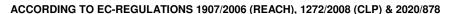
Revision: 1st March 2023 Version: 005





SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product name Naphtha (petroleum), hydrotreated heavy

Product description V4015-C7+hydrotreated heavy-Naphtha (petroleum), hydrotreated heavy

Trade Name C7+hydrotreated heavy

 Product code
 C7+HHYDR

 CAS No.
 64741-42-0

 EC No.
 265-042-6

REACH Registration No. 01-2119474679-18-xxxx

1.2 Relevant identified uses of the substance or mixture

and uses advised against

Identified Use(s)	No	Exposure Scenario	Page:
	1	Distribution of Naphtha (petroleum), full-range straight-run (0 -	11
		1 % benzene content)	
	2	Formulation and (re)packing of Naphtha (petroleum), full-range	14
		straight-run (0 - 1 % benzene content) and Mixtures	
	3	Use of Gasoline (0 – 1 % benzene content) as a	17
		fuel(Industrial)	
	4	Use of Gasoline (0 – 1 % benzene content) as a	19
		fuel(Professional)	
	5	Use of Gasoline (0 – 1 % benzene content) as a	22
		fuel(Consumer)	

Uses advised against

Anything other than the above.

1.3 Details of the supplier of the safety data sheet

Company Identification Vitol SA

Place des Bergues 3 1201 Geneva Switzerland +31 10 498 7200 +31 10 452 9545 xreach@vitol.com

E-mail (competent person)

1.4 Emergency telephone number

Telephone

Fax

Emergency Phone No. +44 (0) 1235 239 670, 24/7
Languages spoken All official European languages.

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

2.1.1 Regulation (EC) No. 1272/2008 (CLP) Flam. Liq. 1; H224

Asp. Tox. 1; H304 Skin Irrit. 2; H315 Muta. 1B; H340 Carc. 1B; H350 Repr. 2; H361fd

STOT SE 3; H336 (central nervous system, inhalation)

Aquatic Chronic 2; H411

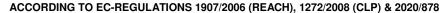
2.2 Label elements According to Regulation (EC) No. 1272/2008 (CLP)

Product description V4015-C7+hydrotreated heavy-Naphtha (petroleum), hydrotreated

heavy

Page: 1 of 24

Revision: 1st March 2023 Version: 005





Hazard Pictogram(s)









Signal Word(s) Danger

Hazard Statement(s)

H224: Extremely flammable liquid and vapour.

H304: May be fatal if swallowed and enters airways. H315: Causes skin irritation.

H340: May cause genetic defects. H350: May cause cancer.

H361fd: Suspected of damaging fertility. Suspected of damaging the unborn

child.

H336: May cause drowsiness or dizziness. (central nervous system, inhalation)

H411: Toxic to aquatic life with long lasting effects.

Precautionary Statement(s) P201: Obtain special instructions before use.

P210: Keep away from heat, hot surfaces, sparks, open flames and other

ignition sources. No smoking.

P273: Avoid release to the environment.

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

protection/hearing protection.

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

P331: Do NOT induce vomiting.

P403+P233: Store in a well-ventilated place. Keep container tightly closed.

2.3 Other hazards May form explosive mixture with air. The vapour is heavier than air; beware of pits

and confined spaces. May cause irritation to eyes and air passages.

Product may release Hydrogen Sulphide: A specific assessment of inhalation risks from the presence of hydrogen sulphide in tank headspaces, confined spaces, product residue, tank waste and waste water, and unintentional releases should be made to help determine controls appropriate to local circumstances.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

SUBSTANCE	CAS No.	EC No.	%W/W
Naphtha (petroleum), full-range straight-run	64741-42-0	265-042-6	100

SECTION 4: FIRST AID MEASURES



4.1 Description of first aid measures

Self-protection of the first aider

Eliminate sources of ignition. If it is suspected that fumes are still present, the responder should wear an appropriate mask or self-contained breathing apparatus. Drench contaminated clothing with water before removing to avoid risk of sparks from static electricity. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Avoid all contact. Do not ingest. If swallowed then seek immediate medical assistance.

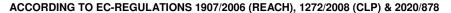
Hydrogen sulphide (H2S) can accumulate in the headspace of storage tanks and reach potentially hazardous concentrations.

If there is any suspicion of inhalation: A self contained breathing apparatus should be worn. Remove to fresh air immediately.

H2S Warning:

Page: 2 of 24

Revision: 1st March 2023 Version: 005





inhalation IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical advice/attention if you feel unwell

> IF ON SKIN (or hair): Remove contaminated clothing immediately and wash affected skin with plenty of water or soap and water. If irritation (redness, rash, blistering) develops, get medical attention.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.

IF SWALLOWED: Do not induce vomiting because of risk of aspiration into the lungs. If vomiting occurs spontaneously, keep head below hips to prevent aspiration into the lungs. If unconscious, place in recovery position and get medical attention immediately. Do not give anything by mouth to an unconscious person. Get medical attention immediately. Do not wait for symptoms to appear. inhalation: May cause drowsiness or dizziness. Headache, nausea and vomiting. Skin contact: Causes skin irritation.

Eye contact: Causes serious eye irritation.

Ingestion: Aspiration into the lungs may cause chemical pneumonitis, which can be fatal. Ingestion may cause irritation of the gastrointestinal tract. Nausea, Vomiting and Diarrhoea

Treat symptomatically..

IF INHALED: If unconscious, place in recovery position and get medical attention immediately. Administer oxygen if available and artificial respiration if necessary. IF SWALLOWED: Do not induce vomiting because of risk of aspiration into the lungs. If aspiration is suspected obtain immediate medical attention. If vomiting

occurs spontaneously, keep head below hips to prevent aspiration into the lungs.

Skin contact

Eye contact

Ingestion

4.2 Most important symptoms and effects, both acute and delayed

4.3 Indication of any immediate medical attention and special treatment needed

Notes to a physician:

SECTION 5: FIREFIGHTING MEASURES

5.1 **Extinguishing media**

Suitable extinguishing media

Unsuitable extinguishing media

5.2 Special hazards arising from the substance or mixture

5.3 Advice for firefighters Extinguish with sand or dry chemical. Foam, Carbon dioxide, Water fog or dry

Do not use water jet. Direct water jet may spread the fire.

Extremely flammable liquid and vapour. Will float and can be reignited on surface water. Decomposes in a fire giving off toxic fumes: A mixture of solid and liquid particulates and gases including unidentified organic and inorganic compounds. May form explosive mixture with air. Prevent liquid entering sewers, basements and any watercourses. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback. If sulphur compounds are present in appreciable amounts, combustion products may include also H2S and SOx (sulfur oxides) or sulfuric acid

Fight fire with normal precautions from a reasonable distance. Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Keep containers cool by spraying with water if exposed to fire. Avoid release to the environment. Dike fire control water for later disposal.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Caution - spillages may be slippery. Ensure operatives are trained to minimise exposures. Ensure suitable personal protection during removal of spillages. Eliminate sources of ignition. Shut off leaks if without risk. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Avoid all contact with substance. Ensure adequate ventilation Do not breathe vapour. Do not ingest. If swallowed then seek immediate medical assistance. Do not use sparking tools. Use non-sparking ventilation systems, approved explosion-proof equipment, and intrinsically safe electrical systems.

