SAFETY DATA SHEET

Gasoline

SECTION 1: Identification of the substance/mixture and of the company/ undertaking

1.1 Product identifier

Product name : Gasoline

Material uses : Unleaded fuel for gasoline engines

Index number : 649-378-00-4

EC number : 289-220-8

REACH Registration number

Registration number	Legal entity
01-2119471335-39-0010	-

CAS number : 86290-81-5

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

Identified uses
Manufacture of substance
Distribution of substance
Formulation and (re)packing of substances and mixtures
Use as a fuel - Consumer

1.3 Details of the supplier of the safety data sheet

Manufacturer / Distributor : Gunvor Petroleum Rotterdam B.V
Moezelweg 255
3198 LS Europoort
The Netherlands
Tel. +31181251911

e-mail address of person responsible for this SDS : msds@tarcona.com, communication preferably in English only.

1.4 Emergency telephone number

Telephone number : +3235751130

National advisory body/Poison Center

Telephone number : Nationaal Vergiftigingen Informatie Centrum, Utrecht +31 (0)30 274 8888 (Only for the purpose of informing medical personnel in cases of acute intoxications.)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : UVCB

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

The product is classified as hazardous according to Regulation (EC) 1272/2008 as amended.

SECTION 2: Hazards identification

Flam. Liq. 1, H224
Skin Irrit. 2, H315
Muta. 1B, H340 (dermal)
Muta. 1B, H340 (inhalation)
Carc. 1B, H350 (dermal)
Repr. 2, H361fd (Fertility and Unborn child) (inhalation)
STOT SE 3, H336
Asp. Tox. 1, H304
Aquatic Chronic 2, H411

Ingredients of unknown toxicity : None.

Ingredients of unknown ecotoxicity : None.

2.2 Label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : H224 - Extremely flammable liquid and vapor.
H315 - Causes skin irritation.
H340 - May cause genetic defects if inhaled or in contact with skin.
H350 - May cause cancer in contact with skin.
H361fd - Suspected of damaging fertility if inhaled. Suspected of damaging the unborn child if inhaled.
H304 - May be fatal if swallowed and enters airways.
H336 - May cause drowsiness and dizziness.
H411 - Toxic to aquatic life with long lasting effects.

Precautionary statements

General : P201 - Obtain special instructions before use.

Prevention : P210 - Keep away from heat, sparks, open flames and hot surfaces. - No smoking.
P273 - Avoid release to the environment.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.

Response : P301 - IF SWALLOWED:
P310 - Immediately call a POISON CENTER or doctor/physician.
P331 - Do NOT induce vomiting.

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

Disposal : P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazardous ingredients : Gasoline

Supplemental label elements : Not applicable.

SECTION 2: Hazards identification

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles : Restricted to professional users.

Special packaging requirements

Containers to be fitted with child-resistant fastenings : Yes, applicable.

Tactile warning of danger : Yes, applicable.

2.3 Other hazards

Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII : No.
P: Not available. B: No. T: Yes.

Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII : No.
vP: Not available. vB: No.

Other hazards which do not result in classification : Hazardous concentrations of hydrogen sulphide (H2S) gas may accumulate in the vapour space of storage vessels. Standard procedures for opening or entering tanks, vessels or other containers must strictly be followed to avoid inhalation of this acutely toxic gas.

SECTION 3: Composition/information on ingredients

3.1 Substances : UVCB

Product/ingredient name	Identifiers	%	Classification		Type
				Regulation (EC) No. 1272/2008 [CLP]	
Gasoline	REACH #: 01-2119471335-39-0010 EC: 289-220-8 CAS: 86290-81-5 Index: 649-378-00-4	100		Flam. Liq. 1, H224 Skin Irrit. 2, H315 Muta. 1B, H340 (dermal) Muta. 1B, H340 (inhalation) Carc. 1B, H350 (dermal) Repr. 2, H361fd (Fertility and Unborn child) (inhalation) STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411	[*]
toluene	EC: 203-625-9 CAS: 108-88-3 Index: 601-021-00-3	12.73		Flam. Liq. 2, H225 Skin Irrit. 2, H315 Repr. 2, H361d (Unborn child) STOT SE 3, H336 STOT RE 2, H373 Asp. Tox. 1, H304	[A]
benzene	REACH #:	0.75		Flam. Liq. 2, H225	[A]

SECTION 3: Composition/information on ingredients

	01-2119447106-44 EC: 200-753-7 CAS: 71-43-2 Index: 601-020-00-8			Skin Irrit. 2, H315 Eye Irrit. 2, H319 Muta. 1B, H340 Carc. 1A, H350 STOT RE 1, H372 Asp. Tox. 1, H304	
n-hexane	EC: 203-777-6 CAS: 110-54-3 Index: 601-037-00-0	0.73		Flam. Liq. 2, H225 Skin Irrit. 2, H315 Repr. 2, H361f (Fertility) STOT SE 3, H336 STOT RE 2, H373 Asp. Tox. 1, H304 Aquatic Chronic 2, H411 **See Section 16 for the full text of the H statements declared above.**	[A]

There are no additional ingredients present which, within the current knowledge of the supplier, are classified and contribute to the classification of the substance and hence require reporting in this section.

Type

[*] Substance
[A] Constituent
[B] Impurity
[C] Stabilizing additive

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If exposure to hydrogen sulphide is suspected or cannot be excluded, obtain medical attention IMMEDIATELY. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Wash contaminated skin with soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

SECTION 4: First aid measures

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness.

