SAFETY DATA SHEET

Gasoline 98 (E5)

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

1.1 Product identifier

Product name : Gasoline 98 (E5)

Viscosity or Type : EN 228 Euro 98, E5

UFI : HEH0-T0CS-K00S-53UP

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

Material uses : Unleaded fuel for gasoline engines

Identified uses
Formulation and (re)packing of substances and mixtures Use as a fuel; Industrial Use as a fuel; Professional Use as a fuel; Consumer

1.3 Details of the supplier of the safety data sheet

Supplier : Kuwait Petroleum (Belgium) N.V.
Desguinlei 100 - 8, 2018 Antwerp, Belgium
Tel. +32 3 241 33 00, Fax +32 3 241 35 31

e-mail address of person responsible for this SDS : SDSinfo@Q8.com, communication preferably in English only.

PCN Information contact : PCNinfo@Q8.com, communication preferably in English only.

1.4 Emergency telephone number

Europe : +44 (0) 1235 239 670

Global (English only) : +44 (0) 1865 407 333

CARECHEM24

National advisory body/Poison Center

Belgium : Poison Centre : +32 (0)70 245 245

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : Mixture

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

FLAMMABLE LIQUIDS	Category 1	H224
SKIN CORROSION/IRRITATION	Category 2	H315
GERM CELL MUTAGENICITY	Category 1B	H340
CARCINOGENICITY	Category 1B	H350
TOXIC TO REPRODUCTION	Category 2	H361fd
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects)	Category 3	H336
ASPIRATION HAZARD	Category 1	H304
AQUATIC HAZARD (LONG-TERM)	Category 2	H411

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

Ingredients of unknown toxicity : None.

Ingredients of unknown ecotoxicity : None.

See Section 16 for the full text of the H statements declared above.

SECTION 2: Hazards identification

See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Hazard pictograms :

Signal word : Danger

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

Precautionary statements

General :
P103 - Read carefully and follow all instructions.
P102 - Keep out of reach of children.
P101 - If medical advice is needed, have product container or label at hand.

Prevention :
P201 - Obtain special instructions before use.
P280 - Wear protective gloves, protective clothing, eye protection, face protection, or hearing protection.
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P271 - Use only outdoors or in a well-ventilated area.
P273 - Avoid release to the environment.
P261 - Avoid breathing vapor.
P264 - Wash thoroughly after handling.

Response :
P391 - Collect spillage.
P308 + P313 - IF exposed or concerned: Get medical advice or attention.
P304 + P312 - IF INHALED: Call a POISON CENTER or doctor if you feel unwell.
P301 + P310, P331 - IF SWALLOWED: Immediately call a POISON CENTER or doctor. Do NOT induce vomiting.
P362 + P364 - Take off contaminated clothing and wash it before reuse.

Storage :
P405 - Store locked up.
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.
P403 + P235 - Keep cool.

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

Hazardous ingredients :
Gasoline
2-ethoxy-2-methylpropane
2-methoxy-2-methylbutane

Supplemental label elements :
Not applicable.

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.

SECTION 2: Hazards identification

2.3 Other hazards

Product meets the criteria for PBT or vPvB according to Regulation (EC) No. 1907/2006, Annex XIII : This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

Other hazards which do not result in classification : None known.

SECTION 3: Composition/information on ingredients

3.2 Mixtures : Mixture

Product/ingredient name	Identifiers	%	Classification	Specific Conc. Limits, M-factors and ATEs	Type
Gasoline	REACH #: 01-2119471335-39 EC: 289-220-8 CAS: 86290-81-5 Index: 649-378-00-4	>80	Flam. Liq. 1, H224 Skin Irrit. 2, H315 Muta. 1B, H340 Carc. 1B, H350 Repr. 2, H361fd STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411	-	[1]
tert-butyl methyl ether	REACH #: 01-2119452786-27 EC: 216-653-1 CAS: 1634-04-4 Index: 603-181-00-X	≤22	Flam. Liq. 2, H225 Skin Irrit. 2, H315	-	[1] [2]
2-ethoxy-2-methylpropane	REACH #: 01-2119452785-29 EC: 211-309-7 CAS: 637-92-3	≤22	Flam. Liq. 2, H225 STOT SE 3, H336	-	[1] [2]
2-methoxy-2-methylbutane	REACH #: 01-2119453236-41 EC: 213-611-4 CAS: 994-05-8 Index: 603-213-00-2	≤22	Flam. Liq. 2, H225 Acute Tox. 4, H302 STOT SE 3, H336	ATE [Oral] = 1602 mg/kg	[1] [2]
ethanol	REACH #: 01-2119457610-43 EC: 200-578-6 CAS: 64-17-5 Index: 603-002-00-5	≤5	Flam. Liq. 2, H225	-	[2]
toluene (Constituent)	EC: 203-625-9 CAS: 108-88-3 Index: 601-021-00-3	<10	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Repr. 2, H361d STOT SE 3, H336 STOT RE 2, H373 Asp. Tox. 1, H304	-	[1] [2]
n-hexane (Constituent)	EC: 203-777-6 CAS: 110-54-3 Index: 601-037-00-0	<5	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Repr. 2, H361f STOT SE 3, H336 STOT RE 1, H372 Asp. Tox. 1, H304 Aquatic Chronic 2,	STOT RE 1, H372: C ≥ 5%	[1] [2]

SECTION 3: Composition/information on ingredients

			H411		
benzene (Constituent)	EC: 200-753-7 CAS: 71-43-2 Index: 601-020-00-8	<1	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Muta. 1B, H340 Carc. 1A, H350 STOT RE 1, H372 Asp. Tox. 1, H304 Aquatic Chronic 3, H412	-	[1] [2]
cumene (Constituent)	EC: 202-704-5 CAS: 98-82-8 Index: 601-024-00-X	<1	Flam. Liq. 3, H226 Carc. 1B, H350 STOT SE 3, H335 Asp. Tox. 1, H304 Aquatic Chronic 2, H411 **See Section 16 for the full text of the H statements declared above.**	-	[1] [2]

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment, are PBTs, vPvBs or Substances of equivalent concern, or have been assigned a workplace exposure limit and hence require reporting in this section.

Type

[1] Substance classified with a health or environmental hazard
[2] Substance with a workplace exposure limit

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 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 : Flush contaminated skin with plenty of 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. 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

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
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
nausea or vomiting
reduced fetal weight
increase in fetal deaths
skeletal malformations

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. Runoff to sewer may create fire or explosion hazard. 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. 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.

Hazardous combustion products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

SECTION 5: Firefighting measures

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 specialized 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. Absorb with an inert 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. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. 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.

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

SECTION 7: Handling and storage

Protective measures : Put on appropriate personal protective equipment (see Section 8). 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

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. See Section 10 for incompatible materials before handling or use.

Seveso Directive - Reporting thresholds

Danger criteria

Category	Notification and MAPP threshold	Safety report threshold
P5a	10 tonnes	50 tonnes
E2	200 tonnes	500 tonnes

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

Product/ingredient name	Exposure limit values
tert-butyl methyl ether	**Limit values (Belgium, 12/2023)** TWA 8 hours: 40 ppm. TWA 8 hours: 146 mg/m³. STEL 15 minutes: 367 mg/m³. STEL 15 minutes: 100 ppm. **EU OEL (Europe, 1/2022)** TWA 8 hours: 183.5 mg/m³. TWA 8 hours: 50 ppm. STEL 15 minutes: 367 mg/m³. STEL 15 minutes: 100 ppm.
2-ethoxy-2-methylpropane	**Limit values (Belgium, 12/2023)** TWA 8 hours: 21 mg/m³.