Page: 3 of 24

Revision: 1st March 2023 Version: 005

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) & 2020/878



H2S Warning: Product may release Hydrogen Sulphide. Exposure controls - These controls may include: Segregation of areas, Access only to authorised persons, Permit to work systems, Confined space working procedures, Area H2S alarms, Personal H2S alarms, Personal escape sets, H2S awareness training. Please see section 8 for appropriate personal protection equipment Small spillages: Wear flame-resistant antistatic protective clothing. Large spillages: Evacuate the area and keep personnel upwind. Drench contaminated clothing with water before removing to avoid risk of sparks from static electricity. Avoid all contact. Wear chemical protection suit and breathing apparatus. See Also Section: 8. 6.2 Avoid release to the environment. Do not allow to enter drains, sewers or **Environmental precautions** watercourses. Spillages or uncontrolled discharges into watercourses must be alerted to the Environment Agency or other appropriate regulatory body. If necessary: Dike area to contain the spill and prevent releases to sewers, drains, or other waterways. 6.3 Methods and material for containment and cleaning Provided it is safe to do so, isolate the source of the leak. Use non-sparking up equipment when picking up flammable spill. The vapour is heavier than air; beware of pits and confined spaces. Ensure that the equipment is adequately grounded. Allow small spillages to evaporate provided there is adequate ventilation. Wear flame-resistant antistatic protective clothing. Wear chemical protection suit and breathing apparatus. Spillages onto land: In case of soil contamination, remove contaminated soil and treat in accordance with local regulations. Adsorb spillages onto sand, earth or any suitable adsorbent material. Transfer to a lidded container for disposal or recovery. Dispose of this material and its container as hazardous waste Small spillages: Allow small spillages to evaporate provided there is adequate ventilation. Wear flame-resistant antistatic protective clothing. Large spillages: Cover spillage with foam to reduce evaporation. Do not use water jet. Collect as much as possible in clean container for reuse or disposal. Spillages on water or at sea: Small spillages: Contain product with floating barriers or other equipment. Collect spilled product by absorbing with specific floating absorbents. Large spillages: Open waters should be contained with floating barriers or other mechanical means and recovered, only if this is strictly necessary and if fire/explosion risks can be adequately prevented. Otherwise control the spreading of the spillage, and let the substance evaporate naturally. 6.4 Reference to other sections See Section: 8,13

SECTION 7: HANDLING AND STORAGE

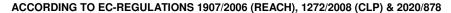
7.1 Precautions for safe handling

Obtain special instructions before use. Keep away from sources of ignition - No smoking. Use only outdoors or in a well-ventilated area. Prevent vapour build up by providing adequate ventilation during and after use. May form explosive mixtures with air. Take action to prevent static discharges. Use non-sparking tools. All parts of the plant and equipment should be electrically bonded together and connected to earth. Electrical continuity should be checked at regular intervals. Antistatic clothing and footwear should be used. The vapour is heavier than air; beware of pits and confined spaces. Avoid all contact with substance. Do not ingest. If swallowed then seek immediate medical assistance. Do not breathe vapour. See Section: 8. Keep good industrial hygiene. Wash hands thoroughly after handling. Contaminated clothing should be thoroughly cleaned.

Product may release Hydrogen Sulphide: A specific assessment of inhalation risks from the presence of hydrogen sulphide in tank headspaces, confined spaces, product residue, tank waste and waste water, and unintentional releases should be made to help determine controls appropriate to local circumstances. These controls may include: Segregation of areas, Access only to authorised persons, Permit to work systems, Confined space working procedures, Area H2S alarms, Personal H2S alarms, Personal escape sets, H2S awareness training.

H2S Warning:

Revision: 1st March 2023 Version: 005





7.2 Conditions for safe storage, including any incompatibilities

Light hydrocarbon vapours can build up in the headspace of containers. These can cause flammability / explosion hazards. Bund storage facilities to prevent soil and water pollution in the event of spillage. Keep only in original packaging. Keep containers properly sealed when not in use. Protect from sunlight. Containers of this material may be hazardous when empty since they retain product residue. Empty container may contain product residue which may result in flammable or explosive vapours inside the container.

Stable at ambient temperatures.

Suitable containers: Stainless steel, Mild steel

Do not store in: Synthetic materials Keep away from oxidising agents.

7.3 Specific end use(s) See Section: 1.2 and/or Exposure Scenario.

storage temperature Storage measures

Incompatible materials

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Occupational exposure limits

No Occupational Exposure Limit assigned. Users are advised to consider national Occupational Exposure Limits or other equivalent values.

8.1.2 Biological Limit Value

Not established

8.1.3 PNECs and DNELs

PNEC: Not established Naphtha (petroleum), full-range straight-run is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the environmental toxicity (HC5) of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore individual environmental compartments PNECs are not available for this product.

Naphtha (petroleum), full-range straight-run Derived no effect level	oral	inhalation	dermal
Worker - Long Term - Systemic effects	-	1300 mg/m ³	-
Worker - Long Term - Local effects	-	840 mg/m ³	-
Worker - acute - Local effects	-	1100 mg/m ³	-
Consumer - Long Term - Systemic effects	-	1200 mg/m ³	-
Consumer - Long Term - Local effects	-	180 mg/m ³	-
Consumer - acute - Local effects	-	640 mg/m ³	-

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Provide adequate ventilation, including appropriate local extraction if dusts, fumes or vapours are likely to be evolved. Store in a cool/low-temperature, well-ventilated (dry) place away from heat and ignition sources. Guarantee that the eye flushing systems and safety showers are located close to the working place.

8.2.2 Individual protection measures, such as personal protective equipment

Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

Fuels are typically used, transferred and transported in closed systems. If exposure is likely (i.e. during sampling) the following advice may be appropriate. Keep good industrial hygiene. Always wash hands before smoking, eating and drinking. Do not eat, drink or smoke at the work place. Refer to annexes for exposure scenarios detailing use specific exposure controls

Eye / face protection

Use eye protection



Use eye protection according to EN 166, designed to protect against liquid splashes.

Revision: 1st March 2023 Version: 005

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) & 2020/878





Hand protection: Wear impervious gloves (EN374). Gloves should be changed regularly to avoid permeation problems. Breakthrough time of the glove material: refer to the information provided by the gloves' producer.

Recommended: Nitrile rubber.

Body protection: Wear anti-static clothing and shoes.

small scale: Wear suitable coveralls to prevent exposure to the skin.

large scale: Chemical protection suit

Respiratory protection



When the product is heated/In case of inadequate ventilation wear respiratory protection. The use of a high efficiency filter (EN143) is recommended. Filter type

Closed system(s): Not normally required.

Thermal hazards not applicable

8.2.3 **Environmental exposure controls** Avoid release to the environment.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

> Physical state Liquid Colour Colourless Odour Hydrocarbon Melting point/freezing point < - 60 °C Boiling point or initial boiling point and boiling range < 35 °C

Flammability

not applicable - Liquid Lower and upper explosion limit Flammable Limits (Lower) (%v/v) 1.4

Flammable Limits (Upper) (%v/v) 7.6

< -40 °C Flash point Auto-ignition temperature > 220 °C Decomposition temperature Not established рΗ Not established <1 mm²/s @ 20 °C Kinematic viscosity

Immiscible with water. Solubility

Partition coefficient: n-octanol/water (log value) not applicable. Substance is complex UVCB. 4 - 240 kPa @ 37.8°C Vapour pressure

Density and/or relative density

0.62 - 0.88 g/cm3 @ 15 °C

> 2 Relative vapour density

Particle characteristics Not established

9.2 Other information None Known

SECTION 10: STABILITY AND REACTIVITY

Conditions to avoid

Incompatible materials

10.4

10.5

Stable under normal conditions Reacts with - Strong oxidising agents 10.1 Reactivity 10.2 Chemical stability Stable under normal conditions Hazardous polymerisation will not occur.

Product may release Hydrogen Sulphide.

10.3 Possibility of hazardous reactions Extremely flammable liquid and vapour. May form explosive mixture with air.

Vapours are heavier than air and may travel considerable distances to a source

of ignition and flashback. Product may release Hydrogen Sulphide.

Elevated temperature. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from direct sunlight.

Keep away from oxidising agents. Strong Acids and Alkalis.

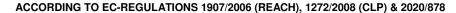
10.6 Hazardous decomposition products A mixture of solid and liquid particulates and gases including unidentified

organic and inorganic compounds. Decomposes in a fire giving off toxic fumes:

COx, H2S, SOx,

Page: 6 of 24

Revision: 1st March 2023 Version: 005





SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on hazard classes as defined in

Regulation (EC) No 1272/2008

Acute toxicity - Ingestion

Acute toxicity - Inhalation

Acute toxicity - Skin contact

Skin corrosion/irritation

Serious eye damage/irritation

-----g-----

Respiratory or skin sensitisation

Germ cell mutagenicity

Carcinogenicity

Reproductive toxicity

STOT - Single Exposure

STOT - Repeated Exposure

Aspiration hazard

11.2 Information on other hazards11.2.1 Endocrine disrupting properties

Short Term (acute):

Long Term (Chronic):

11.2.2 Other information

12.2

All test data taken from existing ECHA registrations for the substances

mentioned.