Skin contact : Causes skin irritation.

Ingestion : Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness
reduced fetal weight
increase in fetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
irritation
redness

Ingestion : Adverse symptoms may include the following:
nausea or vomiting

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture : Extremely flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

SECTION 5: Firefighting measures

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
sulfur oxides
Hydrogen sulphide

5.3 Advice for firefighters

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

6.2 Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

6.3 Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product.

6.4 Reference to other sections : See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

7.1 Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Hazardous concentrations of hydrogen sulphide (H2S) gas may accumulate in the vapour space of storage vessels. Standard procedures for opening or entering tanks, vessels or other containers must strictly be followed to avoid inhalation of this acutely toxic gas. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not swallow. Avoid breathing vapor or mist. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities

Provide adequate ventilation. Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Seveso II Directive - Reporting thresholds (in tonnes)

Named substances

Name	Notification and MAPP threshold	Safety report threshold
petroleum products - gasoline and naphthas - kerosenes (including jet fuels) - gas oils (including diesel fuels, home heating oils and gas oil blending streams)-heavy fuel oils	2500	25000

7.3 Specific end use(s)

Recommendations : Not available.

Industrial sector specific solutions : Not available.

SECTION 8: Exposure controls/personal protection

The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

8.1 Control parameters

Occupational exposure limits

SECTION 8: Exposure controls/personal protection

Product/ingredient name	Exposure limit values
Gasoline	**MinSZW Wettelijke Grenswaarden (Netherlands, 6/2014).** OEL, 8-h TWA: 240 mg/m³ 8 hours. STEL,15-min: 480 mg/m³ 15 minutes.
toluene	**MinSZW Wettelijke Grenswaarden (Netherlands, 6/2011).** OEL, 8-h TWA: 150 mg/m³ 8 hours. STEL,15-min ref: 384 mg/m³ 15 minutes.
benzene	**MinSZW Wettelijke Grenswaarden (Netherlands, 6/2011). Absorbed through skin.** OEL, 8-h TWA: 3.25 mg/m³ 8 hours.
n-hexane	**MinSZW Wettelijke Grenswaarden (Netherlands, 6/2011).** OEL, 8-h TWA: 72 mg/m³ 8 hours. STEL,15-min ref: 144 mg/m³ 15 minutes.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

DNELs/DMELs

No DNELs/DMELs available.

PNECs

No PNECs available.

8.2 Exposure controls

Appropriate engineering controls : 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. Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

SECTION 8: Exposure controls/personal protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. Wear suitable gloves tested to EN374. Recommended: < 1 hour (breakthrough time): nitrile rubber 0.17 mm.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves. Refer to European Standard EN 1149 for further information on material and design requirements and test methods.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Recommended: Boiling point > 65 ℃: A1; Boiling point < 65 ℃: AX1; Hot materi al: A1P2.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state : Liquid. [Mobile liquid.]

Appearance : Clear.

Color : Colorless.

Odor : Characteristic.

Odor threshold : Not applicable.

pH : 7

Melting point/freezing point : <-50℃

Initial boiling point and boiling range : 25 to 220℃

Flash point : Closed cup: <-40℃ [ASTM D56]

Evaporation rate : Not available.

Flammability (solid, gas) : Highly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge.

Upper/lower flammability or explosive limits : Lower: 1.4%
Upper: 7.6%

Vapor pressure : 35.1 to 100.2 kPa [room temperature]

Vapor density : >3 [Air = 1]

Relative density : 0.75

Solubility(ies) : Insoluble in the following materials: cold water and hot water.

Dispersibility properties : Not dispersible in the following materials: cold water and hot water.

Partition coefficient: n-octanol/ water : 2 to 7

SECTION 9: Physical and chemical properties

Auto-ignition temperature : >250°C

Decomposition temperature : >250°C

Viscosity (40°C) : <1 cSt

Explosive properties : Not applicable.

Oxidizing properties : Not applicable.

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity : No specific test data related to reactivity available for this product or its ingredients.

10.2 Chemical stability : The product is stable.

10.3 Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

10.5 Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials

10.6 Hazardous decomposition products : Decomposition products may include the following materials: sulfur oxides Hydrogen sulphide

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Gasoline	LC50 Inhalation Vapor	Rat - Male, Female	>5610 mg/m³	4 hours
	LD50 Oral	Rat	13.6 g/kg	-
toluene	LC50 Inhalation Vapor	Rat	49 g/m³	4 hours
	LD50 Oral	Rat	636 mg/kg	-
benzene	LD50 Oral	Rat	930 mg/kg	-
n-hexane	LC50 Inhalation Gas.	Rat	48000 ppm	4 hours
	LD50 Oral	Rat	15840 mg/kg	-

Conclusion/Summary : Not available.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Gasoline	Skin - Edema	Rabbit	3	4 hours	72 hours
	Eyes - Edema of the conjunctivae	Rabbit	0.33	4 hours	72 hours
toluene	Eyes - Mild irritant	Rabbit	-	0.5 minutes 100 milligrams	-
	Eyes - Mild irritant	Rabbit	-	870 Micrograms	-
	Eyes - Severe irritant	Rabbit	-	24 hours 2 milligrams	-

	Skin - Mild irritant	Pig	-	24 hours 250	-

SECTION 11: Toxicological information

	Skin - Mild irritant	Rabbit	-	microliters 435 milligrams	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
	Skin - Moderate irritant	Rabbit	-	500 milligrams	-
benzene	Eyes - Moderate irritant	Rabbit	-	88 milligrams	-
	Eyes - Severe irritant	Rabbit	-	24 hours 2 milligrams	-
	Skin - Mild irritant	Rat	-	8 hours 60 microliters	-
	Skin - Mild irritant	Rabbit	-	24 hours 15 milligrams	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
n-hexane	Eyes - Mild irritant	Rabbit	-	10 milligrams	-

Conclusion/Summary : Not available.

