

JET A-1 FUEL

Written on: 01.10.1998 / Revised on: 09.10.2013

Version: 4.0

Written in accordance with Commission Regulation No 453/2010

Section 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND COMPANY/UNDERTAKINGS

1.1 PRODUCT IDENTIFICATION

Commercial name

JET A-1 Fuel

Contains

Fraction-distilled petroleum

1.2 RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST

Identified uses

| Identified use | Process category [PROC] | Product category [PC] | Sector of use [SU] | Article category [AC] | Environmental release category [ERC] |
|---|--|-----------------------|--------------------|-----------------------|--|
| Industrial | | | | | |
| 01 – Substance production | PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15 | | SU3, SU8, SU9 | | ERC1, ERC4 |
| 01b – Used as an intermediate | PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15 | | SU3, SU8, SU9 | | ERC6a |
| 01a – Substance distribution | PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15 | | SU3 | | ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7 |
| 02 – Substance and mixture formulation and re-packaging | PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15 | | SU3, SU10 | | ERC2 |
| 12a – Used as fuel (industrial) | PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16 | | SU3 | | ERC7 |
| 13a – Used in/as industrial liquid | PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9 | | SU3 | | ERC7 |
| Professional | | | | | |
| 12b – Used as fuel (professional) | PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16 | - | SU22 | - | ERC9a, ERC9b |
| Consumer | | | | | |
| 12c – Used as fuel (consumer) | - | PC13, | SU21 | - | ERC9a, ERC9b |

Marking descriptions:

- PROC1 Used in a closed process, no likelihood of exposure
- PROC2 Used in a closed, continuous process with occasional controlled exposure
- PROC3 Used in a closed-batch process (synthesis or formulation)
- PROC4 Used in batch or other processes (synthesis), with increased likelihood of exposure
- PROC 8a Transfer of substances or mixtures (charging/discharging) from/to vessels / large containers at non-dedicated facilities
- PROC8b Transfer of substance or mixture (charging/discharging) from/to vessels / large containers at dedicated facilities
- PROC9 Transfer of substance or mixture to small containers (a dedicated filling line with a weighing unit)
- PROC14 Production of preparations* or articles by tableting, compression, extrusion, pelletization
- PROC16 Using materials as fuel sources, limited exposure to unburned product to be expected
- PC13 Fuels
- ERC1 Manufacture of substances
- ERC2 Formulation of preparations*
- ERC3 Formulation in materials
- ERC4 Industrial use of processing aids in processes and products, not becoming part of articles
- ERC5 Industrial use resulting in inclusion into or onto a matrix

ERC6a Industrial use resulting in manufacture of another substance (use of intermediates)

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| | |
|-------|--|
| ERC6b | Industrial use of reactive processing aids |
| ERC6c | Industrial use of monomers for manufacture of thermo-plastics |
| ERC6d | Industrial use of process regulators for polymerization processes in the production of resins, rubbers, polymers |
| ERC7 | Industrial use of substances in closed systems |
| ERC9a | Wide dispersive indoor use of substances in closed systems |
| ERC9b | Wide dispersive outdoor use of substances in closed systems |
| SU3 | Industrial uses: uses of substances as such or in preparations* at industrial sites |
| SU8 | Manufacture in bulk, large scale chemicals (including petroleum products) |
| SU9 | Manufacture of fine chemicals |
| SU10 | Formulation (mixing) of preparations and/or re-packaging (excluding alloys) |
| SU21 | Consumer uses: private households (= general public = consumers) |
| SU22 | Professional uses: public domain (administration, education, entertainment, services, handicraft) |

Uses advised against

Other uses than recommended are advised against, unless, prior to commencing the use, proper assessment is carried out to prove whether the use is controlled. This additional assessment shall be carried out at the sole responsibility of each registrar.

1.3 INFORMATION ON THE MATERIAL SAFETY DATA SHEET SUPPLIER

Manufacturer Polski Koncern Naftowy ORLEN S.A.
09-411 Płock, ul. Chemików 7
Telephone no.: (+48 24) 365 00 00
Fax: (+48 24) 365 45 55
Telephone no.: (+48 24) 365 35 24
e-mail: reach@orlen.pl (e-mail of MSDS coordinator)

1.4 EMERGENCY TELEPHONE NUMBER

Company Fire Brigade

Krajowe Centrum Pomocy w Transporcie Materiałów Niebezpiecznych – SPOT

- Telephone numbers: (+48 24) 365 70 32 and (+48 24) 365 70 33 (available 24h/day)

- e-mail straz.pozarna@orlen.pl

Section 2. HAZARDS IDENTIFICATION

2.1 SUNSTANCE OR MIXTURE IDENTIFICATION

According to Regulation (EC) no. 1272/2008, accounting for applicable H phrases (for contents, see section 16)

Physical and chemical hazards

Flam. Liq 3 H226 Flammable liquid and vapor

Human health hazards

Asp. Tox. 1 H304 May be fatal if swallowed and enters airways

Skin Irrit. 2 H315 Causes skin irritation

STOT SE 3 H336 May cause drowsiness or dizziness

Environmental hazards

Aquatic Chronic 2 H411 Toxic to aquatic life with long lasting effects

According to Directive 1999/45/EC, accounting for applicable H phrases (for contents, see section 16)

Physical and chemical hazards

R10 Flammable

Human health hazards

Xn, R65 Harmful: may cause lung damage if swallowed.

Xi, R38 Irritating to skin

Environmental hazards

N, R51/53 Toxic to aquatic organisms; may cause long-term adverse effects in the aquatic environment.

2.2 MARKING ELEMENTS**Pictograms specifying the hazard type**

GHS02



GHS08



GHS07



GHS09

Warning label: Hazard**Hazard phrases:**

H226 Flammable liquid and vapor

H304 May be fatal if swallowed and enters airways

H315 Causes skin irritation

H336 May cause drowsiness and dizziness

H411 Toxic to aquatic life with long lasting effects

Precautionary statements:General precautionary statements:

P102 Keep away from children

Prevention precautionary statements:

P210 Keep away from heat/sparks/open flames/hot surfaces – No smoking.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection

Response precautionary statements:

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician

Storage precautionary statements - Disposal

P501 Dispose of contents/ container to authorized waste disposal company.

2.3 OTHER HAZARDS

Vapors may form explosive mixtures with air. Vapors are heavier than air, spread right above ground surface, accumulate in the lower parts of rooms.

Sealed containers exposed to flames or excessive temperature may explode in result of growing internal pressure.

A leak may cause the surface to be slippery.

The product does not meet the criteria for PBT or vPvB, according to Annex XIII of the REACH regulation.

Section 3. COMPOSITION / INFORMATION ON INGREDIENTS**3.1 SUBSTANCES**

Not applicable – the product is a mixture.

3.2 MIXTURES

A mixture of the main component and anti-oxidizing and anti-electrostatic additives.