Based upon the available data, the classification criteria are not met.

LD50 > 5000 mg/kg bw/day (rat) (OECD 401)

Based upon the available data, the classification criteria are not met.

LC50 Vapour $> 5600 \text{ mg/m}^3 \text{ Air (rat) (OECD 403)}$

Based upon the available data, the classification criteria are not met.

LD50 > 2000 mg/kg bw/day (rabbit) (OECD 402)

Skin Irrit. 2; Causes skin irritation.
Irritating to skin. (rabbit) (OECD 404)

Based upon the available data, the classification criteria are not met.

Not irritating to eyes (rabbit) (OECD 405)

Based upon the available data, the classification criteria are not met.

Sensitisation (guinea pig) - Negative (OECD 406)

Muta. 1B; May cause genetic defects. Harmonised Classification.

ECHA Registration Endpoint summary: According to EU CLP Classification (EC no. 1272/2008), there is a regulatory requirement to classify gasoline and naphtha streams as hazardous for this endpoint when they contain >0.1%

benzene

Carc. 1B; May cause cancer. Harmonised Classification.

ECHA Registration Endpoint summary: According to EU CLP Classification (EC no. 1272/2008), there is a regulatory requirement to classify gasoline and naphtha streams as hazardous for this endpoint when they contain >0.1%

benzene

Repr. 2; Suspected of damaging fertility or the unborn child.

ECHA Registration Endpoint summary: According to EU CLP Classification (EC no. 1272/2008), there is a regulatory requirement to classify gasoline and naphtha streams as hazardous for this endpoint when they contain >0.1%

Toluene and/Or n-Hexane

STOT SE 3; May cause drowsiness or dizziness.

Weight of evidence approach

Based upon the available data, the classification criteria are not met.

oral: No adverse effect observed (rat) (Halder CA, et al. (1985))

inhalation: No adverse effect observed (rat) (OECD 453)
Chronic - Systemic effects NOAEC 1402 mg/m³

No adverse effect observed. (Mouse) (OECD TG 410)

Chronic - Systemic effects NOAEL 375 mg/kg bw/day

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

Classification.

Viscosity: <1 mm²/s @ 20 °C

This substance does not have endocrine disrupting properties with respect to

humans.

SECTION 12: ECOLOGICAL INFORMATION

Persistence and degradability

12.1 Toxicity Aquatic Chronic 2; Toxic to aquatic life with long lasting effects.

dermal:

LL50 (Fish) (96hr) 10 mg/l (OCED 203)

According to the EU CLP Regulation (EC No. 1272/2008) criteria, substances in the low boiling point naphtha category are classified as Chronic Category 2 (H411) for the environment based on acute invertebrate and alga toxicity.

Readily biodegradable. (OECD 301F)

12.3 Bioaccumulative potential Substance is complex UVCB. The BCF (fish) of this substance components is

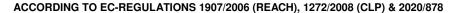
well below the criteria for bioaccumulation. Therefore, this substance is not considered as bioaccumulative substance.(ECHA registration dossier: PBT

assessment 2)

12.4 Mobility in soil The product is predicted to have low mobility in soil. Immiscible with water.

Page: 7 of 24

Revision: 1st March 2023 Version: 005





12.5 Results of PBT and vPvB assessment Substance is complex UVCB. This substance does not contain PBT constituents

included in the SVHC candidate list at concentrations above 0.1%.

12.6 Endocrine disrupting properties This substance does not have endocrine disrupting properties with respect to

non-target organisms.

12.7 Other adverse effects None Known

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods Dispose of this material and its container as hazardous waste Do not empty into

drains, dispose of this material and its container at hazardous or special waste collection point. Disposal should be in accordance with local, state or national legislation. Containers of this material may be hazardous when empty since they retain product residue. Containers must not be punctured or destroyed by burning, even when empty. Allocation of a waste code number, according to the

European Waste Catalogue, should be carried out in agreement with the

regional waste disposal company. Waste code: 13 07 01 Waste classification according to Directive 2008/98/EC EU Waste Codes: HP3, HP4, HP7, HP10, HP11, HP14

(Waste Framework Directive)

SECTION 14: TRANSPORT INFORMATION

		ADR/RID	IMDG/ADN
14.1	UN number	UN 1268	UN 1268

14.2 Proper Shipping Name PETROLEUM DISTILLATES N.O.S. PETROLEUM DISTILLATES N.O.S.

14.3 Transport hazard class(es) 3 3+(N2, CMR,F)

14.4 Packing group

14.4 Packing group I
 14.5 Environmental hazards I
 MILIEUGEVAARLIJK / ENVIRONMENTALLY HAZARDOUS / UMWELTGEFÄHREND

/DANGEREUX POUR/ L'ENVIRONNEMENT

14.6 Special precautions for user See Section: 2

14.7 Maritime transport in bulk according This product is being carried under the scope of MARPOL Annex 1. Special Precautions: Refer to

to IMO instruments Chapter 7 'Handling and Storage' for special precautions which a user needs to be aware of, or

needs to comply with, in connection with transport.

14.8 Additional information ADR HIN: 33 EmS: F-E, S-E

Tunnel restriction code: 3 (D/E) Limited Quantity: 500ml

Limited Quantity: 500 ml

Special Provisions 664

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental

regulations/legislation specific for the substance or

mixture

15.1.1 EU regulations

Seveso Upper Tier: 25000 tonnes

Lower Tier: 2500 tonnes

Annex XVII (Restrictions) In accordance with REACH Annex XVII entry 30 (c) this substance is exempt from

Entry 28 and 29 of REACH Annex XVII as it is to be sold as a fuel in a closed

svstem.

15.1.2 National regulations

Germany Wassergefährdungsklasse (Germany). WGK number: 3

15.2 Chemical Safety Assessment A REACH chemical safety assessment (CSA) has been carried out. Refer to

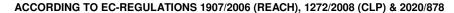
annexes for exposure scenarios detailing use specific exposure controls.

SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: New SDS Regulation 2020/878 format, all sections have been updated to include new information. Please review SDS with care.

Page: 8 of 24

Revision: 1st March 2023 Version: 005





References:

Existing ECHA registration(s) for Naphtha (petroleum), full-range straight-run (CAS No. 64741-42-0) and Chemical Safety Report.

Literature References:

1. Halder CA, et al., 1985, Hydrocarbon nephropathy in male rats: identification of the nephrotoxic components of unleaded gasoline., Toxicol. Ind. Health 1:67-87

EU Classification: This Safety Data Sheet was prepared in accordance with EC Regulation (EC) 1907/2006 (REACH), 1272/2008 (CLP) & 2020/878

Legend

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road **ADR** ADN ADN: European Agreement on the International Transport of Dangerous Goods by Inland Waterways CLP Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures

DNEL Derived no effect level

IATA IATA: International Air Transport Association **ICAO** ICAO: International Civil Aviation Organization **IMDG** IMDG: International Maritime Dangerous Goods

I TFI Long term exposure limit

PBT PBT: Persistent. Bioaccumulative and Toxic

PNEC Predicted No Effect Concentration

REACH Registration, Evaluation, Authorisation and Restriction of Chemicals

RID RID: Regulations concerning the international railway transport of dangerous goods

STEL Short term exposure limit

vPvB vPvB: very Persistent and very Bioaccumulative

OECD Organisation for Economic Cooperation and Development

FS Exposure Scenario

NOAEC no observed adverse effect concentration NOAEL No Observed Adverse Effect Level

Hazard classification / Classification code:

Flam. Liq. 1, Flammable liquid, Category 1 Asp. Tox. 1, Aspiration Toxicity, Category 1 Skin Irrit. 2, Skin irritation, Category 2

Muta. 1B, Germ cell mutagen, Sub-category 1B

Carc. 1B, Carcinogen, Category 1B Repr. 2, Reproductive toxicant, Category 2

STOT SE 3, Specific target organ toxicity - Single exposure, Category 3

Aquatic Chronic 2, Hazardous to the aquatic environment (Chronic), Category 2

Hazard Statement(s)

H224: Extremely flammable liquid and vapour. H304: May be fatal if swallowed and enters airways.