Sensitization

Conclusion/Summary : Not available.

Mutagenicity

Product/ingredient name	Test	Experiment	Result
Gasoline	471 Bacterial Reverse Mutation Test 475 Mammalian Bone Marrow Chromosomal Aberration Test	Experiment: In vitro Subject: Bacteria Experiment: In vivo Subject: Mammalian-Animal	Negativ e Negativ

Conclusion/Summary : Not available.

Carcinogenicity

Product/ingredient name	Result	Species	Dose	Exposure
Gasoline	Positive - Dermal - TC	Mouse - Male	5 mg/kg	102 weeks; 3 days per week

Conclusion/Summary : Not available.

Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility	Development toxin	Species	Dose	Exposure
Gasoline	Negative	Negative	Negative	Rat - Male, Female	Inhalation: ≥20000 mg/m³	7 weeks; 6 hours per day

Conclusion/Summary : Not available.

Teratogenicity

Product/ingredient name	Result	Species	Dose	Exposure
Gasoline	Negative - Inhalation	Rat	23900 mg/m³	20 days; 6 hours per day

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
Gasoline	Category 3	Not applicable.	Narcotic effects
toluene	Category 3	Not applicable.	Narcotic effects
n-hexane	Category 3	Not applicable.	Narcotic effects

SECTION 11: Toxicological information

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Route of exposure	Target organs
toluene	Category 2	Not determined	Not determined
benzene n-	Category 1	Not determined	Not determined
hexane	Category 2	Not determined	Not determined

Aspiration hazard

Product/ingredient name	Result
Gasoline	ASPIRATION HAZARD - Category 1
toluene	ASPIRATION HAZARD - Category 1
benzene	ASPIRATION HAZARD - Category 1
n-hexane	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Routes of entry anticipated: Inhalation.
Routes of entry not anticipated: Oral, Dermal.

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness.

Skin contact : Causes skin irritation.

Ingestion : Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness
reduced fetal weight
increase in fetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
irritation
redness

Ingestion : Adverse symptoms may include the following:
nausea or vomiting

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

SECTION 11: Toxicological information

Product/ingredient name	Result	Species	Dose	Exposure
Gasoline	Sub-acute NOEL Oral	Rat - Male	<500 mg/kg	28 days; 5 days per week
	Sub-acute NOAEL Dermal	Rat - Male, Female	375 mg/kg	28 days; 5 days per week
	Sub-chronic NOAEL Inhalation Vapor	Rat - Male, Female	10000 mg/m³	90 days; 5 days per week

Conclusion/Summary : Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : May cause cancer in contact with skin. Risk of cancer depends on duration and level of exposure.

Mutagenicity : May cause genetic defects if inhaled. May cause genetic defects in contact with skin.

Teratogenicity : Suspected of damaging the unborn child if inhaled.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : Suspected of damaging fertility if inhaled.

Metabolism : Rapidly metabolized.

Elimination : Excreted via the urine.

Other information : Not available.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
Gasoline	Acute EC50 3.7 mg/l Fresh water	Algae	96 hours
	Acute EC50 4.5 mg/l Fresh water	Daphnia	48 hours
	Acute LC50 10 mg/l Fresh water	Fish	96 hours
	Chronic NOEC 2.6 mg/l Fresh water	Fish	14 days
toluene	Acute EC50 433 ppm Marine water	Algae - Skeletonema costatum	96 hours
	Acute EC50 12500 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 11600 µg/l Fresh water	Crustaceans - Gammarus pseudolimnaeus - Adult	48 hours
	Acute EC50 6000 µg/l Fresh water	Daphnia - Daphnia magna - Juvenile (Fledgling, Hatchling, Weanling)	48 hours
	Acute LC50 5500 µg/l Fresh water	Fish - Oncorhynchus kisutch - Fry	96 hours
	Chronic NOEC 500000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Chronic NOEC 1000 µg/l Fresh water	Daphnia - Daphnia magna	21 days
benzene	Acute EC50 29000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 1600000 µg/l Fresh water	Algae - Selenastrum sp.	96 hours
	Acute EC50 9230 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 21000 µg/l Marine water	Crustaceans - Artemia salina - Nauplii	48 hours
	Acute LC50 5.28 ul/L Fresh water	Fish - Oncorhynchus gorbuscha - Fry	96 hours
	Chronic NOEC 1.5 to 5.4 ul/L Marine water	Fish - Morone saxatilis - Juvenile (Fledgling, Hatchling, Weanling)	4 weeks
n-hexane	Acute LC50 2500 µg/l Fresh water	Fish - Pimephales promelas	96 hours

Conclusion/Summary : Not available.