SECTION 8: Exposure controls/personal protection

	TWA 8 hours: 5 ppm.
2-methoxy-2-methylbutane	**Limit values (Belgium, 12/2023)** TWA 8 hours: 85 mg/m³. TWA 8 hours: 20 ppm.
ethanol	**Limit values (Belgium, 12/2023)** TWA 8 hours: 1000 ppm. TWA 8 hours: 1907 mg/m³.
toluene (Constituent)	**Limit values (Belgium, 12/2023)** Absorbed through skin. TWA 8 hours: 20 ppm. TWA 8 hours: 77 mg/m³. STEL 15 minutes: 100 ppm. STEL 15 minutes: 384 mg/m³. **EU OEL (Europe, 1/2022)** Absorbed through skin. TWA 8 hours: 192 mg/m³. TWA 8 hours: 50 ppm. STEL 15 minutes: 384 mg/m³. STEL 15 minutes: 100 ppm.
n-hexane (Constituent)	**Limit values (Belgium, 12/2023)** TWA 8 hours: 20 ppm. TWA 8 hours: 72 mg/m³. **EU OEL (Europe, 1/2022)** TWA 8 hours: 72 mg/m³. TWA 8 hours: 20 ppm.
benzene (Constituent)	**Limit values (Belgium, 12/2023)** C. Absorbed through skin. TWA 8 hours: 0.5 ppm. TWA 8 hours: 1.65 mg/m³. **EU OEL (Europe, 3/2024)** Absorbed through skin. TWA 8 hours: 0.5 ppm. TWA 8 hours: 1.65 mg/m³.
cumene (Constituent)	**Limit values (Belgium, 12/2023)** Absorbed through skin. TWA 8 hours: 10 ppm. TWA 8 hours: 50 mg/m³. STEL 15 minutes: 50 ppm. STEL 15 minutes: 250 mg/m³. **EU OEL (Europe, 1/2022)** Absorbed through skin. TWA 8 hours: 10 ppm. TWA 8 hours: 50 mg/m³. STEL 15 minutes: 50 ppm. STEL 15 minutes: 250 mg/m³.

Biological exposure indices

No exposure indices known.

Recommended monitoring procedures : 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

Product/ingredient name **Result**

SECTION 8: Exposure controls/personal protection

Gasoline	**DNEL - General population - Long term - Inhalation** 0.41 mg/m³ Effects: Systemic **DNEL - Workers - Long term - Inhalation** 1.9 mg/m³ Effects: Systemic **DNEL - General population - Long term - Inhalation** 178.57 mg/m³ Effects: Local **DNEL - General population - Short term - Inhalation** 640 mg/m³ Effects: Local **DNEL - Workers - Long term - Inhalation** 837.5 mg/m³ Effects: Local **DNEL - Workers - Short term - Inhalation** 1066.67 mg/m³ Effects: Local **DNEL - General population - Short term - Inhalation** 1152 mg/m³ Effects: Systemic **DNEL - Workers - Short term - Inhalation** 1286.4 mg/m³ Effects: Systemic
tert-butyl methyl ether	**DNEL - General population - Long term - Oral** 7.1 mg/kg bw/day Effects: Systemic **DNEL - General population - Long term - Inhalation** 53.6 mg/m³ Effects: Systemic **DNEL - Workers - Long term - Inhalation** 178.5 mg/m³ Effects: Systemic **DNEL - General population - Short term - Inhalation** 214 mg/m³ Effects: Local **DNEL - Workers - Short term - Inhalation** 357 mg/m³ Effects: Local **DNEL - General population - Long term - Dermal** 3570 mg/kg bw/day Effects: Systemic **DNEL - Workers - Long term - Dermal** 5100 mg/kg bw/day Effects: Systemic
2-ethoxy-2-methylpropane	**DNEL - General population - Long term - Oral** 6 mg/kg bw/day Effects: Systemic

SECTION 8: Exposure controls/personal protection

	DNEL - General population - Long term - Inhalation 63 mg/m³ Effects: Local **DNEL - General population - Long term - Inhalation** 105 mg/m³ Effects: Systemic **DNEL - Workers - Long term - Inhalation** 105 mg/m³ Effects: Local **DNEL - Workers - Long term - Inhalation** 352 mg/m³ Effects: Systemic **DNEL - General population - Short term - Inhalation** 1680 mg/m³ Effects: Systemic **DNEL - Workers - Short term - Inhalation** 2800 mg/m³ Effects: Systemic **DNEL - General population - Long term - Dermal** 4060 mg/kg bw/day Effects: Systemic **DNEL - Workers - Long term - Dermal** 6767 mg/kg bw/day Effects: Systemic
2-methoxy-2-methylbutane	**DNEL - General population - Long term - Oral** 1 mg/kg bw/day Effects: Systemic **DNEL - General population - Long term - Inhalation** 26.5 mg/m³ Effects: Systemic **DNEL - Workers - Long term - Inhalation** 88.8 mg/m³ Effects: Systemic **DNEL - General population - Short term - Inhalation** 212 mg/m³ Effects: Systemic **DNEL - Workers - Short term - Inhalation** 353.3 mg/m³ Effects: Systemic **DNEL - General population - Long term - Dermal** 961 mg/kg bw/day Effects: Systemic **DNEL - Workers - Long term - Dermal** 1601 mg/kg bw/day Effects: Systemic
ethanol	**DNEL - Workers - Long term - Inhalation** 380 mg/m³ Effects: Systemic

SECTION 8: Exposure controls/personal protection

DNEL - General population - Long term - Oral
87 mg/kg bw/day
Effects: Systemic

DNEL - General population - Long term - Inhalation
114 mg/m³
Effects: Systemic

DNEL - General population - Long term - Dermal
206 mg/kg bw/day
Effects: Systemic

DNEL - Workers - Long term - Dermal
343 mg/kg bw/day
Effects: Systemic

DNEL - General population - Short term - Inhalation
950 mg/m³
Effects: Local

DNEL - Workers - Short term - Inhalation
1900 mg/m³
Effects: Local

toluene (Constituent)

DNEL - General population - Long term - Oral
8.13 mg/kg bw/day
Effects: Systemic

DNEL - General population - Long term - Inhalation
56.5 mg/m³
Effects: Local

DNEL - General population - Long term - Inhalation
56.5 mg/m³
Effects: Systemic

DNEL - Workers - Long term - Inhalation
192 mg/m³
Effects: Local

DNEL - Workers - Long term - Inhalation
192 mg/m³
Effects: Systemic

DNEL - General population - Long term - Dermal
226 mg/kg bw/day
Effects: Systemic

DNEL - General population - Short term - Inhalation
226 mg/m³
Effects: Local

DNEL - General population - Short term - Inhalation
226 mg/m³
Effects: Systemic

DNEL - Workers - Long term - Dermal
384 mg/kg bw/day
Effects: Systemic

DNEL - Workers - Short term - Inhalation
384 mg/m³

SECTION 8: Exposure controls/personal protection

	Effects: Local **DNEL - Workers - Short term - Inhalation** 384 mg/m³ Effects: Systemic
n-hexane (Constituent)	**DNEL - General population - Long term - Oral** 4 mg/kg bw/day Effects: Systemic **DNEL - General population - Long term - Dermal** 5.3 mg/kg bw/day Effects: Systemic **DNEL - Workers - Long term - Dermal** 11 mg/kg bw/day Effects: Systemic **DNEL - General population - Long term - Inhalation** 16 mg/m³ Effects: Systemic **DNEL - Workers - Long term - Inhalation** 75 mg/m³ Effects: Systemic
benzene (Constituent)	**DNEL - General population - Long term - Inhalation** 0.14 mg/m³ Effects: Systemic
cumene (Constituent)	**DNEL - General population - Long term - Dermal** 1.2 mg/kg bw/day Effects: Systemic **DNEL - Workers - Long term - Dermal** 15.4 mg/kg bw/day Effects: Systemic **DNEL - Workers - Long term - Inhalation** 100 mg/m³ Effects: Systemic **DNEL - Workers - Short term - Inhalation** 250 mg/m³ Effects: Local **DNEL - General population - Long term - Oral** 5 mg/kg bw/day Effects: Systemic **DNEL - General population - Long term - Inhalation** 16.6 mg/m³ Effects: Systemic

PNECs

Not available.