H315: Causes skin irritation. H340: May cause genetic defects.

H350: May cause cancer.

H361fd: Suspected of damaging fertility. Suspected of damaging the unborn child.

H336: May cause drowsiness or dizziness. (central nervous system, inhalation)

H411: Toxic to aquatic life with long lasting effects.

Training advice: Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.

Disclaimers

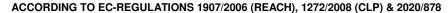
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Annex to the extended Safety Data Sheet (eSDS)

See below -

Page: 9 of 24

Revision: 1st March 2023 Version: 005





Naphtha (petroleum), full-range straight-run (0 -1% benzene content)

CAS Number 64741-42-0 EC Number 265-042-6

Summary of Parameters

Physical Paramete	ers			
Vapour pressure (Pa)			4 – 240 @ 37.8 °C (Value used for exposure assessment = 340)	
Partition Coefficient	t (log K _{ow})		2.00 - 20.43	
Aqueous solubility ((mg L ⁻¹)		1.6E+03 - 5.1E-18 (Value used for exposure assessment = 2.0E+02)	
Molecular weight			not applicable	
Biodegradability			Not defined	
Human Health parameter (DNELs)				
	Short term	inhalation (mg/m³)	1100	
Worker	Short term	dermal (mg/kg bw/day)	not applicable	
worker	Long Torm	inhalation (mg/m³)	3.2 (= 1 ppm)*	
	Long Term	dermal (mg/kg bw/day)	0.234*	
inha		inhalation (mg/m³)	0.0032 (=1 ppb)* (0.93 mg/kg bw/day)	
Consumer		dermal (mg/kg bw/day)	0.234*	
		oral (mg/kg bw/day)	8.8	

Environmental parameter (PNECs)

Naphtha (petroleum), full-range straight-run is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the environmental toxicity (HC5) of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore individual environmental compartments PNECs are not available for this product.

Table of Contents

Number	Title	Page:
Exposure Scenario 1	Distribution of Naphtha (petroleum), full-range straight-run (0 - 1 % benzene content)	11
Exposure Scenario 2	Formulation and (re)packing of Naphtha (petroleum), full-range straight-run (0 – 1 % benzene content)	14
Exposure Scenario 3	Use of Gasoline (0 – 1 % benzene content) as a fuel- Industrial	17
Exposure Scenario 4	Use of Gasoline (0 - 1 % benzene content) as a fuel- Professional	19
Exposure Scenario 5	Use of Gasoline (0 – 1 % benzene content) as a fuel- Consumer	22

Contributing Scenarios

Workers

Concentration: benzene (Worst case assumption. Contains benzene. @1%).

Revision: 1st March 2023 Version: 005



ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) & 2020/878

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with
PROC2	equivalent containment conditions
	Use in closed, continuous process with occasional controlled exposure.
PROC2 (Storage)	Bulk product storage.
	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or
PROC3	processes with equivalent containment condition.
	Use in closed, continuous process with occasional exposure.
PROC3 (Sampling)	Sample collection
	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8a (Maintenance)	Clean down and maintenance of vessels and containers.
	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC8b (bulk)	Bulk transfer in a closed system
	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC8b (Drum)	Drum or batch transfers.
	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC8b (Refueling)	Refueling vehicles, light aircraft or marine craft
	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC8b (aircraft)	Refuelling aircraft
PROC15	Use as laboratory reagent.
PROC16	Using material as fuel sources, limited exposure to unburned product to be expected.
	Using material as fuel sources, limited exposure to unburned product to be expected.
PROC16 (Additive)	Use as a fuel additive.
Environment	
ERC1	Manufacture of substance
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)
ERC6b	Industrial use of reactive processing aids
ERC6c	Industrial use of monomers for manufacture of thermoplastics
ERC6d	Industrial use of process regulators for polymerisation processes in 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
Consumer	
PC13	Fuels
	(Liquid: Automotive Refuelling)
	(Liquid Scooter Refuelling)
	(Liquid: Garden equipment - Refuelling)
	(Liguid, Garden equipment - Use)

Exposure Scenario 1 – Distribution of Naphtha (petroleum), full-range straight-run (0 – 1 % benzene content)

1.0 Contributing Scenarios	
Sector of uses SU	SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites
Process category [PROC]	PROC1 PROC2 PROC2 (Storage) PROC3 PROC3 (Sampling) PROC8a (Maintenance) PROC8b (bulk) PROC15
Chemical product category [PC]	not applicable
Article categories [AC]	not applicable
Environmental release categories [ERC]	ERC1 ERC2 ERC3 ERC4 ERC5 ERC66 ERC66 ERC60

Revision: 1st March 2023 Version: 005



ERC7



Specific Environmental Release Categories SPERC	ESVOC Spi	ERC 1.1b v.1				
2.0 Operational conditions and risk management measures						
2.1 Control of worker exposure Product characteristics						
Physical form of product	Liquid with high volatility.					
Concentration of substance in product				(≤ 1 % benzene content)		
Human factors not influenced by risk manage		overe concentrations t	ap to 10070	(= 1 /0 bonzono doment)		
Potential exposure area		ot defined				
Frequency and duration of use	-					
Exposure duration per day			up to 8 hou	ırs (unless stated differently).		
Frequency of use (days per year)	30					
Other operational conditions affecting work			, 1	0.11		
Area of use		ROC3, PROC2 (Stora	ge)	Outdoor		
		I other PROC's		Not defined (default = Indoor)		
Characteristics of the surroundings		ot defined				
General measures applicable to all activities Assumes a good basic standard of occupationa	: Il hygiene is i	implemented. Assume	es activities	are at ambient temperature (unless stated differently).		
General measures (skin irritants)						
likely. Clean up contamination/spills as soon	as they oc	cur. Wash off any s	ontact. Wea kin contam	ar gloves (tested to EN374) if hand contact with substance innation immediately. Provide basic employee training to		
prevent/minimise exposures and to report any s	kin problems	s that may develop.				
General measures (carcinogens)		р , , , , , , , , , , , , , , , , , , ,	p			
				on of releases. minimise exposure using measures such as		
				down systems and clear transfer lines prior to breaking		
				otential for exposure: restrict access to authorised persons;		
				d coveralls to prevent skin contamination; wear respiratory		
				ately and dispose of waste safely. Ensure safe systems of		
	to manage r	risks. Regularly inspec	ct, test and	maintain all control measures. Consider the need for risk		
based health surveillance.						
Technical conditions of use						
PROC1, PROC2, PROC3		andle substance withir		•		
PROC8b (bulk)		nsure material transfei) %)	rs are unde	r containment or extract ventilation. (Efficiency of at least		
PROC15	Us	se fume cupboard. (Ef	ficiency of a	at least 90 %)		
Organisational measures						
PROC3 (Sampling)	Sa	ample via a closed loo	p or other s	system to avoid exposure. (Efficiency of at least 95 %)		
PROC8a (Maintenance)	in		ng disposal	to equipment break-in or maintenance. Retain drain downs or for subsequent recycle. Clear spills immediately.		
Risk management measures related to huma	an health			·		
Respiratory protection	No	o special measures ar	e required.			
	PF	ROC2		Wear suitable gloves tested to EN374. (Efficiency of at least 80 %)		
Hand and/or Skin protection				Wear chemically resistant gloves (tested to EN374) in		
·	PF			combination with 'basic' employee training. (Efficiency of		
		,		at least 90 %)		
Eye Protection	No	o special measures ar	e required.	·		
Other operational conditions affecting work		•				
Wear suitable coveralls to prevent exposure to			to de-coupli	ng. Avoid dip sampling.		
2.2 Control of environmental exposure						
Amounts used						
Fraction of EU tonnage used in region:			0.1			
Regional use tonnage (tons/year):			3.1E+06			
Fraction of Regional tonnage used locally: t	ons/year		2.0E-03			
Annual site tonnage (tons/year):			62,000			
Average daily use (kg/day)			210,000			
Environment factors not influenced by risk	managemen		,,,,,,,,,,			
Flow rate of receiving surface water (m³/d): Not defined (default = 18,000)						
Local freshwater dilution factor:			10	u (uciauit = 10,000)		
Local Healtwater ullution ractor.						