SECTION 12: Ecological information

12.2 Persistence and degradability

Conclusion/Summary : Not available.

12.3 Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Gasoline	2 to 7	10 to 2500	high
toluene	2.69	8.317637711	low
benzene	2.13	4.265795188	low
n-hexane	3.9	-	low

12.4 Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Mobility : Not available.

12.5 Results of PBT and vPvB assessment

PBT : No.

P: Not available. B: No. T: Yes.

vPvB : No.

vP: Not available. vB: No.

12.6 Other adverse effects

: No known significant effects or critical hazards.

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods

Product

Methods of disposal : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

Hazardous waste : Yes.

European waste catalogue (EWC)

Waste code	Waste designation
13 07 02*	gasoline

Packaging

Methods of disposal : The generation of waste should be avoided or minimized wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

	ADR/RID	ADN	IMDG	IATA
14.1 UN number	UN1203	UN1203	UN1203	UN1203
14.2 UN proper shipping name	GASOLINE	GASOLINE	GASOLINE	Gasoline
14.3 Transport hazard class(es)	3 	3 	3 	3 
14.4 Packing group	II	II	II	II
14.5 Environmental hazards	No.	Yes.	No.	No.
Additional information	**Hazard identification number** 33 **Limited quantity** 1 L **Special provisions** 534, 243, 363 **Tunnel code** (D/E)	The product is only regulated as an environmentally hazardous substance when transported in tank vessels. **Special provisions** 243, 534, 363	**Emergency schedules (EmS)** F-E, S-E **Special provisions** 243, 363	The environmentally hazardous substance mark may appear if required by other transportation regulations. **Passenger and Cargo Aircraft** Quantity limitation: 5 L Packaging instructions: 353 **Cargo Aircraft Only** Quantity limitation: 60 L Packaging instructions: 364 **Limited Quantities - Passenger Aircraft** Quantity limitation: 1 L Packaging instructions: Y341 **Special provisions** A100

14.6 Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorization

Annex XIV

None of the components are listed.

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles : Restricted to professional users.

Other EU regulations

Europe inventory : All components are listed or exempted.

Priority List Chemicals (793/93/EEC) : Listed

Product/ingredient name	Carcinogenic effects	Mutagenic effects	Developmental effects	Fertility effects
Gasoline	Carc. 1B, H350 (dermal)	Muta. 1B, H340 (dermal) Muta. 1B, H340 (inhalation)	Repr. 2, H361d (Unborn child) (inhalation)	Repr. 2, H361f (Fertility) (inhalation)
toluene	-	-	Repr. 2, H361d (Unborn child)	-
benzene	Carc. 1A, H350	Muta. 1B, H340	-	-
n-hexane	-	-	-	Repr. 2, H361f (Fertility)

Seveso II Directive

This product is controlled under the Seveso II Directive.

Named substances

Name
petroleum products - gasoline and naphthas - kerosenes (including jet fuels) - gas oils (including diesel fuels, home heating oils and gas oil blending streams)-heavy fuel oils

National regulations

Product/ingredient name	List name	Name on list	Classification	Notes
Gasoline	Netherlands Carcinogenic Chemicals	(complexe) aardolie- en steenkoolderivaten EG nrs. beginnend met 232, 263, 265-275, 277, 278, 283-285, 287, 289, 291-298, 300, 302, 305-310	Carc.	Part of these derivates are only classified as carcinogenic if the content of benzene > 0.1% and/or benzo(a) pyrene > 0.005% or 1,3-butadiene > 0,1% or DMSO-extract > 3%. Please refer to Publicatieblad L381 of December 31th, 1994: the 21st amendment of

SECTION 15: Regulatory information

				Directive 67/548/EEC or later amendments of this Directive.
	Netherlands Mutagenic Substances	aardoliegassen en residuen EG nrs. beginnend met 232, 265-267, 268-273, 274, 277, 283-285, 287, 289, 292, 293, 295, 296, 298, 302, 305, 307, 308-310, 306	Muta.	
toluene	Netherlands Reprotoxic Chemicals	tolueen	Dev. development category 3	-
benzene	Netherlands Carcinogenic Chemicals	benzeen; benzol	Carc.	-
	Netherlands Mutagenic Substances	benzeen; benzol	Muta.	
n-hexane	Netherlands Reprotoxic Chemicals	n-hexaan	Repro. fertility category 3	-

Water Discharge Policy (ABM) : {2} May cause heritable genetic damage. Abatement effort: A

Hazard class for water (WGK) : 3 Appendix No. 2

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Inform Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

International lists

National inventory

Australia : All components are listed or exempted.

Canada : All components are listed or exempted.

China : All components are listed or exempted.

Japan : All components are listed or exempted.

Malaysia : All components are listed or exempted.

New Zealand : All components are listed or exempted.

Philippines : All components are listed or exempted.

Republic of Korea : All components are listed or exempted.

Taiwan : All components are listed or exempted.

United States : All components are listed or exempted.

SECTION 15: Regulatory information

15.2 Chemical Safety Assessment : Complete.

SECTION 16: Other information

Indicates information that has changed from previously issued version.