8.2 Exposure controls

SECTION 8: Exposure controls/personal protection

Appropriate engineering controls : 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 : Do not ingest. If swallowed then seek immediate medical assistance.

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

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 : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Recommended: Boiling point > 65 °C: A1; Boiling point < 65 °C: AX1; Hot material: A1P2. Gas and combination filter cartridges should comply with the European standard EN14387.

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

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

9.1 Information on basic physical and chemical properties

Appearance

Physical state : Liquid. [Mobile liquid.]

Appearance : Clear

Color : Colorless to light yellow

Odor : Characteristic

Odor threshold : Not available.

Melting point/freezing point : <-50°C (<-58°F)

Boiling point or initial boiling point and boiling range : 25 to 220°C (77 to 428°F) [ISO 3405]

SECTION 9: Physical and chemical properties

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

Lower and upper explosion limit : Lower: 1.4%
Upper: 7.6%

Flash point : Closed cup: <-40°C (<-40°F) [ASTM D56]

Auto-ignition temperature : >250°C (>482°F)

Decomposition temperature : >250°C

pH : Not applicable.

Viscosity : Kinematic (40°C (104°F)): <1 mm^2/s (<1 cSt)

Solubility :

Media	Result
cold water	Not soluble
hot water	Not soluble

Partition coefficient n-octanol/water (log Pow) : 2 to 7

Vapor pressure : 45 to 95 kPa (337.53 to 712.56 mm Hg) [37.8°C (100°F)]

	Vapor Pressure at 20°C			Vapor pressure at 50°C		
Ingredient name	mm Hg	kPa	Method	mm Hg	kPa	Method
Gasoline	263.16 to 751.88	35.1 to 100.2				

Density : 0.75 g/cm^3 [15°C (59°F)] [EN ISO 12185]

Relative vapor density : >3 [Air = 1]

Particle characteristics

Median particle size : Not applicable.

9.2 Other information

9.2.1 Information with regard to physical hazard classes

Explosive properties : Not applicable.

Oxidizing properties : Not applicable.

9.2.2 Other safety characteristics

Not applicable.

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 : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity

Product/ingredient name	Result
Gasoline	**Rat - Oral - LD50** 13.6 g/kg Toxic effects: Eye - Conjunctive irritation Behavioral - Headache Lung, Thorax, or Respiration - Cough **Rat - Male, Female - Inhalation - LC50 Vapor** 5610 mg/m³ [4 hours] OECD 403 [Acute Inhalation Toxicity]
tert-butyl methyl ether	**Rat - Oral - LD50** 4 g/kg **Rat - Inhalation - LC50 Gas.** 23576 ppm [4 hours] **Rat - Inhalation - LC50 Vapor** 41000 mg/m³ [4 hours]
2-ethoxy-2-methylpropane	**Rat - Oral - LD50** 7150 mg/kg Toxic effects: Behavioral - Somnolence (general depressed activity) **Rat - Inhalation - LC50 Vapor** 36200 mg/m³ [4 hours] Toxic effects: Behavioral - Somnolence (general depressed activity)
2-methoxy-2-methylbutane	**Rat - Oral - LD50** 1602 mg/kg Toxic effects: Behavioral - Ataxia Musculoskeletal - Other changes Changes in Chemistry or Temperature - Body temperature decrease
ethanol	**Rat - Oral - LD50** 7 g/kg Toxic effects: Liver - Other changes Blood - Changes in serum composition (e.g., TP, bilirubin, cholesterol) Enzyme inhibition, induction, or change in blood or tissue levels - Phosphatases **Rat - Inhalation - LC50 Vapor** 124700 mg/m³ [4 hours]
toluene (Constituent)	**Rat - Oral - LD50** 636 mg/kg **Rat - Inhalation - LC50 Vapor** 49 g/m³ [4 hours]
n-hexane (Constituent)	**Rat - Oral - LD50** 15840 mg/kg **Rat - Inhalation - LC50 Gas.** 48000 ppm [4 hours]
benzene (Constituent)	**Rat - Oral - LD50** 930 mg/kg Toxic effects: Behavioral - Tremor Behavioral - Convulsions or effect on seizure threshold

SECTION 11: Toxicological information

cumene (Constituent)

Rat - Oral - LD50
1400 mg/kg
Toxic effects: Gastrointestinal - Gastritis

Rat - Inhalation - LC50 Vapor
39000 mg/m³ [4 hours]

Conclusion/Summary [Product] : Not available.

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
Gasoline 98 (E5)	12936.5	N/A	N/A	N/A	N/A
Gasoline	13600	N/A	N/A	N/A	N/A
tert-butyl methyl ether	4000	N/A	23576	41	N/A
2-ethoxy-2-methylpropane	7150	N/A	N/A	36.2	N/A
2-methoxy-2-methylbutane	1602	N/A	N/A	N/A	N/A
ethanol	7000	N/A	N/A	124.7	N/A
toluene (Constituent)	N/A	N/A	N/A	49	N/A
n-hexane (Constituent)	15840	N/A	48000	N/A	N/A
cumene (Constituent)	N/A	N/A	N/A	39	N/A

Skin corrosion/irritation

Product/ingredient name	Result
Gasoline	**Rabbit - Skin - Edema** Acute Dermal Irritation/Corrosion Duration of treatment/exposure: 4 hours Observation period: 72 hours Irritation score: 3 Fully reversible in more than 7 days
2-ethoxy-2-methylpropane	**Rabbit - Skin - Moderate irritant** Duration of treatment/exposure: 4 hours Amount/concentration applied: 500 uL
2-methoxy-2-methylbutane	**Rabbit - Skin - Severe irritant** Duration of treatment/exposure: 4 hours Amount/concentration applied: 500 uL
ethanol	**Rabbit - Skin - Mild irritant** Amount/concentration applied: 400 mg **Rabbit - Skin - Moderate irritant** Duration of treatment/exposure: 24 hours Amount/concentration applied: 20 mg
toluene (Constituent)	**Pig - Skin - Mild irritant** Duration of treatment/exposure: 24 hours Amount/concentration applied: 250 uL **Rabbit - Skin - Mild irritant** Amount/concentration applied: 435 mg **Rabbit - Skin - Moderate irritant** Duration of treatment/exposure: 24 hours Amount/concentration applied: 20 mg

SECTION 11: Toxicological information

	Rabbit - Skin - Moderate irritant Amount/concentration applied: 500 mg
benzene (Constituent)	**Rat - Skin - Mild irritant** Duration of treatment/exposure: 8 hours Amount/concentration applied: 60 uL **Rabbit - Skin - Mild irritant** Duration of treatment/exposure: 24 hours Amount/concentration applied: 15 mg **Rabbit - Skin - Moderate irritant** Duration of treatment/exposure: 24 hours Amount/concentration applied: 20 mg
cumene (Constituent)	**Rabbit - Skin - Mild irritant** Duration of treatment/exposure: 24 hours Amount/concentration applied: 10 mg **Rabbit - Skin - Moderate irritant** Duration of treatment/exposure: 24 hours Amount/concentration applied: 100 mg

Conclusion/Summary [Product] : Not available.