Revision: 1st March 2023 Version: 005





Local marine water dilution factor:	100	
operational conditions		
Emission days (days/year):	300	
Release fraction to air from process (initial release prior to RMM):	1.0E-03	
Release fraction to wastewater from process (initial release prior to RMM):	1.0E-05	
Release fraction to soil from process (initial release prior to RMM):	1.0E-05	
Technical onsite conditions and measures to reduce or limit discharges,	air emissions and releases to soil	
Treat air emission to provide a typical removal efficiency of (%):	90	
If there is no discharge to domestic sewage treatment plant, Treat onsite		
wastewater (prior to receiving water discharge) to provide the required	0	
removal efficiency of (%):		
If discharging to domestic sewage treatment plant, provide the required onsite		
wastewater removal efficiency of (%):	0	
Treat soil emission to provide a typical removal efficiency of (%):	0	
Common practices vary across sites thus conservative process release estimates	ates used. If discharging to domestic sewage treatment plant, no onsite	
wastewater treatment required.		
Organisational measures to prevent/limit release from site		
Do not apply industrial sludge to natural soils. Sludge should be incinerated, co	ntained or reclaimed.	
Conditions and measures related to municipal sewage treatment plant		
Size of municipal sewage system/treatment plant (m³/d)	2000	
Degradation effectiveness (%)	95.7	
Conditions and measures related to external treatment of waste for dispo	sal	
External treatment and disposal of waste should comply with applicable local a	nd/or national regulations.	
Substance release quantities after risk management measures		
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	530,0000	

3. Exposure estimation and reference to its source

3.1 Human exposure prediction

	inhalation		der	Combined	
Process category [PROC]	inhalation exposure (mg/m³)	Risk characterisation ratio (RCR)	dermal exposure (mg/kg bw/day)	Risk characterisation ratio (RCR)	Risk characterisation ratio (RCR)
PROC1	0.00	0.00	0.03	0.15	0.15
PROC2	0.50	0.50	0.03	0.12	0.62
PROC2 (Storage)	0.35	0.35	0.14	0.57	0.94
PROC3	0.70	0.70	0.03	0.15	0.85
PROC3 (Sampling)	0.05	0.05	0.03	0.15	0.20
PROC8a (Maintenance)	0.25	0.25	0.14	0.57	0.84
PROC8b (bulk)	0.15	0.15	0.07	0.30	0.45
PROC15	0.05	0.05	0.00	0.01	0.06

3.2 Environmental exposure prediction

Exposure assessment (method/calculation model)

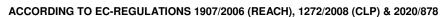
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Naphtha (petroleum), full-range straight-run is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the environmental toxicity (HC5) of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore individual environmental compartments PNECs are not available for this product.

Environmental exposure	STP	freshwater	marine water	soil	freshwater sediment	marine sediment
Predicted Environmental Exposure (PEC)	4.6E-03 mg/L	3.6E-03 mg/L	4.6E-05 mg/L	1,68E-4 mg/kg ww	0.15 mg/kg ww	4.6E-03 mg/kg ww

Page: 13 of 24

Revision: 1st March 2023 Version: 005





	Risk characterisation ratio (RCR)	2.8E-04	1.2E-02	1.3E-04	2.3E-05	6.0E-03	1.9E-04	
Human exposi	ure prediction:							
	Route	Route of Exposure		Exposure (μg/kg ⁻¹ day ⁻¹)		Risk characterisation r (RCR)	atio	
		oral		3.9		3.9E-02		
	i	nhalation		0.68		7.3E-04		

4.0 Evaluation guidance to downstream user					
For scaling see	are managed to at least equive Available hazard data do not Further details on scaling and industries-libraries.html). Exposure calculated for benzeros.	Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for other health effects. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). Exposure calculated for benzene and assumes that the substance contains 1 % benzene. Arithmetic scaling may be possible if the batch contains < 1 % benzene			
Exposure assessment	Worker	ECETOC TRA			
instrument/tool/method	Environment The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.				

Exposure Scenario 2 – Formulation and (re)packing of Naphtha (petroleum), full-range straight-run (0 – 1 % benzene content)

1.0 Contributing Scenarios	
Sector of uses SU	SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites SU10 Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
Process category [PROC]	PROC1 PROC2 PROC2 (Storage) PROC3 PROC3 (Sampling) PROC8a (Maintenance) PROC8b (bulk) PROC8b (Drum/batch transfers) PROC15
Chemical product category [PC]	not applicable
Article categories [AC]	not applicable
Environmental release categories [ERC]	ERC2
Specific Environmental Release Categories SPERC	ESVOC SPERC 2.2.v1

2.0 Operational conditions and risk manage	ement measures				
2.1 Control of worker exposure					
Product characteristics					
Physical form of product	Liquid with high volatility.				
Concentration of substance in product	Covers concentrations up	to 100% (≤ 1 % benzene content)			
Human factors not influenced by risk mana	gement				
Potential exposure area	Not defined				
Frequency and duration of use					
Exposure duration per day	Covers daily exposures u	to 8 hours (unless stated differently).			
Frequency of use (days per year)	300				
Other operational conditions affecting work	er exposure				
Average	PROC3	Outdoor			
Area of use	All other PROC's	Not defined (default = Indoor)			
Characteristics of the surroundings	Not defined	Not defined			
General measures applicable to all activitie	s				

Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).

General measures (skin irritants)

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.

General measures (carcinogens)

Revision: 1st March 2023 Version: 005





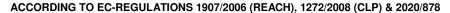
Consider technical advances and process upgrades (including automation) for the elimination of releases. minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenario; clear up spills immediately and dispose of waste safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.

based health surveillance.				
Technical conditions of use				
PROC1, PROC2, PROC2 (Storage), PROC3	Handle substance wit	hin a closed	system.	
PROC3 (Sampling)	Sample via a closed l	oop or other	system to avoid exposure. (Efficiency of at least 95 %)	
PROC8b (bulk), PROC8b (Drum/batch transfers)	Ensure material transfers are under containment or extract ventilation. (Efficiency of at least 97 %)			
PROC15	Use fume cupboard. (Efficiency of	at least 90 %)	
Organisational measures		· · · · · · · · · · · · · · · · · · ·	,	
PROC8a (Maintenance)	Drain down and flush system prior to equipment break-in or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Clear spills immediately. (Efficiency of at least 90 %)			
Risk management measures related to human hea				
Respiratory protection	No special measures	are required		
	PROC2, PROC2 (Sto	rage)	Wear suitable gloves tested to EN374. (Efficiency of at least 80 %)	
Hand and/or Skin protection	PROC8a (Maintenand		Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency of at least 90 %)	
Eye Protection	No special measures	are required		
Other operational conditions affecting worker exp				
Wear suitable coveralls to prevent exposure to the ski	n. Clear transfer lines pri	or to de-cou	pling. Avoid dip sampling.	
2.2 Control of environmental exposure				
Amounts used		Т		
Fraction of EU tonnage used in region:		0.1		
Regional use tonnage (tons/year):		4.0E+05		
Fraction of Regional tonnage used locally: (tons/year)		7.4E-02		
Annual site tonnage (tons/year):		3.0E+04		
Average daily use (kg/day):		1.0E+05		
Environment factors not influenced by risk manage	gement	1		
Flow rate of receiving surface water (m³/d):			ed (default = 18,000)	
Local freshwater dilution factor:		10		
Local marine water dilution factor:		100		
operational conditions		1 000		
Emission days (days/year):	. 51414	300		
Release fraction to air from process (initial release pri Release fraction to wastewater from process (initial re		2.5E-02 1.1E-03		
Release fraction to wastewater from process (initial release process)		1.0E-04		
Technical onsite conditions and measures to redu			ns and releases to soil	
Treat air emission to provide a typical removal efficier		0		
If there is no discharge to domestic sewage treatment				
wastewater (prior to receiving water discharge) to pro		95.3		
removal efficiency of (%):	1			
If discharging to domestic sewage treatment plant, pro	ovide the required			
onsite wastewater removal efficiency of (%):	•	0		
Treat soil emission to provide a typical removal efficie	ncy of (%):	0		
		ites used. If	discharging to domestic sewage treatment plant, no onsite	
Organisational measures to prevent/limit release	rom site			
Do not apply industrial sludge to natural soils. Sludge	should be incinerated, co	ontained or r	eclaimed.	
Conditions and measures related to municipal set				
Size of municipal sewage system/treatment plant (m ³ /	(d)	2000		
Degradation effectiveness (%)		95.7		
Conditions and measures related to external treat	ment of waste for dispo	sal		

Page: 15 of 24

External treatment and disposal of waste should comply with applicable local and/or national regulations.