Abbreviations and acronyms :
ATE = Acute Toxicity Estimate
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
DMEL = Derived Minimal Effect Level
DNEL = Derived No Effect Level
EUH statement = CLP-specific Hazard statement
PBT = Persistent, Bioaccumulative and Toxic
PNEC = Predicted No Effect Concentration
RRN = REACH Registration Number
vPvB = Very Persistent and Very Bioaccumulative

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
Flam. Liq. 1, H224	Expert judgment
Skin Irrit. 2, H315	Expert judgment
Muta. 1B, H340 (dermal)	Expert judgment
Muta. 1B, H340 (inhalation)	Expert judgment
Carc. 1B, H350 (dermal)	Expert judgment
Repr. 2, H361fd (Fertility and Unborn child) (inhalation)	Expert judgment
STOT SE 3, H336	Expert judgment
Asp. Tox. 1, H304	Expert judgment
Aquatic Chronic 2, H411	Expert judgment

Full text of abbreviated H statements :

H224	Extremely flammable liquid and vapor.
H225	Highly flammable liquid and vapor.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H336	May cause drowsiness and dizziness.
H340	May cause genetic defects.
H340 (dermal)	May cause genetic defects in contact with skin.
H340 (inhalation)	May cause genetic defects if inhaled.
H350	May cause cancer.
H350 (dermal)	May cause cancer in contact with skin.
H361d (Unborn child)	Suspected of damaging the unborn child.
H361f (Fertility)	Suspected of damaging fertility.
H361fd (Fertility and Unborn child) (inhalation)	Suspected of damaging fertility if inhaled. Suspected of damaging the unborn child if inhaled.
H372	Causes damage to organs through prolonged or repeated exposure.
H373	May cause damage to organs through prolonged or repeated exposure.
H411	Toxic to aquatic life with long lasting effects.

SECTION 16: Other information

Full text of classifications [CLP/GHS] :

Aquatic Chronic 2, H411	AQUATIC HAZARD (LONG-TERM) - Category 2
Asp. Tox. 1, H304	ASPIRATION HAZARD - Category 1
Carc. 1A, H350	CARCINOGENICITY - Category 1A
Carc. 1B, H350 (dermal)	CARCINOGENICITY (dermal) - Category 1B
Eye Irrit. 2, H319	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
Flam. Liq. 1, H224	FLAMMABLE LIQUIDS - Category 1
Flam. Liq. 2, H225	FLAMMABLE LIQUIDS - Category 2
Muta. 1B, H340	GERM CELL MUTAGENICITY - Category 1B
Muta. 1B, H340 (dermal)	GERM CELL MUTAGENICITY (dermal) - Category 1B
Muta. 1B, H340 (inhalation)	GERM CELL MUTAGENICITY (inhalation) - Category 1B
Repr. 2, H361d (Unborn child)	TOXIC TO REPRODUCTION (Unborn child) - Category 2
Repr. 2, H361f (Fertility)	TOXIC TO REPRODUCTION (Fertility) - Category 2
Repr. 2, H361fd (Fertility and Unborn child) (inhalation)	TOXIC TO REPRODUCTION (Fertility and Unborn child) (inhalation) - Category 2
Skin Irrit. 2, H315	SKIN CORROSION/IRRITATION - Category 2
STOT RE 1, H372	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
STOT RE 2, H373	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
STOT SE 3, H336	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3

Full text of abbreviated R phrases : R12- Extremely flammable.
R11- Highly flammable.
R45- May cause cancer.
R46- May cause heritable genetic damage.
R62- Possible risk of impaired fertility.
R63- Possible risk of harm to the unborn child.
R48/23/24/25- Also toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.
R48/20- Also harmful: danger of serious damage to health by prolonged exposure through inhalation.
R65- Also harmful: may cause lung damage if swallowed.
R38- Irritating to skin.
R36/38- Irritating to eyes and skin.
R67- Vapors may cause drowsiness and dizziness.
R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Full text of classifications [DSD/DPD] : F+ - Extremely flammable
F - Highly flammable
Carc. Cat. 1 - Carcinogen category 1
Carc. Cat. 2 - Carcinogen category 2
Muta. Cat. 2 - Mutagen category 2
Repr. Cat. 3 - Toxic to reproduction category 3
T - Toxic
Xn - Harmful
Xi - Irritant
N - Dangerous for the environment

Training advice : Ensure operatives are trained to minimise exposures.

Date of printing : 01-03-2016

Date of issue/ Date of revision : 01-03-2016

Date of previous issue : -

Version : 1.0

Notice to reader

SECTION 16: Other information

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Annex to the extended Safety Data Sheet (eSDS)

Industrial

Identification of the substance or mixture

Product definition	:	UVCB
Product name	:	Gasoline

Section 1 Title

Short title of the exposure scenario	:	Manufacture of Low Boiling Point Naphthas (Gasoline) - Classified as H350 and/or H340 and/or H361 (0 % - 1 % benzene) - Industrial
List of use descriptors	:	**Identified use name:** Manufacture of substance **Process Category:** PROC01, PROC02, PROC03, PROC08a, PROC08b, PROC15 **Substance supplied to that use in form of:** As such **Sector of end use:** SU03, SU08, SU09 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC01, ESVOC SpERC 1.1.v1 **Market sector by type of chemical product:** PC13 **Article category related to subsequent service life:** Not applicable.
Processes and activities covered by the exposure scenario	:	Manufacture of the substance or use as a process chemical or extraction agent within closed or contained systems. Includes incidental exposures during recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).
Assessment method	:	See section 3.