Identification of the main component

UVCB substance. A complex mixture of hydrocarbons produced through petroleum distillation. Composed of hydrocarbons of the number of Carbon atoms from C₉ to C₁₆. Boils at temperatures between c.a. 150°C and 290°C.

| | |
|--------------|---|
| CE name | Fraction-distilled petroleum : Petroleum fraction (petroleum) |
| Group | KEROSINES |
| EC number | 232-366-4 |
| CAS number | 8008-20-6 |
| Index number | 649-404-00-4 |

REACH registration number 01-2119485517-27-0064

Total number Not applicable, UVCB substance

Molecular mass Not applicable, UVCB substance

Classification See section 2 of the Material Safety Data Sheet

Section 4. FIRST AID MEASURES**4.1 DESCRIPTION OF FIRST AID MEASURES****General recommendations**

Consider your safety and health as priority – use equipment isolating the respiratory tract, protective clothing and eye protection, adequately to the situation. Prior to providing any first aid measures, make sure that all sources of ignition have been eliminated from the hazard zone, including a shutoff of power supply. Maintain caution in the product spill zone – there is a risk of slipping.

Do not leave any injured unattended. Do not induce vomiting and do not administer anything orally to an unconscious injured. Remove the contaminated clothing and footwear. Prior to removing it, soak the clothing items with water to avoid sparks due to static electricity.

Inhalation

Escort the injured out of the contaminated zone out into fresh air, keep them warm and at rest. Control the patency of their respiratory tract.

Lay the injured in the semi-sitting position; lay the unconscious in the recovery position.

In the case of obstructed breathing, if possible, administer oxygen. If not breathing, perform a resuscitation procedure (do not apply the mouth-to-mouth method).

Upon cardiac arrest, perform the cardiopulmonary resuscitation (trained rescue officers only). Seek medical assistance immediately.

Skin contact

Remove contaminated clothing and footwear. Clean the contaminated skin with water and soap, then rinse abundantly with water. Upon persistent irritation, consult a physician.

Upon contact with a mixture released under pressure, seek medical assistance immediately. Do not wait for any symptoms to appear.

Upon contact with hot mixture, cool down the burn spot with cold water for at least 5 minutes or until pain ceases. Avoid overcooling the body.

Eye contact

Remove contact lenses, if present. Rinse the contaminated eye immediately, with the eye wide open, applying a water stream for approximately 15 minutes. Attention: protect the non-contaminated eye. Upon the occurrence of irritation or any other symptoms (swelling, obstructed sight), seek assistance with an oculist.

ATTENTION: Do not apply an excessive water stream. Be careful not to damage the cornea.

Ingestion

Do not induce vomiting – there is a risk of aspiration to the lungs.

With self-induced vomiting, bend the injured forwards to reduce the risk of aspiration to the lungs.

If the injured is conscious, apply 200 ml of liquid paraffin orally as soon as possible.

ATTENTION: Apply this procedure only in justified mixture poisoning suspicions.

4.2 ESSENTIAL SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

Inhalation In normal temperature conditions, danger to health caused by inhalation risk is unlikely, due to low vapor pressure. Vapor contamination may only occur when the product is used in high temperatures and with insufficient ventilation.

The effects of inhalation exposure are: headache, nausea, vomiting, loss of consciousness.

Skin contact Direct exposure to the liquid may cause dryness, redness, skin irritation.

Eye contact Spraying the eye with the product may cause tearing, temperate irritation with long-term exposure.

Ingestion Causes alimentary tract disorders, central nervous system disorders.

See also section 11.

4.3 INDICATION OF ANY IMMEDIATE MEDICAL ASSISTANCE AND SPECIAL TREATMENT REQUIRED

Upon ingestion, seek immediate medical attention.

Show the physician performing first aid this material safety data sheet, the label or the packaging.

If a larger dose of the product was swallowed, empty the stomach as soon as possible. Gastric lavage may only be performed with the patient intubated. Administering liquid paraffin may limit product absorption.

With obstructed breathing, apply oxygen therapy or intubation. If need be, apply artificial respiration. Control the heart rate (EKG). Further on, apply treatment as per symptoms. All procedures should be performed by qualified medical staff. Do not administer epinephrine and ephedrine – due to a risk of ventricular fibrillation. In severe poisoning cases, in order to avoid pulmonic complications or in the case of pneumonia, administer antibiotics. Further on, apply treatment as per symptoms

All rescue officers participating in extinguishing the fire should be fully trained and equipped with full protective fire-resistant clothing, eye/face protection and overpressure air units isolating the respiratory tract.

Section 5. FIREFIGHTING MEASURES**General recommendations**

Inform other workers of the fire; escort all workers who will not be participating in extinguishing fire out of the hazard zone; if need be, call for evacuation; call a rescue team, the Fire Brigade and State Police.

5.1 EXTINGUISHING MEDIA

Suitable: minor fires – carbon dioxide, extinguishing powder, foam, sand; major fires – dispersed or fog water streams, foam.

Unsuitable: tight water jets applied on the burning mixture may cause the product to spatter and the fire to spread.

Avoid using foam and water at the same time on one surface, since water destroys foam.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

Flammable liquid (flash point $\leq 60\text{ }^{\circ}\text{C}$), water-insoluble and lighter than water, fl oats on water surface and may be re-ignited. Product vapors are heavier than air and may form explosive mixtures with air.

Sealed containers exposed to open flames or excessive temperature may explode in result of internal pressure build-ups.

A fire environment produces carbon monoxide and other unidentified hydrocarbon decomposition products (smoke). Avoid inhaling combustion products, which pose a health risk.

5.3 INFORMATION FOR THE FIRE BRIGADE

Proceed according to procedures applied for extinguishing chemical fires.

Extinguish major fires at a safe distance, from behind barriers, using remote sprinkler systems or unmanned water jets – due to explosive hazard.

Cool down containers exposed to open flames or excessive temperature with dispersed water streams, at a safe distance (explosive hazard); if **possible and safe**, remove them from the hazard zone and continue to spray the containers until they are cooled down.

Do not allow the sewage generated through fire extinguishing to enter the sewage system or surface waters – due to potential explosive hazard in the sewage system, and possible re-ignition on the liquid surface. Sewage and fire remains must be disposed of according to effective regulations.

Section 6. ACCIDENTAL RELEASE MEASURES**6.1 MEANS OF PERSONAL PROTECTION, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES**

ATTENTION: Risk of fire and explosion. Prevent vapor from accumulating right above the ground or in limited spaces in order to avoid their explosive concentrations. Vapors may migrate above the ground to distant sources of ignition and cause a risk of back-fire.

ATTENTION: Maintain caution – mixture spill causes the ground to be slippery.

Inform other workers of the fire; escort all workers who will not be participating in eliminating the accident of the hazard zone; if need be, call for evacuation. Isolate the leak site.