Revision: 1st March 2023 Version: 005





Substance release quantities after risk management measures	
Maximum allowable site tonnage (MSafe) based on release following total	1.1E+05
wastewater treatment removal (kg/d):	

3. Exposure estimation and reference to its source

3.1 Human exposure prediction

Exposure assessment (method/calculation model)

ECETOC TRA (benzene content)

		inhalation	dermal		Combined
Process category [PROC]	inhalation exposure (mg/m³)	Risk characterisation ratio (RCR)	dermal exposure (mg/kg bw/day)	Risk characterisation ratio (RCR)	Risk characterisation ratio (RCR)
PROC1	0.00	0.00	0.03	0.15	0.15
PROC2	0.50	0.50	0.03	0.12	0.62
PROC2 (Storage)	0.50	0.50	0.03	0.12	0.62
PROC3	0.70	0.70	0.03	0.15	0.85
PROC3 (Sampling)	0.05	0.05	0.03	0.15	0.20
PROC8a (Maintenance)	0.25	0.25	0.14	0.59	0.84
PROC8b (bulk)	0.05	0.05	0.07	0.30	0.35
PROC8b (Drum/batch transfers)	0.05	0.05	0.07	0.30	0.35
PROC15	0.05	0.05	0.00	0.01	0.06

3.2 Environmental exposure prediction

Exposure assessment (method/calculation model)

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Naphtha (petroleum), full-range straight-run is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the environmental toxicity (HC5) of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore individual environmental compartments PNECs are not available for this product.

Environmental exposure	STP	freshwater	marine water	soil	freshwater sediment	marine sediment
Predicted Environmental Exposure (PEC)	2.4 mg/L	0.24 mg/L	2.4E-02 mg/L	1.67E-03 mg/kg ww	9.4E-01 mg/kg ww	9.4E-02 mg/kg ww
Risk characterisation ratio (RCR)	0.14	0.66	0.066	4.6E-03	0.91	0.091

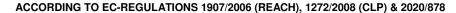
Human exposure prediction:

Route of Exposure	Exposure (μg/kg ⁻¹ day ⁻¹)	Risk characterisation ratio (RCR)
oral	9.8	0.098
inhalation	1700	0.18

4.0 Evaluation guidance to downstream user					
For scaling see	are managed to at least equ Available hazard data do no Further details on scaling ar industries-libraries.html).	t support the need for a DNEL to be established for other health effects. Indicontrol technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for- Izene and assumes that the substance contains 1 % benzene. Arithmetic scaling may			
Exposure assessment	Worker	ECETOC TRA			
instrument/tool/method	Environment	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.			

Page: 16 of 24

Revision: 1st March 2023 Version: 005





Exposure Scenario 3 – Use of Gasoline (0 – 1 % benzene content) as a fuel- Industrial

1.0 Contributing Scenarios	
Sector of uses SU	SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites
Process category [PROC]	PROC1 PROC2 PROC2 (Storage) PROC3 PROC8a (Maintenance) PROC8b (bulk) PROC8b (Drum/batch transfers) PROC8b (Refuelling) PROC8b (Refuelling aircraft) PROC16 PROC16 (Additive)
Chemical product category [PC]	not applicable
Article categories [AC]	not applicable
Environmental release categories [ERC]	ERC7
Specific Environmental Release Categories SPERC	ESVOC SPERC 7.12a.v1

2.0 Operational conditions and risk manage	ement measures		
2.1 Control of worker exposure			
Product characteristics			
Physical form of product	Liquid with high volatility.		
Concentration of substance in product	Covers concentrations up	to 100% (≤ 1 % benzene content)	
Human factors not influenced by risk mana	gement		
Potential exposure area	Not defined		
Frequency and duration of use			
Exposure duration per day	Covers daily exposures up	to 8 hours (unless stated differently).	
Frequency of use (days per year)	300		
Other operational conditions affecting work	er exposure		
Area of use	PROC3	Outdoor	
Area of use	All other PROC's	Not defined (default = Indoor)	
Characteristics of the surroundings	Not defined	•	
Camaral massarras amplicable to all activitie			

General measures applicable to all activities

Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).

General measures (skin irritants)

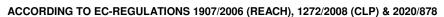
Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.

General measures (carcinogens)

Consider technical advances and process upgrades (including automation) for the elimination of releases. minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenario; clear up spills immediately and dispose of waste safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.

Technical conditions of use			
PROC1, PROC2, PROC2 (Storage), PROC3, PROC16, PROC16 (Additive)	Handle substance within a closed system.		
PROC8b (bulk), PROC8b (Drum/batch transfers), PROC8b (Refuelling), PROC8b (Refuelling aircraft)	Ensure material transfers are under containment or extract ventilation. (Efficiency of at least 90 %)		
Organisational measures			
PROC8a (Maintenance)	Drain down and flush system prior to equipment break-in or maintenance. Retain drain d		
Risk management measures related to human health	h		
Respiratory protection	No special measures are required.		
Hand and/or Skin protection	PROC2 Wear suitable gloves tested to EN374. (Efficiency least 80 %)		

Revision: 1st March 2023 Version: 005





	PROC8a (Maintenance	e)	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency of at least 90 %)
Eye Protection	No special measures a	are required.	
Other operational conditions affecting worker expo	osure		
Wear suitable coveralls to prevent exposure to the skir	n. Clear transfer lines prior	r to de-coup	ing. Avoid dip sampling.
2.2 Control of environmental exposure			
Amounts used			
Fraction of EU tonnage used in region:		0.1	
Regional use tonnage (tons/year):		2.5E+05	
Fraction of Regional tonnage used locally: (tons/year)		1	
Annual site tonnage (tons/year):		2.5E+05	
Average daily use (kg/day):		8.2E+05	
Environment factors not influenced by risk manage	ement	•	
Flow rate of receiving surface water (m³/d):		Not define	d (default = 18,000)
Local freshwater dilution factor:		10	. ,
Local marine water dilution factor:		100	
operational conditions			
Emission days (days/year):		300	
Release fraction to air from process (initial release prior	or to RMM):	5.00E-02	
Release fraction to wastewater from process (initial release		1.0E-05	
Release fraction to soil from process (initial release pri		0	
Technical onsite conditions and measures to reduce		ir emission	s and releases to soil
Treat air emission to provide a typical removal efficience	cy of (%):	95.0	
If there is no discharge to domestic sewage treatment			
wastewater (prior to receiving water discharge) to prov	ide the required	42.3	
removal efficiency of (%):			
If discharging to domestic sewage treatment plant, pro-	vide the required onsite	0	
wastewater removal efficiency of (%):	•	0	
Treat soil emission to provide a typical removal efficien	ncy of (%):	0	
Common practices vary across sites thus conservative wastewater treatment required.	e process release estima	tes used. If	discharging to domestic sewage treatment plant, no onsite
Organisational measures to prevent/limit release fr			
Do not apply industrial sludge to natural soils. Sludge s		ntained or re	claimed.
Conditions and measures related to municipal sew	•		
Size of municipal sewage system/treatment plant (m³/c	d)	2000	
Degradation effectiveness (%)		95.7	
Conditions and measures related to external treatm	nent of waste for dispos	al	
External treatment and disposal of waste should comp	ly with applicable local an	d/or nationa	regulations.
Substance release quantities after risk managemen	nt measures		
Maximum allowable site tonnage (MSafe) based on rel wastewater treatment removal (kg/d):		4.30E+06	

3. Exposure estimation and reference to its source

3.1 Human exposure prediction

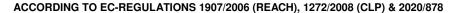
Exposure assessment (method/calculation model)