Section 2 Operational conditions and risk management measures

Section 2.1 Control of consumer exposure

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapour pressure > 10 kPa at STP
Amounts used	:	Not applicable.
Frequency and duration of use/exposure	:	Covers daily exposures up to 8 hours (unless stated differently)
Human factors not influenced by risk management	:	Not applicable.
Other given operational conditions affecting workers exposure	:	Operation is carried out at elevated temperature (> 20℃ above ambient temperature) Assumes a good basic standard of occupational hygiene is implemented

Contributing scenarios: Operational conditions and risk management measures

General measures (skin irritants): Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) 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

Section 2 Operational conditions and risk management measures

operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes 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.

General exposures (closed systems) With sample collection: Handle substance within a closed system. Sample via a closed loop or other system to avoid exposure. Wear suitable gloves tested to EN374.

General exposures (closed systems) Continuous process: Handle substance within a closed system.

General exposures (closed systems) Batch process: Handle substance within a closed system. Ensure operation is undertaken outdoors.

Laboratory activities: Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.

Bulk transfers: Ensure material transfers are under containment or extract ventilation.

Equipment cleaning and 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. Wear chemical-resistant gloves (tested to EN374) in combination with 'basic' employee training.

Storage: Ensure operation is undertaken outdoors. Store substance within a closed system.

Section 2.2 Control of environmental exposure

Product characteristics	:	Substance is complex UVCB.. Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region0.1 Regional use tonnage1.87E7 Fraction of regional tonnage used locally0.03 Annual site tonnage6.0e5 Maximum daily site tonnage2.0e6
Frequency and duration of use	:	Continuous release Emission days (days/year)300
Environment factors not influenced by risk management	:	Local freshwater dilution factor10 Local marine water dilution factor100
Other given operational conditions affecting environmental exposure	:	Release fraction to air from process (initial release prior to RMM)0.05 Release fraction to wastewater from process (initial release prior to RMM)0.003 Release fraction to soil from process (initial release prior to RMM)0.0001
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Prevent discharge of undissolved substance to or recover from onsite wastewater. Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation). On-site wastewater treatment required. Treat air emission to provide a typical removal efficiency of99.0 Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of95.2 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of80.4
Organizational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.
Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via on-site sewage treatment95.5 Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs99.1 Maximum allowable site tonnage (M_{Safe})2.0e6 Assumed on-site sewage treatment plant flow10000

Section 2 Operational conditions and risk management measures

Conditions and measures related to external treatment of waste for disposal	:	During manufacturing, no waste of the substance is generated.
Conditions and measures related to external recovery of waste	:	During manufacturing, no waste of the substance is generated.

Contributing scenarios: Operational conditions and risk management measures

Section 3 Exposure estimation and reference to its source

Section 3.1: Health

Exposure assessment (human):	:	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.
Exposure estimation	:	Not available.

Section 3.2: Environment

Exposure assessment (environment):	:	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.
Exposure estimation	:	Not available.

Section 4 Guidance to check compliance with the exposure scenario

Health	:	Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. 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 enable the derivation of a DNEL for dermal irritant effects. Available hazard data do not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterisation.
Environment	:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet. Scaled local assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file - "Site-Specific Production" worksheet. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Annex to the extended Safety Data Sheet (eSDS)

Industrial

Identification of the substance or mixture

Product definition : UVCB

Product name : Gasoline

Section 1 Title

Short title of the exposure scenario : Formulation & (re)packing of Low Boiling Point Naphthas (Gasoline) - Classified as H340 and.or H350 and/or H361 (0 % - 1 % benzene) - Industrial

List of use descriptors : **Identified use name:** Formulation and (re)packing of substances and mixtures
Process Category: PROC01, PROC02, PROC03, PROC08a, PROC08b, PROC15
Substance supplied to that use in form of: As such
Sector of end use: SU03, SU10
Subsequent service life relevant for that use: No.
Environmental Release Category: ERC02, ESVOC SpERC 2.2.v1
Market sector by type of chemical product: PC13
Article category related to subsequent service life: Not applicable.

Processes and activities covered by the exposure scenario : Formulation of the substance and its mixtures in batch or continuous operations within closed or contained systems, including incidental exposures during storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities.

Assessment method : See section 3.

Section 2 Operational conditions and risk management measures

Section 2.1 Control of consumer exposure

Concentration of substance in mixture or article : Covers percentage substance in the product up to 100% (unless stated differently).

Physical state : Liquid, vapour pressure > 10 kPa at STP

Amounts used : Not applicable.

Frequency and duration of use/exposure : Covers daily exposures up to 8 hours (unless stated differently)

Human factors not influenced by risk management : Not applicable.

Other given operational conditions affecting workers exposure : Assumes use at not more than 20℃ above ambient tem perature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented

Contributing scenarios: Operational conditions and risk management measures

General measures (skin irritants): Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) 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

Section 2 Operational conditions and risk management measures

protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes 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.

General exposures (closed systems) With sample collection: Handle substance within a closed system. Sample via a closed loop or other system to avoid exposure. Wear suitable gloves tested to EN374.

General exposures (closed systems) Outdoor: Handle substance within a closed system.

Process sampling: Sample via a closed loop or other system to avoid exposure.

Laboratory activities: Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.

Bulk transfers: Ensure material transfers are under containment or extract ventilation.

Drum/batch transfers: Ensure material transfers are under containment or extract ventilation.