Eliminate all sources of ignition – do not use open flames, do not smoke, do not use sparking tools, etc. Provide sufficient earthing to the equipment used.

Avoid direct contact with the liquid being released. Do not step on the product spill. Avoid breathing in vapors/fog. With a major leak, keep on the windward side.

Upon accidental release to closed/limited space, ensure sufficient ventilation. If possible, monitor the concentration of vapors.

Prior to proceeding to eliminating the accident, as well as in progress, particularly in limited space, use an explosimeter or indication tubes.

Use protective clothing and equipment (see section 8). With minor leaks, normal antistatic working clothes will suffice. With major leaks, apply a full protective suit made of chemical-resistant and antistatic materials.

6.2 ENVIRONMENTAL PRECAUTIONS

Do not allow the product to enter sewage drains, penetrate surface water or soil. Do not allow the released mixture to accumulate in the lower parts of rooms, in cellars, hollows, sewage drains and all places, in which it could cause explosive risk. If possible and safe, eliminate or limit the leak (seal, close the liquid spill; place the damaged container in an emergency container).

Limit the spill by embanking the accumulation area. If possible, cover the spill area with foam to reduce the emission of vapors. Maintain the spill area in this condition until the rescue team arrives.

Upon the release of large doses of the product and environment contamination, inform applicable services (OHS services, rescue services, environmental protection services, administrative authorities).

6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING

Pump out the large amounts of liquid accumulated in the embankment using professional equipment.

Cover small amounts of the liquid with inflammable liquid-binding agent (sand, soil, diatomaceous earth, vermiculite), collect to an adequate, locked, properly marked waste container.

Neutralize according to applicable regulations (see section 13 and 15).

If need be, remove the contaminated soil layer.

Upon release of the mixture to water, prevent it from spreading using floating water barriers or different equipment. Further on, collect the mixture by absorption using special floating binders or using a skimmer, a special floating pump used to remove fuel from the surface of water. If need be, apply to waste transport and neutralization companies.

6.4 REFERENCES TO OTHER SECTIONS

See sections 8, 13 and 15.

Section 7. HANDLING AND STORAGE

Professionals exposed to the product should be trained in terms of health risks, precautions to be taken in order to limit exposure, OHS requirements, the obligation to apply means of personal protection, accident prevention measures, failure prevention measures, as well as proper rescue operations.

Occupational exposure should be minimized by introducing applicable risk assessment measures.

7.1 PRECAUTIONS FOR SAFE HANDLING

Ensure easy access to rescue equipment (in case of fire, leak, etc.) in the area of mixture storage.

ATTENTION: Risk of fire and explosion in the area. The mixture is a flammable liquid; vapors form explosive mixtures with air.

Recommendations for safe handling

Avoid prolonged skin contact; avoid eye contamination; avoid breathing in vapors/fog.

Avoid the formation of hazardous concentrations of vapors in air. Ensure adequate ventilation; Provide ventilation shafts in areas of vapor emission.

Keep unused containers sealed. Containers should be opened in a well-ventilated space only. Once opened, containers must be sealed and kept in the vertical position to prevent leaks.

Do not use compressed air to fill, empty or transfer the product.

Use means of personal protection according to information specified in section 8.

Recommendations for fire and explosion protection

Vapors are heavier than air – prevent vapors from accumulating and flammable/explosive mixtures from forming, particularly in hollows, channels and limited spaces.

Eliminate all sources of ignition – do not use open flames, do not smoke, do not use sparking tools, or electrostatic fabrics. Apply safety measures preventing electrostatic discharges. Protect the containers against overheating.

Install anti-explosive electrical devices, prevents electric and static loads from accumulating, apply bridging and earthing. Avoid contact with oxidizing materials.

Ensure that all applicable regulations regarding explosive atmospheres, procedures and storage devices for flammable products are complied with.

See also the appendix to this MSDS – *Exposure scenarios*.

Recommendations for occupational health and safety

Observe all applicable occupational health and safety regulations. Observe the principles of good industrial hygiene.

Do not eat or smoke in the workplace. Wash your hands with water and soap after work. Do not use contaminated clothing. Remove all contaminated clothing items immediately after use, clean/wash before next use.

ATTENTION: Leave the contaminated/soaked clothes away from heat sources and sources of ignition.

7.2 CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCONSISTENCIES

Store according to regulations regarding the storage of flammable liquids.

Store in certified, original, properly marked, sealed containers in cool, well-ventilated areas. The containers must be resistant to the product effects. Recommended container materials or container lining materials are: soft steel, stainless steel. Unsuitable container materials or container lining materials are: certain synthetic materials; their compliance must be verified with the manufacturer.

Keep the containers in the vertical position, away from sources of heat or ignition; protect against direct sunrays; secure against falling, impacts or mechanic damages.

ATTENTION: maintain caution when opening the containers – light hydrocarbon vapors may accumulate in the upper part of the container and cause a fire-explosive hazard.

Keep the storage areas cool, equipped with adequate anti-explosive ventilation and electrical installation. Apply safety measures protecting against electrostatic discharges; install anti-explosive electrical devices, apply bridging and earthing.

Always observe the non-smoking requirement. Never use open flames or sparking tools.

Keep away from oxidants. See also section 10.

All and any works related to cleaning, control and maintenance of the internal container structure must be carried out by qualified and properly equipped staff, in line with applicable regulations.

Warehouse installations must be designed to prevent surface water and soil from contaminating in result of a leak or spill.

ATTENTION: Emptied, non-cleaned containers may contain remains of the product (liquid, vapors) and may cause a fire/explosive hazard. Maintain caution. Do not: cut, drill in, mill, weld the containers or perform any of these activities in their vicinity.

7.3 SPECIFIC END USES

See subsection 1.2. For more information, contact the manufacturer/supplier.

Section 8. EXPOSURE CONTROL / MEANS OF PERSONAL PROTECTION

8.1 CONTROL PARAMETERS

Maximum permissible concentrations in the workplace

(ordinance of the Minister of Labor and Social Policy of 29 November 2002, Journal of Laws No. 217, item 1833, as amended)

Kerosine [CAS 8008-20-6].

PC: 100 mg/m³; MPMC: 300 mg/m³; MPTC: -

Marking in air: PN-Z-04227-02:1992

Permissible biological values

No data available.

DNEL and PNEC values

- used in environmental risk assessments

Data not available.

