of Laws 05.2.8)
- Ordinance of the Ministry of Health of 2nd September 2003 on criteria and classification method of chemical substances and preparations (Journal of Laws 03.171.1666)
- Ordinance of the Minister of Health of 28th September 2005 on the list of hazardous substances and its classification and labelling (Journal of Laws 05.201.1674)
- Ordinance of the Minister of Labour and Social Policy of 10th October 2005 amending the Ordinance on highest permissible concentration and intensity of harmful agents for health at work-place (Journal of Laws 05.212.1769)
- All legal acts set forth above have been adopted by the Polish Parliament and the Polish Government and comply with the EU regulations



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

Labelling

Transport packaging must be labelled with the sign "UN 3082 Nitroacet 50" or „UN 3082 Isooctyl nitrate” and with the danger label No. 9 according to ADR Agreement.

Vehicles marking

Transport units must be marked in front, in back and on sides of each tank or tank chamber with orange boards with the danger identify number "90" and UN number "3082". Board design and their arrangement must be in accordance with ADR Agreement.

Identification:

Warnings symbols:

Xn - Hazardous to health

N – Harmful to the environment

R-phrases

R 20/21 Harmful by inhalation and in contact with skin.

R 44 Risk of explosion if heated under confinement.

R 53 May cause long-term adverse effects in the aquatic environment.

S-phrases

S 15 Keep away from sources of ignition - No smoking.

S24/25 Avoid contact with skin and eyes.

S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

16 OTHER INFORMATION

This Safety Data Sheet has been prepared on the basis of DIN safety data sheet worked out by ADIBIS Drejogade 11 / Denmark 23rd September 1992 and Best Practices Manual - CEFTIC Working Group of Subcommittee of Health and Safety Regulations. The data describes the product in respect of safety and can not be considered as guaranteed values.