Serious eye damage/eye irritation

Product/ingredient name	Result
Gasoline	**Rabbit - Eyes - Edema of the conjunctivae** Acute Eye Irritation/Corrosion Duration of treatment/exposure: 4 hours Observation period: 72 hours Irritation score: 0.33 Fully reversible
2-ethoxy-2-methylpropane	**Rabbit - Eyes - Moderate irritant** Duration of treatment/exposure: 24 hours Amount/concentration applied: 100 uL
2-methoxy-2-methylbutane	**Rabbit - Eyes - Severe irritant** Duration of treatment/exposure: 24 hours Amount/concentration applied: 100 uL
ethanol	**Rabbit - Eyes - Mild irritant** Duration of treatment/exposure: 24 hours Amount/concentration applied: 500 mg **Rabbit - Eyes - Moderate irritant** Duration of treatment/exposure: 0.066666667 minutes Amount/concentration applied: 100 mg **Rabbit - Eyes - Moderate irritant** Amount/concentration applied: 100 uL **Rabbit - Eyes - Severe irritant** Amount/concentration applied: 500 mg **Rabbit - Eyes - Mild irritant** Duration of treatment/exposure: 1 hours Amount/concentration applied: 50 pph
toluene (Constituent)	**Rabbit - Eyes - Mild irritant**

SECTION 11: Toxicological information

	Duration of treatment/exposure: 0.5 minutes Amount/concentration applied: 100 mg **Rabbit - Eyes - Mild irritant** Amount/concentration applied: 870 ug **Rabbit - Eyes - Severe irritant** Duration of treatment/exposure: 24 hours Amount/concentration applied: 2 mg **Rabbit - Eyes - Severe irritant** Amount/concentration applied: 0.1 Ml
n-hexane (Constituent)	**Rabbit - Eyes - Mild irritant** Amount/concentration applied: 10 mg
benzene (Constituent)	**Rabbit - Eyes - Moderate irritant** Amount/concentration applied: 88 mg **Rabbit - Eyes - Severe irritant** Duration of treatment/exposure: 24 hours Amount/concentration applied: 2 mg **Rabbit - Eyes - Severe irritant** Amount/concentration applied: 0.1 Ml
cumene (Constituent)	**Rabbit - Eyes - Mild irritant** Duration of treatment/exposure: 24 hours Amount/concentration applied: 500 mg **Rabbit - Eyes - Mild irritant** Amount/concentration applied: 86 mg

Conclusion/Summary [Product] : Not available.

Respiratory corrosion/irritation

Not available.

Conclusion/Summary [Product] : Not available.

Respiratory or skin sensitization

Not available.

Skin

Conclusion/Summary [Product] : Not available.

Respiratory

Conclusion/Summary [Product] : Not available.

Germ cell mutagenicity

Product/ingredient name	Result
Gasoline	**In vitro - Bacteria** Bacterial Reverse Mutation Test Result: Negative **In vivo - Mammalian-Animal - Inhalation** Mammalian Bone Marrow Chromosomal Aberration Test 20000 mg/m³ [6 hours per day] [4 weeks]

SECTION 11: Toxicological information

Result: Negative

Conclusion/Summary [Product] : Not available.

Carcinogenicity

Product/ingredient name	Result
Gasoline	**Mouse - Male - Dermal - TC** Carcinogenicity Studies 5 mg/kg [3 days per week] [102 weeks] Result: Positive

Conclusion/Summary [Product] : Not available.

Reproductive toxicity

Product/ingredient name	Result
Gasoline	**Rat - Male, Female - Inhalation** Two-Generation Reproduction Toxicity Study ≥20000 mg/m³ [6 hours per day] [7 weeks] Effects: No effect level. Maternal toxicity: Negative Fertility effects: Negative Developmental: Negative

Conclusion/Summary [Product] : Not available.

Specific target organ toxicity (single exposure)

Product/ingredient name	Result
Gasoline	STOT SE 3, H336 (Narcotic effects)
2-ethoxy-2-methylpropane	STOT SE 3, H336 (Narcotic effects)
2-methoxy-2-methylbutane	STOT SE 3, H336 (Narcotic effects)
toluene (Constituent)	STOT SE 3, H336 (Narcotic effects)
n-hexane (Constituent)	STOT SE 3, H336 (Narcotic effects)
cumene (Constituent)	STOT SE 3, H335 (Respiratory tract irritation)

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Result
toluene (Constituent)	STOT RE 2, H373
n-hexane (Constituent)	STOT RE 1, H372
benzene (Constituent)	STOT RE 1, H372

Aspiration hazard

Product/ingredient name	Result
Gasoline	ASPIRATION HAZARD - Category 1
toluene (Constituent)	ASPIRATION HAZARD - Category 1
n-hexane (Constituent)	ASPIRATION HAZARD - Category 1
benzene (Constituent)	ASPIRATION HAZARD - Category 1
cumene (Constituent)	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure

Not available.

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

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

Skin contact : Causes skin irritation.

SECTION 11: Toxicological information

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
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
nausea or vomiting
reduced fetal weight
increase in fetal deaths
skeletal malformations

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

Product/ingredient name	Result
Gasoline	**Sub-acute - Rat - Male - Oral - NOEL** <500 mg/kg [5 days per week] [28 days] **Sub-acute - Rat - Male, Female - Dermal - NOAEL** Repeated Dose Dermal Toxicity: 21/28-day Study 375 mg/kg [5 days per week] [28 days] **Sub-chronic - Rat - Male, Female - Inhalation - NOAEL Vapor** Subchronic Inhalation Toxicity: 90-day Study 10000 mg/m³ [5 days per week] [90 days]

Conclusion/Summary [Product] : Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : May cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : May cause genetic defects.

Reproductive toxicity : Suspected of damaging fertility. Suspected of damaging the unborn child.

11.2 Information on other hazards

SECTION 11: Toxicological information

11.2.1 Endocrine disrupting properties

Not available.

Conclusion/Summary [Product] : The product does not meet the criteria to be considered as having endocrine disrupting properties according to the criteria set out in either Regulation (EC) No. 1907/2006 or Regulation (EC) No 1272/2008.

11.2.2 Other information

Not available.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Result
Gasoline	**Acute - LC50 - Fresh water** Fish, Acute Toxicity Test Fish 10 mg/l [96 hours] **Chronic - NOEC - Fresh water** Fish, Prolonged Toxicity Test: 14-Day Study Fish 2.6 mg/l [14 days] **Acute - EC50 - Fresh water** Daphnia sp. Acute Immobilization Test and Reproduction Test Daphnia 4.5 mg/l [48 hours] Effect: Mobility **Acute - EC50 - Fresh water** Alga, Growth Inhibition Test Algae 3.7 mg/l [96 hours] Effect: (growth rate)
tert-butyl methyl ether	**Acute - LC50 - Fresh water** Fish - Fathead minnow - *Pimephales promelas* Age: 33 days 672 mg/l [96 hours] Effect: Mortality
2-methoxy-2-methylbutane	**Acute - LC50 - Fresh water** Fish - Rainbow trout,donaldson trout - *Oncorhynchus mykiss* >100 mg/l [96 hours] Effect: Mortality **Acute - EC50 - Fresh water** Daphnia - Water flea - *Daphnia magna* >100 mg/l [48 hours] Effect: Intoxication **Acute - EC50 - Fresh water** Algae - Green algae - *Raphidocelis subcapitata* >100 mg/l [72 hours] Effect: Population **Chronic - NOEC - Fresh water** Algae - Green algae - *Raphidocelis subcapitata* >100 mg/l [72 hours] Effect: Population
ethanol	**Acute - LC50 - Fresh water**

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	Fish - Rainbow trout,donaldson trout - *Oncorhynchus mykiss* 42 mg/l [4 days] Effect: Mortality **Acute - EC50 - Marine water** Algae - Green algae - *Ulva pertusa* 17.921 mg/l [96 hours] Effect: Reproduction **Chronic - NOEC - Marine water** Algae - Green algae - *Ulva pertusa* 4.995 mg/l [96 hours] Effect: Reproduction **Chronic - NOEC - Fresh water** Daphnia - Water flea - *Daphnia magna* - Neonate Age: <24 hours 100 µl/l [21 days] Effect: Mortality **Chronic - NOEC - Fresh water** Fish - Eastern mosquitofish - *Gambusia holbrooki* - Larvae Age: 3 days 0.375 µl/l [12 weeks] Effect: Morphology **Acute - EC50 - Fresh water** Daphnia - Water flea - *Daphnia magna* 2 mg/l [48 hours] Effect: Intoxication
toluene (Constituent)	**Acute - LC50 - Fresh water** Fish - Coho salmon,silver salmon - *Oncorhynchus kisutch* - Fry Weight: 1 g 5500 µg/l [96 hours] Effect: Mortality **Acute - EC50 - Fresh water** Daphnia - Water flea - *Daphnia magna* - Juvenile (Fledgling, Hatchling, Weanling) 6000 µg/l [48 hours] Effect: Intoxication **Chronic - NOEC - Fresh water** Daphnia - Water flea - *Daphnia magna* Age: ≤24 hours 1 mg/l [21 days] Effect: Mortality **Acute - EC50 - Fresh water** Algae - Green algae - *Raphidocelis subcapitata* 12.5 mg/l [72 hours] Effect: Growth
n-hexane (Constituent)	**Acute - LC50 - Fresh water** Fish - Fathead minnow - *Pimephales promelas* Age: 31 days; Size: 20.4 mm; Weight: 0.123 g 2500 µg/l [96 hours] Effect: Mortality
benzene (Constituent)	**Acute - LC50 - Fresh water** Fish - Pink salmon - *Oncorhynchus gorbuscha* - Fry