- used in the assessment of occupational risk

acute toxicity – system effects

| | |
|---------------------|---------------------|
| dermal / inhalation | No identified risk. |
|---------------------|---------------------|

acute toxicity – local effects

| | |
|--------|--|
| dermal | Data does not allow for specifying DNEL. |
|--------|--|

| | |
|------------|---------------------|
| inhalation | No identified risk. |
|------------|---------------------|

long-term toxicity

| | |
|---------------------|---------------------|
| dermal / inhalation | No identified risk. |
|---------------------|---------------------|

long-term toxicity

| | |
|--------|--|
| dermal | Data does not allow for specifying DNEL. |
|--------|--|

| | |
|------------|---------------------|
| inhalation | No identified risk. |
|------------|---------------------|

- used in the assessment of risk for the general population

acute toxicity – system effects

| | |
|---------------------|---------------------|
| dermal / inhalation | No identified risk. |
|---------------------|---------------------|

acute toxicity – local effects

| | |
|--------|--|
| dermal | Data does not allow for specifying DNEL. |
|--------|--|

| | |
|------------|---------------------|
| inhalation | No identified risk. |
|------------|---------------------|

long-term toxicity

| | |
|---------------------|---------------------|
| dermal / inhalation | No identified risk. |
|---------------------|---------------------|

| | |
|-----------|----------------|
| ingestion | 19 mg/kg (24h) |
|-----------|----------------|

long-term toxicity

| | |
|--------|--|
| dermal | Data does not allow for specifying DNEL. |
|--------|--|

| | |
|------------|---------------------|
| inhalation | No identified risk. |
|------------|---------------------|

8.2 EXPOSURE CONTROL

Physical state of the product: liquid, vapor pressure in normal conditions (25°C) 0.5-10 kPa.

Daily exposure time includes 8 hours (unless specified otherwise).

It is assumed that applicable, fundamental OHS standards are applied in performing operations in temperatures 20°C higher than the ambient temperature.

Technical controls

Where possible, seal the process.

Provide anti-explosive ventilation and electrical installations.

General ventilation and/or local ventilation shafts to maintain vapor concentrations in air below limit values. Local ventilation shafts preferred, since they allow for controlling the emission at its source and prevents it from spreading to the workplace.

Use explosimeters in closed rooms and production areas to measure vapor concentrations and detect conditions with risk of explosion. See also section 7.

Means of personal protection

The obligation to use means of personal protection and their type must account for the type of hazard produced by the mixture, the local conditions and the procedure for handling the mixture.

Use means of personal protection by reputable manufacturers.

Means of personal protection should observe the requirements of applicable standards and regulations.

| | |
|------------------------------|---|
| Respiratory tract protection | In normal conditions, with sufficient ventilation, no means of personal protection are required. With exposure to vapor/fog and with insufficient ventilation, use a certified respirator with a type A filter. |
|------------------------------|---|

Carrying out works in limited space/ insufficient amount of oxygen in the air/ large, uncontrolled emission/ all of these circumstances, when a protective mask does not provide adequate protection, use protective equipment isolating the respiratory tract.

| | |
|-----------------|---|
| Hand protection | Protective gloves resistant to the product (e.g. out of perbunan, neoprene, PAV). |
|-----------------|---|

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| Eye and face protection | Protective goggles and face protection when carrying out works involving the risk of splattering, particularly with hot mixture. |
| Skin and body protection | An apron or coated fabric clothing, resistant to the product; recommended antistatic fabrics. Protective footwear. Avoid skin contact. Define potential direct exposure zones. If there is a likelihood of your skin touching the product, always wear protective gloves (tested according to EN374). Remove the contamination/leak immediately after it occurs. Wash all traces of the product off your skin immediately. All workers must undergo compulsory training in terms of hazard prevention/minimization as well as the procedures for reporting any potential dermal symptoms. |

Environmental exposure control

Prevent the release of non-dissolved mixture. Prevent the recovery of the mixture from local drain water. Local requirement of conditioning drain water. The risk of environmental exposure depends on fresh water, sediments in fresh water. When released to a sewage treatment plant from a household, the product does not enforce the sewage water to be conditioned locally.

Do not pour industrial silt onto natural soil. Burn, neutralize or recondition the silt. Consider securing the area surrounding storage tanks.

Always observe applicable standards regarding permissible environmental pollution levels specified in effective regulations.

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 INFORMATION ON THE BASIC PHYSICAL AND CHEMICAL PROPERTIES

| | |
|--|---|
| Appearance (20°C, 1013 hPa) | : Liquid, transparent, low-viscosity |
| Odor | : Characteristic |
| Odor (<i>perceptibility</i>) threshold: | : No data |
| pH | : Not applicable |
| Melting point / freezing point | : <-20°C; [-47°C] |
| Boiling point and boiling range (1013 hPa) | : 90 - 320°C |
| Flash point | : 29-70°C [min 38 °C] |
| Vaporization speed | : No data available |
| Flammability (solid state, gas) | : Not applicable, the mixture is a liquid |
| Lower / upper explosive limit | : No data available |
| Vapor pressure (at 37.8 °C) | : 1 - 21 kPa |
| Vapor density | : No data available |
| Bulk density | : Not applicable |
| Water solubility | : Practically insoluble |
| n-octanol/ water partition coefficient | : No data available |
| Auto-ignition temperature | : 220-250°C |
| Decomposition temperature | : Not applicable |
| Viscosity (-20°C) | : 2.8 – 4.3 cSt; |
| (40°C) | : 1 – 2.4 cSt |
| Explosive properties | : No data available, the mixture is not explosive |
| Oxidizing properties | : No data available, the mixture is not oxidizing |

Data provided are specified for substances belonging to the Kerosines category. Data for fractions in brackets.

9.1 OTHER INFORMATION

Not applicable

Section 10. STABILITY AND REACTIVITY**10.1 REACTIVITY**

The product is poorly reactive. See section 10.5 as well.

10.2 CHEMICAL STABILITY

In normal working conditions, the product does not react with other substances.

10.3 POSSIBILITY OF HAZARDOUS REACTIONS

In normal working conditions, the product does not enter in reactions with other substances.

Does not perform hazardous polymerization.

10.4 CONDITIONS TO AVOID

Eliminate all sources of ignition: sparks, electrostatic discharges, open flames, heat sources.

10.5 INCOMPATIBLE MATERIALS

Potent oxidants.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS

Not known. Products generated in a fire environment – see section 5.

Section 11. TOXICOLOGICAL INFORMATION**11.1 INFORMATION ON TOXICOLOGICAL EFFECTS****General provisions**

The mixture is classified as dangerous for human health. Test results presented below refer to the main component of the mixture.

The main component is a complex mixture (an UVCB substance), for which relatively few test results are available. A larger bulk of data can be acquired for the hydrocarbon components. The results of these tests may be used to assess the pharmacokinetic effects (that is absorption, metabolic distribution and excretion) of this substance. In practice, human exposure to the substance is based on three ways: by inhalation, by ingestion and by skin contact. Due to relatively low volatility of the substance, skin exposure is to be paid more attention to rather than inhalation. Ingestion can only occur as a result of failure or accident.

Inhalation tests have proven that volatile components of the substance are well absorbed (in 31-45%) and distributed predominantly in the adipose tissue. Aromas are metabolized at a higher level to naphthenes, n-alkanes, isoalkanes and 1-alkenes.