Equipment cleaning and 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. Wear chemical-resistant gloves (tested to EN374) in combination with 'basic' employee training.

Storage: Store substance within a closed system.Wear suitable gloves tested to EN374.

Section 2.2 Control of environmental exposure

Product characteristics	:	Substance is complex UVCB.. Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region0.1 Regional use tonnage1.65E7 Fraction of regional tonnage used locally0.0018 Annual site tonnage3.0E4 Maximum daily site tonnage1.0E5
Frequency and duration of use	:	Continuous release Emission days (days/year)300
Environment factors not influenced by risk management	:	Local freshwater dilution factor10 Local marine water dilution factor100
Other given operational conditions affecting environmental exposure	:	Release fraction to air from process (initial release prior to RMM)0.025 Release fraction to wastewater from process (initial release prior to RMM)0.002 Release fraction to soil from process (initial release prior to RMM)0.00001
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Prevent discharge of undissolved substance to or recover from onsite wastewater. Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation). If discharging to domestic sewage treatment plant, no onsite wastewater treatment required. Treat air emission to provide a typical removal efficiency of 56.5 Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 94.7 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 0
Organizational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.
Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via on-site sewage treatment 95.5 Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs 95.5 Maximum allowable site tonnage (M_{Safe}) 1.0E5 Assumed on-site sewage treatment plant flow 2000

Section 2 Operational conditions and risk management measures

Conditions and measures related to external treatment of waste for disposal : External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste : External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing scenarios: Operational conditions and risk management measures

Section 3 Exposure estimation and reference to its source

Section 3.1: Health

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation : Not available.

Section 3.2: Environment

Exposure assessment (environment): : The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation : Not available.

Section 4 Guidance to check compliance with the exposure scenario

Health : Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. 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 enable the derivation of a DNEL for dermal irritant effects. Available hazard data do not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterisation.

Environment : Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.

Annex to the extended Safety Data Sheet (eSDS)

Industrial

Identification of the substance or mixture

Product definition	:	UVCB
Product name	:	Gasoline

Section 1 Title

Short title of the exposure scenario	:	Distribution of Low Boiling Point Naphthas (Gasoline) - Classified as H340 and/or H350 and/or H361 (0 % - 1 % benzene) - Industrial
List of use descriptors	:	**Identified use name:** Distribution of substance **Process Category:** PROC01, PROC02, PROC03, PROC08a, PROC08b, PROC15 **Substance supplied to that use in form of:** As such **Sector of end use:** SU03 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ESVOC SpERC 1.1b.v1 **Market sector by type of chemical product:** PC13 **Article category related to subsequent service life:** Not applicable.
Processes and activities covered by the exposure scenario	:	Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance within closed or contained systems, including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities.
Assessment method	:	See section 3.

Section 2 Operational conditions and risk management measures

Section 2.1 Control of consumer exposure

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapour pressure > 10 kPa at STP
Amounts used	:	Not applicable.
Frequency and duration of use/exposure	:	Covers daily exposures up to 8 hours (unless stated differently)
Human factors not influenced by risk management	:	Not applicable.
Other given operational conditions affecting workers exposure	:	Assumes use at not more than 20℃ above ambient tem perature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented

Contributing scenarios: Operational conditions and risk management measures

General measures (skin irritants): Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) 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

Section 2 Operational conditions and risk management measures

protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes 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.

General exposures (closed systems) With sample collection: Handle substance within a closed system. Sample via a closed loop or other system to avoid exposure. Wear suitable gloves tested to EN374.

General exposures (closed systems) Outdoor: Handle substance within a closed system.

Process sampling: Sample via a closed loop or other system to avoid exposure.

Laboratory activities: Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.

Bulk closed loading and unloading: Ensure material transfers are under containment or extract ventilation.

Equipment cleaning and 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. Wear chemical-resistant gloves (tested to EN374) in combination with 'basic' employee training.

Storage: Ensure operation is undertaken outdoors. Store substance within a closed system.

Section 2.2 Control of environmental exposure

Product characteristics	:	Substance is complex UVCB.. Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region0.1 Regional use tonnage1.87E7 Fraction of regional tonnage used locally0.002 Annual site tonnage3.75E4 Maximum daily site tonnage1.2E5
Frequency and duration of use	:	Continuous release Emission days (days/year)300
Environment factors not influenced by risk management	:	Local freshwater dilution factor10 Local marine water dilution factor100
Other given operational conditions affecting environmental exposure	:	Release fraction to air from process (initial release prior to RMM)0.001 Release fraction to wastewater from process (initial release prior to RMM)0.00001 Release fraction to soil from process (initial release prior to RMM)0.00001
Technical conditions and measures at process level (source) to prevent release	:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation). If discharging to domestic sewage treatment plant, no onsite wastewater treatment required. Treat air emission to provide a typical removal efficiency of90 Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of12 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of0
Organizational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.
Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via on-site sewage treatment95.5 Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs95.5 Maximum allowable site tonnage (M_{Safe})1.1E6 Assumed on-site sewage treatment plant flow2000
Conditions and measures related to external treatment of waste for disposal	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.

Section 2 Operational conditions and risk management measures

Conditions and measures related to external recovery of waste : External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing scenarios: Operational conditions and risk management measures

Section 3 Exposure estimation and reference to its source

Section 3.1: Health

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation : Not available.

Section 3.2: Environment

Exposure assessment (environment): : The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation : Not available.