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5.28 µl/l [96 hours]
Effect: Mortality

Acute - EC50 - Fresh water
Daphnia - Water flea - *Daphnia magna* - Neonate
Age: ≤24 hours
9.23 mg/l [48 hours]
Effect: Intoxication

Chronic - NOEC - Marine water
Fish - Striped bass - *Morone saxatilis* - Juvenile (Fledgling, Hatchling, Weanling)
Size: 18.1 cm; Weight: 3.39 g
1.5 to 5.4 µl/l [4 weeks]
Effect: Growth

Chronic - NOEC - Fresh water
Daphnia - Water flea - *Daphnia magna*
Age: <24 hours
98 mg/l [21 days]
Effect: Reproduction

Chronic - EC10 - Fresh water
Algae - Green algae - *Desmodesmus subspicatus*
>1360 mg/l [96 hours]
Effect: Population

Acute - EC50 - Fresh water
Algae - Green algae - *Raphidocelis subcapitata*
29 mg/l [72 hours]
Effect: Growth

cumene (Constituent)

Acute - LC50 - Fresh water
Fish - Rainbow trout,donaldson trout - *Oncorhynchus mykiss*
2700 µg/l [96 hours]
Effect: Mortality

Acute - EC50 - Marine water
Crustaceans - Brine shrimp - *Artemia sp.* - Nauplii
Age: 2 to 3
7.4 mg/l [48 hours]
Effect: Intoxication

Acute - EC50 - Fresh water
Algae - Green algae - *Raphidocelis subcapitata*
2600 µg/l [72 hours]
Effect: Growth

Conclusion/Summary [Product] : Not available.

12.2 Persistence and degradability

Not available.

Conclusion/Summary [Product] : Not available.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
2-ethoxy-2-methylpropane	-	-	Inherent

12.3 Bioaccumulative potential

SECTION 12: Ecological information

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Gasoline 98 (E5)	2 to 7	-	High
Gasoline	2 to 7	10 to 2500	High
tert-butyl methyl ether	1.04	1.5	Low
2-ethoxy-2-methylpropane	1.48	-	Low
2-methoxy-2-methylbutane	1.55	-	Low
ethanol	-0.35	-	Low
toluene (Constituent)	2.73	90	Low
n-hexane (Constituent)	4	501.187	High
benzene (Constituent)	2.13	11	Low
cumene (Constituent)	3.55	35.48	Low

12.4 Mobility in soil

Soil/Water partition coefficient

Product/ingredient name	logKoc	Koc
tert-butyl methyl ether	1.3	18.7752
2-ethoxy-2-methylpropane	1.5	31.4026
2-methoxy-2-methylbutane	1.7	53.372
ethanol	0.2	1.59008
toluene (Constituent)	2.1	117.115
n-hexane (Constituent)	2.2	165.951
benzene (Constituent)	1.7	56.1326
cumene (Constituent)	2.7	521.484

Results of PMT and vPvM assessment

Product/ingredient name	PMT	P	M	T	vPvM	vP	vM
Gasoline	No	No	No	No	No	No	No
tert-butyl methyl ether	No	No	No	No	No	No	No
2-ethoxy-2-methylpropane	No	No	No	No	No	No	No
2-methoxy-2-methylbutane	No	No	No	No	No	No	No
ethanol	No	No	No	No	No	No	No
toluene (Constituent)	No	No	No	No	No	No	No
n-hexane (Constituent)	No	No	No	No	No	No	No
benzene (Constituent)	No	No	No	No	No	No	No
cumene (Constituent)	No	No	No	No	No	No	No

Mobility : Not available.

Conclusion/Summary : The product does not meet the criteria to be considered as a PMT or vPvM.

12.5 Results of PBT and vPvB assessment

Regulation (EC) No. 1907/2006 [REACH]

Product/ingredient name	PBT	P	B	T	vPvB	vP	vB
Gasoline	No	N/A	No	Yes	No	N/A	No
tert-butyl methyl ether	No	N/A	No	No	No	N/A	No
2-ethoxy-2-methylpropane	No	N/A	N/A	No	N/A	N/A	N/A
2-methoxy-2-methylbutane	No	N/A	N/A	No	N/A	N/A	N/A
ethanol	No	N/A	N/A	No	N/A	N/A	N/A
toluene (Constituent)	No	N/A	No	Yes	No	N/A	No
n-hexane (Constituent)	No	N/A	No	Yes	No	N/A	No
benzene (Constituent)	No	N/A	No	Yes	No	N/A	No
cumene (Constituent)	No	N/A	No	Yes	No	N/A	No

Regulation (EC) No. 1272/2008 [CLP]

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Product/ingredient name	PBT	P	B	T	vPvB	vP	vB
Gasoline	No	No	No	No	No	No	No
tert-butyl methyl ether	No	No	No	No	No	No	No
2-ethoxy-2-methylpropane	No	No	No	No	No	No	No
2-methoxy-2-methylbutane	No	No	No	No	No	No	No
ethanol	No	No	No	No	No	No	No
toluene (Constituent)	No	No	No	No	No	No	No
n-hexane (Constituent)	No	No	No	No	No	No	No
benzene (Constituent)	No	No	No	No	No	No	No
cumene (Constituent)	No	No	No	No	No	No	No

Conclusion/Summary Regulation (EC) No. 1272/2008 [CLP] : The product does not meet the criteria to be considered as a PBT or vPvB.

12.6 Endocrine disrupting properties

Not available.

Conclusion/Summary [Product] : The product does not meet the criteria to be considered as having endocrine disrupting properties according to the criteria set out in either Regulation (EC) No. 1907/2006 or Regulation (EC) No 1272/2008.

12.7 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 or ID 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	Yes.	Yes.	Yes.	Yes. The environmentally hazardous substance mark is not required.

Additional information

ADR/RID : The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.
Hazard identification number 33
Limited quantity 1 L
Special provisions 243, 534, 664
Tunnel code (D/E)

ADN : The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.
Special provisions 243, 534

IMDG : The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.
Emergency schedules F-E, S-E
Special provisions 243

IATA : The environmentally hazardous substance mark may appear if required by other transportation regulations.
Quantity limitation Passenger and Cargo Aircraft: 5 L. Packaging instructions: 353. Cargo Aircraft Only: 60 L. Packaging instructions: 364. Limited Quantities - Passenger Aircraft: 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 Maritime transport in bulk according to IMO instruments : 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.

SECTION 15: Regulatory information

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

Product/ingredient name	%	Designation [Usage]
Gasoline 98 (E5)	≥90	3 3 [Lamp fuel] 3 [Grill lighter fluid] 28 29
Gasoline	>80	28 29
toluene (Constituent)	<10	48 [Consumer paint]
n-hexane (Constituent)	<5	40 [In aerosol generators for entertainment and decorative purposes such as the following: metallic glitter intended mainly for decorations; artificial snow and frost; 'whoopee' cushions; silly string aerosols; imitation excrement; horn for parties; decorative flakes and foams; artificial cobwebs; stink bombs; etc.]
benzene (Constituent)	<1	5 28 29 72
cumene (Constituent)	<1	28

Labeling : Restricted to professional users.

Other EU regulations

Industrial emissions (integrated pollution prevention and control) - Air : Not listed

Industrial emissions (integrated pollution prevention and control) - Water : Not listed

Explosive precursors : Not applicable.