Application of the substance on skin generally indicated that aromatic and aliphatic hydrocarbons are well absorbed by skin. Aromatic elements penetrate the skin layer at higher levels to aliphates. A skin permeability test indicated that, although the pace of penetrating the skin layer of alkanes, naphthenes and aromatic elements are more or less comparable, the latency times of alkanes are greater to the latency times of naphthenes and aromatic elements. Absorbed elements are transported with the blood circulation to the adipose tissue and various organs. Ingestion exposure tests have proven that gastric-intestinal absorption is slow and incomplete, hence resulting in low bioaccessibility.

Acute toxicity

- oral application, rat $LD_{50} > 5000 \text{ mg/kg mc}$ (met. similar to OECD 420)
- skin application, rabbit $LD_{50} > 2000 \text{ mg/kg mc}$ (met. similar to OECD 402)
- inhalation, rat $LC_{50} > 5.28 \text{ mg/l}$ (met. similar to OECD 403)

The main symptoms observed with animals, occurring with very large doses administered orally, include mild gastric and alimentary irritation.

Adverse effects were recorded only with inhalation exposure to very high concentrations. In this case, the symptoms included loss of vital powers, tachypnea.

Skin application did not result in any acute systemic toxicity. Clinical effects were more similar to skin irritation than to general systemic toxicity.

The mixture indicates low acute toxicity levels by exposure through inhalation, skin contact and ingestion. Basing on available data, the criteria for classification have not been met.

Corrosive effect / skin irritating effect

The main component generally does not have corrosive effect after 4-hour semi-occlusive exposure. However, the main component causes severe irritation after 24-hour sealed exposure. The symptoms differ greatly and include effects ranging from very mild erythema and epidermis ulceration in animals. Further tests of the mechanism of the irritating effects and following reactions indicated that the substance may induce the release of pro-ignition components, such as cytokines.

Due to the conditions of the tests of irritation effects on rabbit skin (method similar to OECD 404) exposed to these substances, assessed using the Draize method, for classification and marking purposes, the results acquired should be interpreted with caution. The average result for erythema and edema indicates that the substance has irritating effect and is classified as *Skin Irrit. 2, H315*.

Severe ocular damage / eye irritating effect

Basing on available data, the classification criteria are not met.

The degree of irritation depends on the substance, the dose and the effective time. Eye irritating effect tests carried out on rabbits (OECD 405) have proven that 0.1 ml of the substance applied on the eye do not cause irritation of the cornea, iris, or the conjunctiva.

Respiratory tract irritating effect

Basing on available data, the classification criteria are not met. Assessment of these types of effects is not required.

Sensitization

Basing on available data, the classification criteria are not met.

Skin

In traditional skin sensitization tests (such as Magnusson-Kligman GPMT and Buehler Tests), the main component does not display any sensitizing effects.

Respiratory tract

Assessment of these types of effects is not required.

Repeated dose toxicity

Basing on available data, the classification criteria are not met.

Repeated dose toxicity tests on rats, assuming the inhalation and ingestion of the product, did not produce cohesive toxicological effects other than kidney lesions in rats. These effects are considered of no significance for human health.

| | |
|--------------------|---|
| NOAEL (oral) | : 750 mg/kg mc/day |
| NOAEL (skin) | : ≥ 400 mg/kg mc/day (target organ: skin) |
| NOAEL (inhalation) | : > 1000 mg/m ³ |

Mutagenic effect on reproductive cells

Basing on available data, the classification criteria are not met.

No indications describing the mutagenic or genotoxic effects of the substance on human health. The results of *in vitro* and *in vivo* mutagenic tests indicate that the mixture is not mutagenic.

With the exception of one, the results of all *in vitro* genotoxicity tests carried out were negative (method similar to OECD 471, 476, 479).

Cytogenetic *in vivo* tests produced slightly opposite results – negative results were acquired for rats and mice females, whereas positive results were acquired for male mice. All *in vivo* tests of chromosome aberrations and dominating lethal gene tests proved negative for genotoxicity (OECD 475, 478), while one of the *in vivo* tests assuming sister chromatid exchange (modification of OECD 479) was positive for genotoxicity with male rats, while remaining negative for female rats.

Carcinogenicity

Basing on available data, the classification criteria are not met.

Tests have proven that the main component is not carcinogenic for animals exposed to the product by ingestion or inhalation. However, chronic skin exposure may lead to the development of tumors as the consequence of cyclically reappearing irritation, skin damage (method similar to OECD 451).

The substance was not indicated as mutagenic or genotoxic, and observations during laboratory tests have proven the non-genotoxic nature of the said tumors. Although skin irritation itself is not sufficient for causing a dermal carcinogenic effect, the tests have clearly proven that skin irritation and inflammation are the preconditions for dermal carcinogenicity. LOAEL (dermal application): 200 mg/kg mc/day (target organ: skin)

Toxicity for reproduction

Basing on available data, the classification criteria are not met.

Fertility

According to available data, long-term oral or inhalation exposure to the product does not indicate any effects on the fertility of female rats up to 3000 mg/kg/day doses or 1000 mg/m³ concentrations (higher concentrations were tested). Doses up to 1500 mg/kg/day do prove to have any effect on the fertility of female rats (higher concentrations were tested). The main component does not have any effect on fertility (OECD 421).

| | |
|--------------------|----------------------------|
| NOAEL (oral) | : > 3000 mg/kg mc/day |
| NOAEL (skin) | : ≥ 494 mg/kg mc/day |
| NOAEL (inhalation) | : > 1000 mg/m ³ |

Developmental toxicity

All tests on animals have proven that the substance does not have effect on development (OECD 414). The most important effects observed with animals after administering large doses included loss of body weight of female and young rats with a dose of 1500 mg/kg/day.

| | |
|--------------------|---------------------------|
| NOAEL (oral) | : > 1000 mg/kg mc/day |
| NOAEL (skin) | : ≥ 494 mg/kg mc/day |
| NOAEL (inhalation) | : > 364 mg/m ³ |

Additional reprotoxicity tests are not scientifically justified, since screening reproductive toxicity and developmental toxicity tests as well as developmental prenatal tests carried out according to internationally accepted, approved principles state the absence of symptoms indicating that the substance may have adverse effect on fertility. Further absence of negative effects on reproductive organs was recorded in repeated oral dose tests.

Aspiration toxicity

Basing on physical and chemical data available, it was claimed that the mixture poses a risk of aspiration to the lungs if swallowed, and thus has been classified as with toxic aspiration effect (*Asp. Tox. I, H304*).

Other effects

Neurotoxicity

Assessment of this hazard is not required.

Experimental tests carried out on animals (male rats) exposed to product vapors did not indicate any relation between exposure ratios and clinical symptoms, the mortality rate, or any effect on body weight. No essential biochemical lesions in the blood were claimed. No relation between exposure rates and neuro-behavioral symptoms were claimed.

Immunotoxicity

Assessment of this hazard is not required.