ECETOC TRA (benzene content)

	inha	lation	der	Combined	
Process category [PROC]	inhalation exposure (mg/m³)	Risk characterisation ratio (RCR)	dermal exposure (mg/kg bw/day)	Risk characterisation ratio (RCR)	Risk characterisation ratio (RCR)
PROC1	0.00	0.00	0.03	0.15	0.15
PROC2	0.50	0.50	0.03	0.12	0.62
PROC2 (Storage)	0.35	0.35	0.14	0.59	0.94
PROC3	0.70	0.70	0.03	0.15	0.85
PROC8a (Maintenance)	0.35	0.35	0.14	0.59	0.94
PROC8b (bulk)	0.09	0.09	0.07	0.30	0.39
PROC8b	0.15	0.15	0.07	0.30	0.45

Page: 18 of 24

Revision: 1st March 2023 Version: 005





(Drum/batch transfers)					
PROC8b (Refuelling)	0.15	0.15	0.07	0.30	0.45
PROC8b (Refuelling aircraft)	0.15	0.15	0.07	0.30	0.45
PROC16	0.25	0.25	0.03	0.15	0.40
PROC16 (Additive)	0.25	0.25	0.03	0.15	0.40

3.2 Environmental exposure prediction

Exposure assessment (method/calculation model)

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Naphtha (petroleum), full-range straight-run is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the environmental toxicity (HC5) of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore individual environmental compartments PNECs are not available for this product.

Environmental exposure	STP	freshwater	marine water	soil	freshwater sediment	marine sediment
Predicted Environmental Exposure (PEC)	0.18 mg/L	0.018 mg/L	1.8E-03 mg/L	4.7E-03 mg/kg ww	0.22 mg/kg ww	7.2E-03 mg/kg ww
Risk characterisation ratio (RCR)	0.011	0.051	5.1E-03	3.6E-03	0.074	7.0E-03

Human exposure prediction:

Route of Exposure	Exposure (µg/kg ⁻¹ day ⁻¹)	Risk characterisation ratio (RCR)
oral	4.6	0.046
inhalation	1.3E+02	0.15

4.0 Evaluation guidance to downstream user					
For scaling see	are managed to at least equiv Available hazard data do not s Further details on scaling and industries-libraries.html).	support the need for a DNEL to be established for other health effects. control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-forene and assumes that the substance contains 1 % benzene. Arithmetic scaling may			
Exposure assessment	Worker ECETOC TRA				
instrument/tool/method	Environment The Hydrocarbon Block Method has been used to calculate envir exposure with the Petrorisk model.				

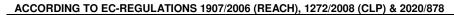
Exposure Scenario 4 – Use of Gasoline (0 – 1 % benzene content) as a fuel- Professional

1.0 Contributing Scenarios	
Sector of uses SU	SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process category [PROC]	PROC1 PROC2 PROC2 (Storage) PROC3 PROC8a (Maintenance) PROC8b (bulk) PROC8b (Drum/batch transfers) PROC8b (Refuelling) PROC16
Chemical product category [PC]	not applicable
Article categories [AC]	not applicable
Environmental release categories [ERC]	ERC9a ERC9b

Page: 19 of 24

Revision: 1st March 2023 Version: 005

Specific Environmental Release Categories SPERC



ESVOC SPERC 9.12b.v1



2.0 Operational conditions and risk management me	easures				
2.1 Control of worker exposure					
Product characteristics					
Physical form of product	Liquid with high volatili				
Concentration of substance in product	Covers concentrations	up to 100%	(≤ 1 % benzene content)		
Human factors not influenced by risk management	Net defined				
Potential exposure area Frequency and duration of use	Not defined				
Exposure duration per day	Covers daily exposure	s un to 8 hoi	urs (unless stated differently).		
Frequency of use (days per year)	300	3 40 10 0 1101	ars (unicss stated differently).		
Other operational conditions affecting worker expos					
	PROC3		Outdoor		
Area of use	All other PROC's		Not defined (default = Indoor)		
Characteristics of the surroundings	Not defined				
General measures applicable to all activities					
Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).					
General measures (skin irritants)	'		, ,		
Avoid direct skin contact with product. Identify potentia	l areas for indirect skin o	contact. Wea	ar gloves (tested to EN374) if hand contact with substance		
		skin contan	nination immediately. Provide basic employee training to		
prevent/minimise exposures and to report any skin prob	lems that may develop.				
General measures (carcinogens)					
			on of releases. minimise exposure using measures such as		
			down systems and clear transfer lines prior to breaking		
			otential for exposure: restrict access to authorised persons		
			nd coveralls to prevent skin contamination; wear respirator		
protection when its use is identified for certain contributing scenario; clear up spills immediately and dispose of waste safely. Ensure safe systems of					
work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk					
based health surveillance.					
Technical conditions of use					
PROC1, PROC2, PROC2 (Storage), PROC3,	Handle substance with	in a closed	system		
PROC16					
PROC2 (Storage)	_	-	Il ventilation. Natural ventilation is from doors, windows etc. supplied or removed by a powered fan. (Efficiency of at		
PROC8b (bulk), PROC8b (Drum/batch transfers), PROC8b (Refuelling)	Ensure material transfe 90 %)	ers are unde	er containment or extract ventilation. (Efficiency of at least		
Organisational measures	'				
PROC8a (Maintenance)		ling disposa	to equipment break-in or maintenance. Retain drain downs or for subsequent recycle. Clear spills immediately.		
Risk management measures related to human healt	h				
Respiratory protection	No special measures a	are required.			
	PROC2		Wear suitable gloves tested to EN374. (Efficiency of at least 80 %)		
Hand and/or Skin protection	PROC8a (Maintenance	e)	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency of at least 98 %)		
Eye Protection	No special measures a	are required	,		
Other operational conditions affecting worker expos					
Wear suitable coveralls to prevent exposure to the skin.		r to de-count	ing. Avoid din sampling		
2.2 Control of environmental exposure	. Ocal transfer lines prior	to de-coupi	ing. Avoid dip sampling.		
Amounts used Fraction of EU tonnage used in region: 0.1					
		0.1			
Regional use tonnage (tons/year):		6.9E+04			
Fraction of Regional tonnage used locally: (tons/year)		5.0E-04			
Annual site tonnage (tons/year):		350			
Average daily use (kg/day):		950			
Environment factors not influenced by risk manage	ment				
Flow rate of receiving surface water (m³/d):		Not define	d (default = 18,000)		
, , , , , , , , , , , , , , , , , , , ,					

Revision: 1st March 2023 Version: 005



ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) & 2020/878

Local freshwater dilution factor:	10
Local marine water dilution factor:	100
operational conditions	
Emission days (days/year):	365
Release fraction to air from process (initial release prior to RMM):	1.0E-02
Release fraction to wastewater from process (initial release prior to RMM):	1.0E-05
Release fraction to soil from process (initial release prior to RMM):	1.0E-05
Technical onsite conditions and measures to reduce or limit discharges, a	ir emissions and releases to soil
Treat air emission to provide a typical removal efficiency of (%):	not applicable
If there is no discharge to domestic sewage treatment plant, Treat onsite	
wastewater (prior to receiving water discharge) to provide the required	0
removal efficiency of (%):	
If discharging to domestic sewage treatment plant, provide the required onsite	0
wastewater removal efficiency of (%):	0
Treat soil emission to provide a typical removal efficiency of (%):	0
Common practices vary across sites thus conservative process release estimated wastewater treatment required.	ttes used. If discharging to domestic sewage treatment plant, no onsite
Organisational measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, con	ntained or reclaimed.
Conditions and measures related to municipal sewage treatment plant	
Size of municipal sewage system/treatment plant (m³/d)	2000
Degradation effectiveness (%)	95.7
Conditions and measures related to external treatment of waste for dispos	sal sal
External treatment and disposal of waste should comply with applicable local ar	nd/or national regulations.
Substance release quantities after risk management measures	
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	2.4E+03

3. Exposure estimation and reference to its source

3.1 Human exposure prediction

	inhalation		der	mal	Combined
Process category inhalation exposure (mg/m³)		Risk characterisation ratio (RCR)	dermal exposure (mg/kg bw/day)	Risk characterisation ratio (RCR)	Risk characterisation ratio (RCR)
PROC1	0.00	0.00	0.03	0.15	0.15
PROC2	0.50	0.50	0.03	0.12	0.62
PROC2 (Storage)	0.35	0.35	0.14	0.59	0.94
PROC3	0.70	0.70	0.03	0.15	0.85
PROC8a (Maintenance)	0.85	0.85	0.03	0.12	0.97
PROC8b (bulk)	0.25	0.25	0.07	0.30	0.55
PROC8b (Drum/batch transfers)	0.25	0.25	0.07	0.30	0.55
PROC8b (Refuelling)	0.25	0.25	0.07	0.30	0.55
PROC16	0.50	0.50	0.03	0.15	0.65

3.2 Environmental exposure prediction

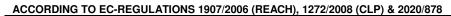
Exposure assessment (method/calculation model)

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Naphtha (petroleum), full-range straight-run is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the environmental toxicity (HC5) of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore individual environmental compartments PNECs are not available for this product.