Ozone depleting substances (EU 2024/590)

Not listed.

Prior Informed Consent (PIC) (649/2012/EU)

Not listed.

Persistent Organic Pollutants (1021/2019/EU)

Not listed.

Seveso Directive

This product is controlled under the Seveso Directive.

Danger criteria

Category
P5a E2

National regulations

Germany

Hazard class for water (WGK) : 3

Switzerland

VOC content : VOC (w/w): 16.6%

International regulations

SECTION 15: Regulatory information

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia : Not determined.

Canada : At least one component is not listed in DSL but all such components are listed in NDSL.

China : Not determined.

Eurasian Economic Union : **Russian Federation inventory**: All components are listed or exempted.

Japan : **Japan inventory (CSCL)**: Not determined.
Japan inventory (ISHL): Not determined.

New Zealand : Not determined.

Philippines : Not determined.

Republic of Korea : All components are listed or exempted.

Taiwan : All components are listed or exempted.

Thailand : Not determined.

Turkey : Not determined.

United States of America : Not determined.

Viet Nam : All components are listed or exempted.

15.2 Chemical Safety Assessment : This product contains substances for which Chemical Safety Assessments are still required.

SECTION 16: Other information

Indicates information that has changed from previously issued version.

Abbreviations and acronyms :
ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway
ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
ASTM = American Society for Testing and Materials
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
CAS = Chemical Abstracts Service
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
DIN = German Institute for Standardization
DMEL = Derived Minimal Effect Level
DNEL = Derived No Effect Level
EC = European Commission
EC50 = Half maximal effective concentration
EN = European Standard (Norm)
EUH statement = CLP-specific Hazard statement
GHS - Globally Harmonized System of Classification and Labeling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container

SECTION 16: Other information

IC50 = Half maximal inhibitory concentration
IMDG = International Maritime Dangerous Goods
IMO = International Maritime Organisation
ISO = International Organization for Standardization
LC50 = Median lethal concentration
LD50 = Median lethal dose
LOAEL / LOAEC = Lowest Observed Adverse Effect Level / Concentration
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
N/A = Not available
NOAEL / NOAEC = No Observed Adverse Effect Level / Concentration
NOEL / NOEC = No Observed Effect Level / Concentration
OECD = Organisation for Economic Co-operation and Development
OEL = Occupational Exposure Limit
PBT = Persistent, Bioaccumulative and Toxic
PNEC = Predicted No Effect Concentration
REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation [Regulation (EC) No. 1907/2006]
RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS = Safety Data Sheet
SVHC = Substances of Very High Concern
STEL = Short Term Exposure Limit
TLV = Threshold Limit Value
TWA = Time Weighted Average
UFI = Unique Formula Identifier
UN = United Nations
VOC = Volatile Organic Compound
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	On basis of test data
Skin Irrit. 2, H315	Calculation method
Muta. 1B, H340	Calculation method
Carc. 1B, H350	Expert judgment
Repr. 2, H361fd	Calculation method
STOT SE 3, H336	Calculation method
Asp. Tox. 1, H304	Calculation method
Aquatic Chronic 2, H411	Calculation method

Full text of abbreviated H statements

H224	Extremely flammable liquid and vapor.
H225	Highly flammable liquid and vapor.
H226	Flammable liquid and vapor.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H340	May cause genetic defects.
H350	May cause cancer.
H361d	Suspected of damaging the unborn child.
H361f	Suspected of damaging fertility.
H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child.
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.
H412	Harmful to aquatic life with long lasting effects.

Full text of classifications [CLP/GHS]

SECTION 16: Other information

Acute Tox. 4	ACUTE TOXICITY - Category 4
Aquatic Chronic 2	AQUATIC HAZARD (LONG-TERM) - Category 2
Aquatic Chronic 3	AQUATIC HAZARD (LONG-TERM) - Category 3
Asp. Tox. 1	ASPIRATION HAZARD - Category 1
Carc. 1A	CARCINOGENICITY - Category 1A
Carc. 1B	CARCINOGENICITY - Category 1B
Eye Irrit. 2	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
Flam. Liq. 1	FLAMMABLE LIQUIDS - Category 1
Flam. Liq. 2	FLAMMABLE LIQUIDS - Category 2
Flam. Liq. 3	FLAMMABLE LIQUIDS - Category 3
Muta. 1B	GERM CELL MUTAGENICITY - Category 1B
Repr. 2	TOXIC TO REPRODUCTION - Category 2
Skin Irrit. 2	SKIN CORROSION/IRRITATION - Category 2
STOT RE 1	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
STOT RE 2	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
STOT SE 3	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) - Category 3

Training advice : Ensure operatives are trained to minimise exposures.

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Notice to reader

The information in this SDS is based on the present state of our knowledge and on current laws. The product is not to be used for purposes other than those specified under section 1 without first obtaining written handling instructions. It is always the responsibility of the user to take all necessary steps to fulfill the demands set out in the local rules and legislation. The information in this SDS is meant to be a description of the safety requirements for our product. It is not to be considered a guarantee of the product's properties.

Annex to the extended Safety Data Sheet (eSDS)

Industrial

Identification of the substance or mixture

Product definition : Mixture

Product name : Gasoline 98 (E5)

Section 1 - Title

Short title of the exposure scenario : Formulation and (re)packing of substances and mixtures; Closed systems; Level I (EC: 289-220-8)

List of use descriptors : **Identified use name:** Formulation and (re)packing of substances and mixtures
Process Category: PROC01, PROC02, PROC03, PROC08a, PROC08b, PROC15, PROC28
Substance supplied to that use in form of: As such
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.

Additional information : See section 3.

Section 2 - Exposure controls

Contributing scenario controlling environmental exposure for 1:

Product characteristics : Substance is complex UVCB.. Predominantly hydrophobic

Amounts used : Fraction of EU tonnage used in region: 1.0
Regional use tonnage (tonnes/year): 8.5E+07
Fraction of regional tonnage used locally: 3.5E-04
Annual site tonnage (tonnes/year): 3.0E+04
Maximum daily site tonnage (kg/day): 1.0E+02

Frequency and duration of use : Continuous release
Emission days (days per year): 300

Environment factors not influenced by risk management : Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure : Release fraction to air from process (after typical onsite RMMs consistent with EU Solvent Emissions Directive requirements): 2.5E+00
Release fraction to wastewater from process (initial release prior to RMM): 2.0E-01
Release fraction to soil from process (initial release prior to RMM): 0.01

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 freshwater sediment.
Prevent discharge of undissolved substance to or recover from onsite wastewater.
If discharging to municipal sewage treatment plant, no on-site wastewater treatment required.
Treat air emission to provide a typical removal efficiency of (%): 0.0E+00
Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of >=(%): 99.0
If discharging to municipal sewage treatment plant, provide the required on-site wastewater removal efficiency of >=(%): 99.0

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	:	Not applicable as there is no release to wastewater. Estimated substance removal from wastewater via municipal sewage treatment (%): 0.0 Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 0.0 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d): 1.1E+05 Assumed domestic sewage treatment plant flow (m^3/d): 2.0E+03
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 scenario controlling worker exposure for 2:

General measures (skin irritants): Ensure that direct skin contact is avoided. Identify potential areas for indirect skin contact. Wear suitable gloves tested to EN374. Clear spills immediately. Wash off any skin contamination immediately. For further specification, refer to section 8 of the SDS.

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 and flush system prior to equipment break-in or maintenance. Access to work area only for authorized persons. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Wear suitable coveralls to prevent exposure to the skin. Wear respiratory protection when its use is identified for certain contributing scenarios. For further specification, refer to section 8 of the SDS. Clear spills immediately. Dispose of this material and its container at hazardous or special waste collection point. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Ensure control measures are regularly inspected and maintained. Consider the need for risk-based health surveillance.

General measures (flammability): For measures to control risks from physicochemical properties, refer to main body of the SDS, section 7 and/or 8.