NOAEL: > 495 mg/kg/day (basing on general effects; no negative immunological reactions were recorded with female rats at any administered dose levels).

Phototoxicity

Tests of photoirritating effects on skin have proven that the substance is not considered photoirritating. Photoirritation index : 0.7 (72h).

Symptoms and effects of exposure

| | |
|--------------|--|
| Inhalation | Inhaling vapors/fog may cause irritation and swelling of the oral mucous membrane; irritation of the respiratory tract, cough and obstructed breathing; sore throat, toxic, bronchopneumonia. Higher vapor/fog concentrations may cause central nervous system disorders, such as headache and dizziness, distorted coordination, nausea, vomiting, disorientation, states of euphoria, nervousness, memory disorders, obstructed sight, breathlessness, weakness, pain in the epigastric fossa, sternum pains, dizziness, toxic coma. Exposures to large concentrations may cause shuddering or convulsions, sudden loss of consciousness, coma, paralysis of the respiratory tract, which may result in death. |
| Ingestion | Due to low viscosity, if swallowed and vomited, the product may penetrate the lungs and cause their severe damage (Mendelson's syndrome, lung petechia, pleural effusion). May cause oral cavity, throat and gastric irritation, temporary symptoms of liver damage. Other symptoms include: nausea, belching with characteristic smell, abundant vomiting, diarrhea. |
| Skin contact | Causes skin dryness, itching, burning, cracking, irritation. |
| Eye contact | High vapor/fog concentrations or splattering to the eye may cause irritation of the mucous membrane, conjunctivitis, tearing. |

Long-term exposure to low vapor concentrations may cause smell disorders, chronic conjunctivitis, disorders within peripheral nerves.

Section 12. ECOLOGICAL INFORMATION

General provisions

Basing on the following data specifying the eco-toxicological properties, the mixture meets the criteria for a substance posing a hazard to the natural environment, and, as such, was classified as *Aquatic Chronic 2, H411*.

After releasing this complex petroleum substance to the natural environment, particular hydrocarbon components spread in particular elements of the environment, pertaining to their individual physical and chemical properties (e.g. volatility, solubility in water, partition coefficient). In addition, the concentration of particular substances depends on the pace of decomposition of particular components into ingredients and elements of the environment. This effect hinders the specification of the exposure of a given monitored area with the petroleum substance, since the concentrations of components or the total values of hydrocarbons in the natural environment may not be related to the initial substance for a long time. Therefore, it is not possible to apply the information regarding simple substances to assess the risk produced by petroleum mixtures. This environmental toxicity test adopted models basing on the methods of testing groups of components.

The mixture is practically water-insoluble and lighter than water; floats on the surface of water.

Pursuant to local exposure scale assessment, calculated using the PETRORISK model, the distribution of the main substance in particular elements of the natural environment is (acc. to Mackay, Level III):

Air: 91.57% ; water: 1.54% ; soil: 4.82% ; sediment: 2.07% ; suspended sediment: <0.1% ; living organisms: <0.1% ; aerosol: <0.1%

The most suitable method of eliminating the main substance from the surface of water and soil is by evaporating it. Due to a high vaporization rate, the substance does not accumulate in the environment. More complex hydrocarbons may penetrate the soil.

The test results specified above refer to the main component of the mixture.

12.1 TOXICITY

Aquatic environment (including sediments)

Short-term/prolonged toxicity on fish

In semi-static, 96-hour acute toxicity tests (OECD 203; KS = 1) carried out on *Oncorhynchus mykiss* assuming exposure to 0 / 0.2 / 0.7 / 2.0 / 5.0 / 17.0 and 50 mg/l concentrations, obstructed swimming and immobilization were recorded with some fish.

LL₅₀ (96 h): *Oncorhynchus mykiss* 2 - 5 mg/l

NOEL (96 h): *Oncorhynchus mykiss* 2,0 mg/l

No experimental data on long-term toxicity. Long-term toxicity assessments for fish were carried out by adopting the (Q)SAR method, applying the PETROX computer model, based on calculating the toxicity rate according to the total concentrations of hydrocarbon groups representative for the petroleum substance in the water phase as well as the membrane-water partition coefficient describing the distribution of hydrocarbons between water and the organism. The 28-days' NOEL value established for fresh water fish

NOEL (28 days): *Oncorhynchus mykiss* 0,098 mg/l

Short-term/prolonged toxicity on crustacean

In a static 48-hour acute toxicity test (OECD 202; KS = 1) carried out on *Daphnia magna*, exposed to 0 / 0.1 / 0.3 / 1.4 / 6.8 and 34 mg/l concentrations

EL₅₀ (48 h): *Daphnia magna* 1.4 mg/l (with 95% confidence 1.0 to 2.0 mg/l)

NOEL (48 h): *Daphnia magna* 0.3 mg/l (based on immobilization)

Confirming tests based on the WAF methodology

EL₅₀ (48 h): *Daphnia magna* 1.9 - 89 mg/l (load coefficient resulting from 50% immobilization)

NOEL (48 h): *Daphnia magna* 0.3 – 2.0 mg/l

Semi-static, 21-day chronic reproductive toxicity test (OECD 211 ; KS = 1), with load indexes of 0 (control value) / 0.8 / 0.19 / 0.48 / 1.2 and 3.0 mg/l

NOEL (21 days): *Daphnia magna* 0.48 mg/l

LOEL (21 days): *Daphnia magna* 1.2 mg/l

EL₅₀ (21 days): *Daphnia magna* 0.89 mg/l

Toxicity on algae and water plants

In 72-hour static toxicity tests (OECD 201 ; KS = 1) for fresh water algae exposed to nominal concentrations of 0 / 0.1 / 0.4 / 1.0 / 3.0 and 10.0 mg/l, the observed % of algae development impairment as compared to the control group was 7.1 to 270%.

EL₅₀ (21 days): *Raphidocelis subcapitata* 1 – 3 mg/l

NOAEL (72 h): *Raphidocelis subcapitata* 1.0 mg/l

Toxicity on aquatic microorganisms

Assessment of toxicity on aquatic microorganisms was carried out using the (Q)SAR method, applying the PETROX computer model, based on calculating the toxicity rate according to the total concentrations of hydrocarbon groups representative for the petroleum substance in the water phase as well as the membrane-water (K_{mw}) partition coefficient describing the distribution of hydrocarbons between water and the organism. Estimated 72-hour values for one of the most sensitive microorganisms are:

LL₅₀ (72 h): *Tetrahymena pyriformis* 677.9 mg/l (basing on development impairment)

NOAEL (72 h): *Tetrahymena pyriformis* 1.651 mg/l

Soil environment

No data available.

The substance is an UVCB hydrocarbon. Standard tests for this assessment are designed for single substances and are not applicable to complex substance risk assessments. To perform risk assessment, the on-land values of PNEC for hydrocarbon groups must be established using the aquatic values of PNEC and the Equal partition (EqP) method.