Section 4 Guidance to check compliance with the exposure scenario

Health : Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. 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 enable the derivation of a DNEL for dermal irritant effects. Available hazard data do not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterisation.

Environment : Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.

Annex to the extended Safety Data Sheet (eSDS)

Consumer

Identification of the substance or mixture

Product definition : UVCB

Product name : Gasoline

Section 1 Title

Short title of the exposure scenario : Use of Low Boiling Point Naphthas (Gasoline) as a Fuel - Classified as H340 and/or H350 and/or H361 (0 % - 1 % benzene) - Consumer

List of use descriptors : **Identified use name:** Use as a fuel - Consumer
Substance supplied to that use in form of: As such
Sector of end use: SU21
Subsequent service life relevant for that use: No.
Environmental Release Category: ERC09a, ERC09b, ESVOC SpERC 9.12c.v1
Market sector by type of chemical product: PC13
Article category related to subsequent service life: Not applicable.

Processes and activities covered by the exposure scenario : Covers consumer uses in liquid fuels.

Assessment method : See section 3.

Section 2 Operational conditions and risk management measures

Section 2.1 Control of consumer exposure

Concentration of substance in mixture or article : Covers percentage substance in the product up to 100% (unless stated differently).

Physical state : Liquid, vapour pressure > 10 kPa at STP

Amounts used : For each use event, covers use amounts up to 37500 g. Covers skin contact area up to 420 cm^2.

Frequency and duration of use/exposure : Covers use up to 0.143 uses per day. For each use event, covers exposure up to 2 hours.

Other given operational conditions affecting consumers exposure : Unless otherwise stated, Covers use at ambient temperatures. Covers use in room size of 20 m^3. Covers use under typical household ventilation.

Contributing scenarios: Operational conditions and risk management measures

Product categories [PC]: 13 - Fuels Liquid: automotive refuelling
Operations Conditions (consumer): Covers concentrations up to 1%. Covers use up to 52 days per year. Covers use up to 1 uses per day. Covers skin contact area up to 210.00 cm^2. For each use event, covers use amounts up to 37500 g. Covers outdoor use. Covers use in room size of 100 m^3. For each use event, covers exposure up to 0.05 hours.
Risk management measures (RMM): No specific risk management measure identified beyond those operational conditions stated.

Product categories [PC]: 13 - Fuels Liquid: scooter refuelling
Operations Conditions (consumer): Covers concentrations up to 1%. Covers use up to 52 days per year. Covers use up to 1 uses per day. Covers skin contact area up to 210.00 cm^2. For each use event, covers use amounts up to 3750 g. Covers outdoor use. Covers use in room size of 100 m^3. For each use event, covers exposure up to 0.03 hours.
Risk management measures (RMM): No specific risk management measure identified beyond those operational conditions stated.

Product categories [PC]: 13 - Liquid: garden equipment - use
Operations Conditions (consumer): Covers concentrations up to 1%. Covers use up to 26 days per year. Covers use

Section 2 Operational conditions and risk management measures

up to 1 uses per day. For each use event, covers use amounts up to 750 g. Covers outdoor use. Covers use in room size of 100 m³. For each use event, covers exposure up to 2.00 hours.
Risk management measures (RMM): No specific risk management measure identified beyond those operational conditions stated.

Product categories [PC]: 13 - Liquid: garden equipment - refuelling
Operations Conditions (consumer): Covers concentrations up to1%. Covers use up to 26 days per year. Covers use up to 1 uses per day. Covers skin contact area up to 420.00 cm². For each use event, covers use amounts up to750 g. Covers use in a one car garage (34 m³) under typical ventilation. Covers use in room size of 34 m³. For each use event, covers exposure up to 0.03 hours.
Risk management measures (RMM): No specific risk management measure identified beyond those operational conditions stated.

Section 2.2 Control of environmental exposure

Product characteristics	:	Substance is complex UVCB. Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region 0.1 Regional use tonnage 1.39E7 Fraction of regional tonnage used locally 0.0005 Annual site tonnage 7.0E3 Maximum daily site tonnage 1.9E4
Frequency and duration of use	:	Continuous release Emission days (days/year) 365
Environment factors not influenced by risk management	:	Local freshwater dilution factor 10 Local marine water dilution factor 100
Other given operational conditions affecting environmental exposure	:	Release fraction to air from wide dispersive use (regional only) Release fraction to air from process (initial release prior to RMM) 0.01 Release fraction to wastewater from wide dispersive use 0.00001 Release fraction to soil from wide dispersive use (regional only) 0.00001
Conditions and measures related to municipal sewage treatment plant	:	Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation). Estimated substance removal from wastewater via on-site sewage treatment 95.5 Maximum allowable site tonnage (M_{Safe}) 1.8E5 Assumed on-site sewage treatment plant flow 2000
Conditions and measures related to external treatment of waste for disposal	:	Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment.
Conditions and measures related to external recovery of waste	:	This substance is consumed during use and no waste from the substance is generated.

Section 3 Exposure estimation and reference to its source

Section 3.1: Health

Exposure assessment (human):	:	The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Section 3.2: Environment

Exposure assessment (environment):	:	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Section 4 Guidance to check compliance with the exposure scenario

Section 4 Guidance to check compliance with the exposure scenario

Health	:	Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Environment	:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Further details on scaling and control technologies are provided in SpERC factsheet.