General measures (aspiration): Do not ingest. If swallowed then seek immediate medical assistance.

General exposures (closed systems) (PROC 2, PROC 1): Handle substance within a closed system. Sample via a closed loop or other system to avoid exposure.

General exposures Batch process; Closed systems (PROC 3): Handle substance within a closed system. Sample via a closed loop or other system to avoid exposure.

Laboratory activities (PROC 15): Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply. Put lids on containers immediately after use.

Bulk transfers Drum/batch transfers; Closed systems (PROC 8b): Ensure material transfers are under containment or extract ventilation.

Equipment cleaning and maintenance (PROC 8a, PROC 28): Drain down and flush system prior to equipment break-in or maintenance. Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply. Wear suitable coveralls to prevent exposure to the skin. Clear spills immediately.

Storage (PROC 2, PROC 1): Store substance within a closed system.

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100 %. (unless stated differently) Covers percentage in the substance up to Benzene <1%
Physical state	:	Liquid, vapor pressure > 10 kPa at Standard Temperature and Pressure

Frequency and duration of use/exposure	:	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting worker exposure	:	Assumes a good basic standard of occupational hygiene is implemented Covers use at ambient temperatures. (unless stated differently)

Section 3 - Exposure estimation and reference to its source

Website:	:	Not applicable.

Exposure estimation and reference to its source - Environment: 1:

Exposure assessment (environment):	:	Hydrocarbon Block Method (Petrorisk)
Exposure estimation and reference to its source	:	Not available.

Exposure estimation and reference to its source - Workers: 2:

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

Section 4 - Guidance to DU to evaluate whether he works inside the boundaries set by the ES

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 (http://cefic.org/en/reach-for-industries-libraries.html). Maximum Risk Characterization Ratios for air emissions RCRair: 8.2E-01 Maximum Risk Characterization Ratios for waste water emissions RCRwater: 8.4E-01
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 carcinogenic effects. Available hazard data do not enable the derivation of a DNEL for aspiration effects. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk management measures are based on qualitative risk characterisation.

Annex to the extended Safety Data Sheet (eSDS)

Industrial

Identification of the substance or mixture

Product definition : Mixture

Product name : Gasoline 98 (E5)

Section 1 - Title

Short title of the exposure scenario : Use as a fuel; Industrial; Closed systems; Level I (EC: 289-220-8)

List of use descriptors : **Identified use name:** Use as a fuel; Industrial
Process Category: PROC01, PROC02, PROC08a, PROC08b, PROC16, PROC28
Substance supplied to that use in form of: As such
Subsequent service life relevant for that use: No.
Environmental Release Category: ERC07, ESVOC SPERC 7.12a.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 the use as a fuel (or fuel additives and additive components) within closed or contained systems, including incidental exposures during activities associated with its transfer, use, equipment maintenance and handling of waste.

Additional information : See section 3.

Section 2 - Exposure controls

Contributing scenario controlling environmental exposure for 1:

Product characteristics : Substance is complex UVCB.. Predominantly hydrophobic

Amounts used : Fraction of EU tonnage used in region: 0.1
Regional use tonnage (tonnes/year): 9.9E+05
Fraction of regional tonnage used locally: 1.0E+00
Annual site tonnage (tonnes/year): 9.9E+05
Maximum daily site tonnage (kg/day): 3.3E+06

Frequency and duration of use : Continuous release
Emission days (days per year): 300

Environment factors not influenced by risk management : Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure : Release fraction to air from process (initial release prior to RMM): 5.0E-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): 0

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 freshwater sediment.
If discharging to municipal sewage treatment plant, no on-site wastewater treatment required.
Treat air emission to provide a typical removal efficiency of (%): 9.5E+01
Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of >=(%): 91.5
If discharging to municipal sewage treatment plant, provide the required on-site wastewater removal efficiency of >=(%): 0.0

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	:	Not applicable as there is no release to wastewater. Estimated substance removal from wastewater via municipal sewage treatment (%): 96.1 Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 96.1 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d): 7.1E+06 Assumed domestic sewage treatment plant flow (m^3/d): 2.0E+03
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. External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	This substance is consumed during use and no waste from the substance is generated.

Contributing scenario controlling worker exposure for 2:

General measures (skin irritants): Ensure that direct skin contact is avoided. Identify potential areas for indirect skin contact. Wear suitable gloves tested to EN374. Clear spills immediately. Wash off any skin contamination immediately. For further specification, refer to section 8 of the SDS.

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 and flush system prior to equipment break-in or maintenance. Access to work area only for authorized persons. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Wear suitable coveralls to prevent exposure to the skin. Wear respiratory protection when its use is identified for certain contributing scenarios. For further specification, refer to section 8 of the SDS. Clear spills immediately. Dispose of this material and its container at hazardous or special waste collection point. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Ensure control measures are regularly inspected and maintained. Consider the need for risk-based health surveillance.

General measures (flammability): For measures to control risks from physicochemical properties, refer to main body of the SDS, section 7 and/or 8.

General measures (aspiration): Do not ingest. If swallowed then seek immediate medical assistance.

Bulk transfers; Dedicated facility (PROC_8b): Ensure material transfers are under containment or extract ventilation.

Drum/batch transfers; Closed systems (PROC_8b): Ensure material transfers are under containment or extract ventilation.

General exposures (closed systems) (PROC 2, PROC 1): Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Handle substance within a closed system. Sample via a closed loop or other system to avoid exposure.

Use as a fuel; Closed systems (PROC_16): Handle substance within a closed system.

Equipment cleaning and maintenance (PROC_8a, PROC_28): Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Drain down and flush system prior to equipment break-in or maintenance. Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply. Wear suitable coveralls to prevent exposure to the skin. Clean spills immediately.

Storage (PROC 2, PROC 1): Store substance within a closed system.

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100 %. (unless stated differently) Covers percentage in the substance up to (Benzene) <1%
Physical state	:	Liquid, vapor pressure > 10 kPa at Standard Temperature and Pressure
Frequency and duration of use/exposure	:	Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting worker exposure	:	Assumes a good basic standard of occupational hygiene is implemented. Covers use at ambient temperatures. (unless stated differently)

Section 3 - Exposure estimation and reference to its source

Website:	:	Not applicable.

Exposure estimation and reference to its source - Environment: 1:

Exposure assessment (environment):	:	Hydrocarbon Block Method (Petrorisk)
Exposure estimation and reference to its source	:	Not available.

Exposure estimation and reference to its source - Workers: 2:

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

Section 4 - Guidance to DU to evaluate whether he works inside the boundaries set by the ES

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 (http://cefic.org/en/reach-for-industries-libraries.html). Maximum Risk Characterization Ratios for air emissions RCRair: 3.0E-02 Maximum Risk Characterization Ratios for waste water emissions RCRwater: 4.6E-01
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 carcinogenic effects. Available hazard data do not enable the derivation of a DNEL for aspiration effects. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk management measures are based on qualitative risk characterisation.

Annex to the extended Safety Data Sheet (eSDS)

Professional

Identification of the substance or mixture

Product definition : Mixture

Product name : Gasoline 98 (E5)

Section 1 - Title

Short title of the exposure scenario : Use as a fuel; Professional; Closed systems (EC: 289-220-8)

List of use descriptors : **Identified use name:** Use as a fuel; Professional
Process Category: PROC01, PROC02, PROC08a, PROC08b, PROC16, PROC28
Substance supplied to that use in form of: As such
Subsequent service life relevant for that use: No.
Environmental Release Category: ERC09a, ERC09b, ESVOC SPERC 9.12b.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 the use as a fuel (or fuel additives and additive components) within closed or contained systems, including incidental exposures during activities associated with its transfer, use, equipment maintenance and handling of waste.

Additional information : See section 3.