Atmospheric environmentDirect effects

Toxicity on mammals – see section 11.1.

No data available to specify the direct effects of the airborne concentrations of this substance on vegetation. Some risk assessment databases (www://ecb.irc.ec.europa.eu/esis) for particular hydrocarbons with relatively high vapor pressure (e.g. n-pentane, cyclohexane, benzene, toluene, ethylbenzene) are available. Some tests have indicated that the toxicity of vapors on land animals poses a minor problem.

Indirect effects

The substance may contribute to the formation of ozone.

Toxicity to birds

Long-term toxicity tests or dangerous effects on bird reproduction were not required due to the existence of a large volume of data for mammals.

Toxicity to mammals

This assessment is not required.

12.2 PERSISTENCE AND DEGRADABILITY

Hydrolysis The chemical components of the product consist entirely of C and H; they do not include any groups prone to hydrolysis, and thus this degradation process will not result in their removal from the natural environment.

Phototransformation

Air Standard partial decomposition of airborne oxidation period tests are designed for single substances and are not suitable for complex substances.

Water and soil The substance contains hydrocarbon particles, which absorb UV rays below 290 nm, that is below the level of UV rays, which are blocked by the ozone layer. Therefore, the substance potentially has no ability to undergo photolysis in water and soil, and this process will contribute to measurable degradation of this substance in the environment.

Biodegradation

The substance is practically water-insoluble; lighter than water.

Due to the complex character of the composition of this substance, biodegradability assessment was carried out on the basis of quantitative property-structure relations for the structures of representative hydrocarbons assuming hydrocarbon groups.

Subject to basic data, this substance is generally considered easily biodegradable, and since it may be degraded by microorganisms, it is considered primarily biodegradable.

12.3 BIOACCUMULATIVE POTENTIAL

Due to the complex character of the composition of this substance, bioaccumulation assessment was carried out on the basis of quantitative property-structure relations for the structures of representative hydrocarbons assuming hydrocarbon groups.

The substance does not pose accumulative potential, however, an analysis of the structures of representative hydrocarbons indicates that some structures meet the criteria for permanent substance or very permanent substance.

Secondary poisoning

Assessment of secondary poisoning is required since the substance does not pose a high accumulative potential and is not classified due to long-term toxicity or reproductive toxicity on the basis of toxicity data for mammals.

12.4 MOBILITY IN SOIL

No data available.

12.5 RESULTS OF PBT AND vPvB assessments

Persistence assessment Assessment of the structures of representative hydrocarbons indicates that some structures meet the criteria for persistent (P) or very persistent (vP) substance.

Bioaccumulation assessment Assessment of the structures of representative hydrocarbons does not indicate any structures which would meet the criteria for a very bioaccumulative (vB) substance, however, some structures meet the criteria for a bioaccumulative (B) substance.

Toxicity assessment No essential petroleum substance structures were claimed to meet the toxicity criteria, with the exception of anthracene, which is referred to as a PBT substance.

Since anthracene contents in the substance is lower than 0.1% and no other structures of representative hydrocarbons meet the criteria for PBT or vPvB substances, the substance does not meet the PBT / vPvB criteria.

12.6 OTHER ADVERSE EFFECTS

No data available.

ADDITIONAL INFORMATION ON BEHAVIOR IN THE NATURAL ENVIRONMENT

PBT assessment of the hydrocarbon substance carried out adopting the hydrocarbon block method with forecasting tools for evaluating the primary half-life time has indicated that hydrocarbons are degraded (in oxygen conditions) through mono-oxygenase or di-oxygenase, and then carboxylated and, finally, hydroxylated. Further assessment covered the types of metabolites created and has proven that, for all main groups of hydrocarbons, the primary metabolites are scarcely toxic in all cases, and that they indicate lower bioaccumulative properties to the original particle. In conclusion, for the purposes of PBT and risk assessment, hydrocarbon metabolites do not require any further assessment.

Section 13. DISPOSAL CONSIDERATIONS**General provisions**

If possible, limit or eliminate the production of waste.

Observe the safety measures specified in section 7 and 8.

13.1 WASTE TREATMENT METHODS

Classification of waste: corresponding to the place of their production, pursuant to criteria specified in effective regulations.

If the product was used in any further operations/processes, the end user should define the waste type produced and assign a proper code to it.

Waste disposal

Do not dispose of the substance into the sewage system. Prevent the product from contaminating surface and ground waters. Do not dispose of the product on communal landfills. Consider the possibility of reusing the product.

Recycle or neutralize the product according to applicable regulations.

Recommended neutralization method: burning.

Disposal of packaging

Emptied containers may contain remains of the substance, make sure they are thoroughly cleaned.

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Perform recycling or neutralization of packaging waste according to applicable, effective regulations.

Multiple use packaging; may be reused after cleaning.

Waste neutralization must be performed by professional, licensed incineration plant or waste recycling/neutralization companies.

Additional information

Disposing of waste, proceed according to pertinent regulations

The Waste Act of 14 December 2012 (Journal of Laws, No. 0, item 21).

Act of 11 May 2001 on packaging and packaging waste (Journal of Laws no. 63, item 638, as amended).

Ordinance of the Minister of the Environment of 27 September 2001 on the catalogue of waste (Journal of Laws, no. 112, item 1206, as amended).

Section 14. TRANSPORT INFORMATION



General information

The product is classified as hazardous in transport, and thus must observe the provisions regarding the transport of hazardous materials as per RID, ADR, IMDG, IATA.

| | RID, ADR | IMDG | IATA |
|---|--|-----------------------------------|-----------------------------------|
| 14.1. UN NUMBER (Nr ONZ) | UN 1863 | UN 1863 | UN 1863 |
| 14.2. PROPER UN SHIPPING NAME | AVIATION GASOLINE, FOR TURBINE ENGINES | FUEL, AVIATION, TURBINE ENGINE | FUEL, AVIATION, TURBINE ENGINE |
| 14.3. TRANSPORT HAZARD CLASS(ES) Classification code Hazard identification number Warning label | 3 F1 30 no. 3 | 3 -- -- no. 3 | 3 -- -- no. 3 |
| 14.4. PACKAGING GROUP | III | III | III |
| 14.5. ENVIRONMENTAL HAZARDS | Hazardous for the environment. Apply specific regulations under 5.2.1.8 and 5.4.1.1.18 | Hazardous for the environment | Hazardous for the environment |
| 14.6. SPECIAL PRECAUTIONS FOR THE USERS | Observe the provisions of applicable regulations. | | |
| 14.7. TRANSPORT IN BULK according to Annex II of MARPOL 73/78 and the IBC code | No data available | | |

Section 15. REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE

See section 13 of this Material Safety Data Sheet.

Act of 25 February 2011 on chemical substances and their mixtures (Journal of Laws, 2011, No. 63, item 322; Journal of Laws, 2012, no. 0, item 908).