Environmental exposure	STP	freshwater	marine water	soil	freshwater sediment	marine sediment
Predicted Environmental	2.1E-05 mg/L	3.1E-03 mg/L	1.1E-05 mg/L	3.5E-03 mg/kg ww	0.15 mg/kg ww	4.4E-03 mg/kg ww

Revision: 1st March 2023 Version: 005





Exposure (PEC)						
Risk characterisation ratio (RCR)	1.3E-06	0.011	3.1E-05	2.3E-05	4.3E-03	1.2E-03

Human exposure prediction:

Route of Exposure	Exposure (μg/kg ⁻¹ day ⁻¹)	Risk characterisation ratio (RCR)
oral	3.8	0.038
inhalation	0.54	5.8E-04

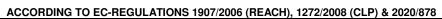
4.0 Evaluation guidance to de	ownstream user			
For scaling see	are managed to at least eq Available hazard data do no Further details on scaling a industries-libraries.html). Exposure calculated for be	Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for other health effects. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). Exposure calculated for benzene and assumes that the substance contains 1 % benzene. Arithmetic scaling may be possible if the batch contains < 1 % benzene		
Exposure assessment	Worker	ECETOC TRA		
instrument/tool/method	Environment	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.		

Exposure Scenario 5 – Use of Gasoline (0 – 1 % benzene content) as a fuel- Consumer

1.0 Contributing Scenarios			
Sector of uses SU SU21 Consumer uses: Private households (= general public = consumers)			
Process category [PROC]	not applicable		
Chemical product category [PC]	PC13 PC13 (Liquid: Automotive Refuelling) PC13 (Liquid Scooter Refuelling) PC13 (Liquid: Garden equipment - Refuelling) PC13 (Liquid, Garden equipment - Use)		
Article categories [AC]	not applicable		
Environmental release categories [ERC]	ERC9a ERC9b		
Specific Environmental Release Categories SPERC ESVOC SPERC 9.12c.v1			

2.0 Operational conditions and risk management m	ieasures				
2.1 Control of worker exposure					
Product characteristics					
Physical form of product Liquid with high volatility.					
Concentration of substance in product	ncentration of substance in product Covers concentrations up to 100% (≤ 1 % benzene content)				
Human factors not influenced by risk management					
Detential eveneurs area (Skin contact)	PC13	Liquid: Automotive Refuelling Liquid Scooter Refuelling	210 cm ²		
Potential exposure area (Skin contact)	F013	Liquid, Garden equipment - Use; Liquid: Garden equipment - Refuelling	420 cm ²		
Frequency and duration of use					
Function (hours/Funch)	PC13	Liquid: Automotive Refuelling; Liquid Scooter Refuelling	0.05		
Exposure duration (hours/Event)		Liquid, Garden equipment - Use	0.03		
		Liquid: Garden equipment - Refuelling	2.00		
Fraguency of use (days per year)	PC13	Liquid: Automotive Refuelling; Liquid Scooter Refuelling	52 (Covers frequency up to: weekly use)		
Frequency of use (days per year)	F013	Liquid, Garden equipment - Use; Liquid: Garden equipment - Refuelling	26 (Covers frequency up to: once in two weeks.)		
Amounts used (g/Event) PC13		Liquid: Automotive Refuelling Liquid Scooter Refuelling	37500 3750		

Revision: 1st March 2023 Version: 005





		Liquid	, Garden equipment - Use;	750	
Other operational conditions affecting worker expos	uro	Liquia	: Garden equipment - Refuelling		
Area of use	Not defined				
Characteristics of the surroundings PC13 Liquid Liquid		: Automotive Refuelling; Scooter Refuelling; , Garden equipment - Use : Garden equipment - Refuelling	Outdoor 34 m³		
risk management measures		1 1			
Respiratory protection	No specific mea	asures i	identified.		
Hand and/or Skin protection	No specific mea				
Eye Protection	No specific mea	asures i	identified.		
2.2 Control of environmental exposure					
Amounts used					
Fraction of EU tonnage used in region:			0.1		
Regional use tonnage (tons/year):			8.7E+04		
Fraction of Regional tonnage used locally: (tons/year)			5.0E-04		
Annual site tonnage (tons/year):			4.4E+01		
Average daily use (kg/day):			1.2E+02		
Environment factors not influenced by risk manager	nent	•			
Flow rate of receiving surface water (m³/d):			Not defined (default = 18,000)		
Local freshwater dilution factor:			10		
Local marine water dilution factor:			100		
operational conditions					
Emission days (days/year):			365		
Release fraction to air from process (initial release prior			1.0E-02		
Release fraction to wastewater from process (initial release	ase prior to RMM):		1.0E-05		
Release fraction to soil from process (initial release prior			1.0E-05		
Conditions and measures related to municipal seway	ge treatment plar				
Size of municipal sewage system/treatment plant (m³/d)			2000		
Degradation effectiveness (%)			95.7		
Conditions and measures related to external treatme		•			
External treatment and disposal of waste should comply	with applicable lo	cal and/	or national regulations.		
Substance release quantities after risk management					
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):			31000		

3. Exposure estimation and reference to its source

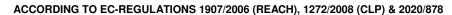
3.1 Human exposure prediction

Yearly Use (Chronic)

Chemical	inhalation		der	mal	Combined	
product category [PC]	inhalation exposure (mg/m³)	Risk characterisation ratio (RCR)	dermal exposure (mg/kg bw/day)	Risk characterisation ratio (RCR)	Risk characterisation ratio (RCR)	
PC13 (Liquid: Automotive Refuelling)	0.002	0.69	0.00	0.01	0.70	
PC13 (Liquid Scooter Refuelling)	0.001	0.46	0.00	0.01	0.47	
PC13 (Liquid, Garden equipment - Use)	0.003	0.87	0.00	0.00	0.87	
PC13 (Liquid: Garden equipment - Refuelling)	0.001	0.18	0.00	0.02	0.20	

3.2 Environmental exposure prediction

Revision: 1st March 2023 Version: 005





Exposure assessment (method/calculation model)

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Naphtha (petroleum), full-range straight-run is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the environmental toxicity (HC5) of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore individual environmental compartments PNECs are not available for this product.

Environmental exposure	STP	freshwater	marine water	soil	freshwater sediment	marine sediment
Predicted Environmental Exposure (PEC)	2.6E-05 mg/L	3.1E-03 mg/L	1.1E-05 mg/L	3.5E-03 mg/kg ww	0.15 mg/kg ww	4.5E-03 mg/kg ww
Risk characterisation ratio (RCR)	1.6E-06	0.011	3.1E-05	2.4E-05	4.3E-03	1.2E-05

Human exposure prediction:

Route of Exposure	Exposure (μg/kg ⁻¹ day ⁻¹)	Risk characterisation ratio (RCR)
oral	3.8	0.038
inhalation	0.54	5.8E-04

4.0 Evaluation guidance to dow	nstream user			
For scaling see	are managed to at least equal Available hazard data do not Further details on scaling a industries-libraries.html). Exposure calculated for being a second to the second	Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for other health effects. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). Exposure calculated for benzene and assumes that the substance contains 1 % benzene. Arithmetic scaling may be possible if the batch contains < 1 % benzene		
Exposure assessment	Consumer	ECETOC TRA		
instrument/tool/method	Environment	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.		