Section 2 - Exposure controls

Contributing scenario controlling environmental exposure for 1:

Product characteristics : Substance is complex UVCB.. Predominantly hydrophobic

Amounts used : Fraction of EU tonnage used in region: 0.1
Regional use tonnage (tonnes/year): 9.1E+05
Fraction of regional tonnage used locally: 5.0E-04
Annual site tonnage (tonnes/year): 4.5E+02
Maximum daily site tonnage (kg/day): 1.2E+03

Frequency and duration of use : Continuous release
Emission days (days per year): 365

Environment factors not influenced by risk management : Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure : Release fraction to air from wide dispersive use (regional only): 5.0E-03
Release fraction to wastewater from wide dispersive use: 1.0E-06
Release fraction to soil from wide dispersive use (regional only): 0.00025

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).
No wastewater treatment required.
Treat air emission to provide a typical removal efficiency of (%): N/A
Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of >=(%): 0.0
If discharging to municipal sewage treatment plant, provide the required on-site wastewater removal efficiency of >=(%): 0.0

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	:	Not applicable as there is no release to wastewater. Estimated substance removal from wastewater via municipal sewage treatment (%): 96.1 Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 96.1 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d): 5.2E+04 Assumed domestic sewage treatment plant flow (m^3/d): 2.0E+03
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. External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	This substance is consumed during use and no waste from the substance is generated.

Contributing scenario controlling worker exposure for 2:

General measures (skin irritants): Ensure that direct skin contact is avoided. Identify potential areas for indirect skin contact. Wear suitable gloves tested to EN374. Clear spills immediately. Wash off any skin contamination immediately. For further specification, refer to section 8 of the SDS.

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 and flush system prior to equipment break-in or maintenance. Access to work area only for authorized persons. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Wear suitable coveralls to prevent exposure to the skin. Wear respiratory protection when its use is identified for certain contributing scenarios. For further specification, refer to section 8 of the SDS. Clear spills immediately. Dispose of this material and its container at hazardous or special waste collection point. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Ensure control measures are regularly inspected and maintained. Consider the need for risk-based health surveillance.

General measures (flammability): For measures to control risks from physicochemical properties, refer to main body of the SDS, section 7 and/or 8.

General measures (aspiration): Do not ingest. If swallowed then seek immediate medical assistance.

Bulk transfers; Dedicated facility (PROC_8b): Ensure material transfers are under containment or extract ventilation.

Drum/batch transfers; Dedicated facility (PROC_8b): Ensure material transfers are under containment or extract ventilation.

Refuelling (PROC_8b): Ensure material transfers are under containment or extract ventilation.

General exposures (closed systems) (PROC 2, PROC 1): Handle substance within a closed system. Sample via a closed loop or other system to avoid exposure.

Use as a fuel; Closed systems (PROC_16): Handle substance within a closed system.

Equipment cleaning and maintenance (PROC_8a, PROC_28): Covers use up to 4.0 h/day. Drain down and flush system prior to equipment break-in or maintenance. Wear a respirator conforming to EN140. Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply. Wear suitable coveralls to prevent exposure to the skin. Clean spills immediately.

Storage (PROC 2, PROC 1): Store substance within a closed system.

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100 %. (unless stated differently) Covers percentage in the substance up to (Benzene) <1%
Physical state	:	Liquid, vapor pressure > 10 kPa at Standard Temperature and Pressure
Frequency and duration of use/exposure	:	Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting worker exposure	:	Assumes a good basic standard of occupational hygiene is implemented. Covers use at ambient temperatures. (unless stated differently)

Section 3 - Exposure estimation and reference to its source

Website:	:	Not applicable.

Exposure estimation and reference to its source - Environment: 1:

Exposure assessment (environment):	:	Hydrocarbon Block Method (Petrorisk)
Exposure estimation and reference to its source	:	Not available.

Exposure estimation and reference to its source - Workers: 2:

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

Section 4 - Guidance to DU to evaluate whether he works inside the boundaries set by the ES

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 (http://cefic.org/en/reach-for-industries-libraries.html). Maximum Risk Characterization Ratios for air emissions RCRair: 2.1E-02 Maximum Risk Characterization Ratios for waste water emissions RCRwater: 1.8E-02
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 carcinogenic effects. Available hazard data do not enable the derivation of a DNEL for aspiration effects. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk management measures are based on qualitative risk characterisation.

Annex to the extended Safety Data Sheet (eSDS)

Consumer

Identification of the substance or mixture

Product definition	:	Mixture
Product name	:	Gasoline 98 (E5)

Section 1 - Title

Short title of the exposure scenario	:	Use as a fuel; Consumer (EC: 289-220-8)
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.
Additional information	:	See section 3.

Section 2 - Exposure controls

Contributing scenario controlling environmental exposure for 1:

Product characteristics	:	Substance is complex UVCB. Predominantly hydrophobic
Amounts used	:	Fraction of EU tonnage used in region: 0.1 Regional use tonnage tonnes/year: 8.1E+06 Fraction of regional tonnage used locally: 5.0E-04 Annual site tonnage tonnes/year: 4.1E+03 Maximum daily site tonnage kg/day: 1.1E+04
Frequency and duration of use	:	Continuous release Emission days (days per year): 365
Environment factors not influenced by risk management	:	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
Other operational conditions of use affecting environmental exposure	:	Release fraction to air from wide dispersive use (regional only): 4.0E-03 Release fraction to wastewater from wide dispersive use: 2.0E-07 Release fraction to soil from wide dispersive use (regional only): 0.00005
Conditions and measures related to municipal sewage treatment plant	:	Not applicable as there is no release to wastewater. Estimated substance removal from wastewater via on-site sewage treatment (%): 96.1 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d): 4.6E+05 Assumed on-site sewage treatment plant flow (m^3/d): 2.0E+03
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. External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	This substance is consumed during use and no waste from the substance is generated.

Contributing scenario controlling consumer exposure for 2:

General measures (skin irritants): Ensure there is no direct skin contact with product. Wash off any skin contamination immediately.

General measures (flammability): For measures to control risks from physicochemical properties, refer to main body of the SDS, section 7 and/or 8.

General measures (aspiration): Do not ingest. If swallowed then seek immediate medical assistance.

Fuels Liquid: automotive refuelling (Gasoline) (PC 13) Concawe SCED 13 1 a:
Covers concentrations up to 100%
Benzene: Covers percentage substance in the product up to 1%.
For each use event, covers use amounts up to 37500.0 g/event
Exposure duration = 0.05 h/event
Outdoor use
Assumes that potential dermal contact is limited to inside hands / one hand / palm of hands.

Fuels; Liquid Recreational vehicles (Quad bikes or similar) (PC_13) Concawe SCED 13 7 a:
Covers concentrations up to 100%
Benzene: Covers percentage substance in the product up to 1%.
For each use event, covers use amounts up to 7500.0 g/event
Exposure duration = 0.017 h/event
Outdoor use
Assumes that potential dermal contact is limited to inside hands / one hand / palm of hands.

Fuels; Liquid; Garden equipment (PC_13) Concawe SCED 13 4 a:
Covers concentrations up to 100%
Benzene: Covers percentage in the substance up to <0.1%
61q:i9nc:8jw: Covers percentage in the substance up to <3%
Toluene: Covers percentage in the substance up to <3%
For each use event, covers use amounts up to 750.0 g/event
Exposure duration = 0.033 h/event
Assumes that potential dermal contact is limited to inside hands / one hand / palm of hands.

Physical state : Liquid

Frequency and duration of use/exposure : Covers use up to 1.0 events per day

Section 3 - Exposure estimation and reference to its source

Website: : Not applicable.

Exposure estimation and reference to its source - Environment: 1:

Exposure assessment (environment): : Hydrocarbon Block Method (Petrorisk)

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Consumers: 2:

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

Exposure estimation and reference to its source : Not available.

Section 4 - Guidance to DU to evaluate whether he works inside the boundaries set by the ES

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. Maximum Risk Characterization Ratios for air emissions RCRair: 2.1E-02 Maximum Risk Characterization Ratios for waste water emissions RCRwater: 1.8E-02
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. Available hazard data do not enable the derivation of a DNEL for carcinogenic effects. Available hazard data do not enable the derivation of a DNEL for aspiration effects. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk management measures are based on qualitative risk characterisation.