Regulation (EC) No. 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No. 793/93 and Commission Regulation (EC) No. 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2002/21/EC.

Commission Regulation (EU) No. 453/2010 of 20 May 2010 amending Regulation (EC) No. 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) (Official Journal of the European Union, L 133 of 31.05.2010)

Regulation (EC) No. 1272/2008 of the European Parliament and of the Council of 16 December 2008 on the classification, labeling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No. 1907/2006 (Official Journal of the European Union, L No. 353, of 31.12.2008, as amended)

Ordinance of the Minister of Health of 10 August 2012 on the criteria and classification methods of chemical substances and their mixtures (Journal of Laws, 2012, no. 0, item 1018)

Ordinance of the Minister of Health of 20 April 2012 on the marking of hazardous substances and hazardous mixtures and particular mixtures (Journal of Laws, 2012, no. 0, item 445)

Ordinance of the Minister of Health of 22 May 2012 on the marking of areas, pipelines, containers and tanks used for storing or containing hazardous substances or hazardous mixtures (Journal of Laws, 2012, No. 9, item 601)

Ordinance of the Minister of Labor and Social Policy of 29 November 2002 on maximum permissible concentrations and volumes of hazardous factors in the occupational environment (Journal of Laws, No. 217, item 1833; 2005, no. 212, item 1769; 2007, No. 161, item 1142; 2009, No. 105, item 873; 2010, No. 141, item 950; 2011, Journal of Laws, No. 27, item 1621)

Ordinance of the Minister of the Economy of 21 December 2005 on the fundamental requirements for means of personal protection (Journal of Laws, 259, item 2173)

Ordinance of the Minister of Labor and Social Policy of 26 September 1997 on occupational health and safety regulations (unified act, Journal of Laws, 2003, No. 169, item 1650; 2007, No. 49, item 330; 2008, no. 108, item 690; 2011, No. 173, item 1034)

Ordinance of the Minister of Health of 30 December 2004 on occupational health and safety on the occurrence of chemical substances in the workplace (Journal of Laws, No. 11, item 86; 2008, No. 203, item 1275)

Ordinance of the Minister of Health of 2 February 2011 on tests and measurements of hazardous factors in the occupational environment (Journal of Laws, No. 33, item 166)

Ordinance of the Minister of the Economy of 8 July 2010 on the minimal occupational health and safety requirements to be observed in workplaces with potentially explosive atmospheres (Journal of Laws, 2010, No. 138, item 931)

The Fire Protection Act of 24 August 1991 (unified act, Journal of Laws, 2009, No. 178, item 1380; 2010, No. 57, item 353; 2012, No. 0, item 908)

The Act of 19 August 2011 on the transport of dangerous goods (Journal of Laws, 2011, No. 277, item 1367; No. 244, item 1454)

Regulations on International Railway Carriage of Dangerous Goods (RID) (Official Journal of the European Union, 2011, No. 137, item 804 and 805)

European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) (Annex to the Official Journal of the European Union, 2011, No. 110, item 641)

Governmental statement dated 23 March 2011 regarding entry into force of amendments to Annexes A and B of European treaty on International Carriage of Dangerous Goods (ADR), concluded in Geneva on 30 September 1957 (Official Journal of the European Union, No. 0, item 815).

Ordinance of the Minister of the Environment of 26 January 2010 on certain reference values for certain airborne substances (Journal of Laws, 2010, No. 16, item 87)

Ordinance of the Minister of the Environment of 24 July 2006 on the conditions to be observed in disposing of sewage to the water or soil, and on substances toxic to the aquatic environment (Journal of Laws, 2006, No. 137, item 984; 2009, no. 27, item 169).

15.2 CHEMICAL SAFETY ASSESSMENT

Safety assessment was carried out for Kerosines.

Section 16. Other information

This material safety data sheet was updated on the basis of information included in the Chemical safety report and effective regulations.

Scope of updates: Sections: 1.1, 2, 3, 8, 11, 12, 15 change of product composition by the addition of supplements, editorial changes, update of regulations, transfer of provisions from exposure scenarios to the contents of the material safety data sheet. The information must be treated as aid for safe handling during transport, storage and use. The material safety data sheet does not constitute a product quality certificate.

The information included in this material safety data sheet refers to the title product only and may not be current or sufficient for the product, when used in combination with other materials or for other purposes. The user of the product must observe all applicable standards and regulations. This Material Safety Data Sheet does not constitute any waiver for the user for incorrect use of the information specified above.

Explanation of abbreviations acronyms used in this material safety data sheet

| | |
|------|--|
| UVCB | Unknown or Variable Composition Substance |
| MPC | Maximum Permissible Concentration |
| MPMC | Maximum Permissible Momentary Concentration |
| MPTC | Maximum Permissible Threshold Concentration |
| MPBC | Maximum Permissible Biological Concentration |

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| | |
|------------------|--|
| vPvB | (Substance) very Persistent and very Bioaccumulative |
| PBT | (Substance), Persistent, Bioaccumulative, Toxic |
| PNEC | Predicted No-effect Concentration |
| DNEL | Derived No-effect Level |
| LD ₅₀ | Median Lethal Dose |
| LC ₅₀ | Lethal Concentration |
| STOT | Specific target organ toxicity |
| NOAEL | No Observable Adverse Effect Level |
| LOEL | Lowest Observed Effect Level |
| (Q)SAR | Quantitative Structure-Activity Relationship |
| OECD | Organization for Economic Cooperation and Development |
| RID | Regulations on International Railway Carriage of Dangerous Goods |
| ADR | Agreement concerning the International Carriage of Dangerous Goods by Road |
| IMDG | International Maritime Dangerous Goods Code |
| IATA | International Air Transport Association |

H-Phrase remark (to classification according to regulation 1272/2008)

The classification and marking specified in reference to this substance apply to the hazardous properties marked using specific terms indicating the hazard type in combination with the specific class (classes) and category (categories) of hazards. The requirements of par. 4 regarding manufacturers, importers and end users of the substance apply to all other classes and categories of hazards. In the case of hazard classes, the exposure methods and effects may lead to distinguishing several classifications within a hazard class, the manufacturer, the importer or the end user shall be obliged to account for all other exposure types and effects, which have not been included yet.

The final label must observe the requirements of par. 17 sec. 2 and sec. 1.2 of Annex I.

H-Phrase remark (to classification according to ordinance of the Minister of Health, *Journal of Laws, 2003, No. 171, item 1666, as amended. 67/548/EEC*)

The classification and marking specified in reference to this substance apply to the hazardous properties marked using specific terms indicating the hazard type in combination with the specific classes and categories of hazards. The manufacturers, importers and end users of this substance must carry out adequate tests to obtain information on proper and available data regarding all other substances required to classify and mark this substance.

The final label must observe the requirements of par. 7 of annex VI to directive 67/548/EEC.