


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 : EH0-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

Netherlands : +31 10 713 8195
Europe : +44 (0) 1235 239 670
Global (English only) : +44 (0) 1865 407 333



National advisory body/Poison Center


Netherlands : Nationaal Vergiftigingen Informatie Centrum, Utrecht +31 (0)88 755 8000
(Only for the purpose of informing medical personnel in cases of acute intoxications.)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : 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.

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SECTION 2: Hazards identification

Ingredients of unknown ecotoxicity : None.

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

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

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SECTION 2: Hazards identification

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

Tactile warning of danger : Yes, applicable.

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] [2]
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-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]
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	<5	Flam. Liq. 2, H225 Skin Irrit. 2, H315	STOT RE 1, H372: C ≥ 5%	[1] [2]

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SECTION 3: Composition/information on ingredients

benzene (Constituent)	Index: 601-037-00-0 EC: 200-753-7 CAS: 71-43-2 Index: 601-020-00-8	<1	Repr. 2, H361f STOT SE 3, H336 STOT RE 1, H372 Asp. Tox. 1, H304 Aquatic Chronic 2, H411 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.

SECTION 4: First aid measures

- 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.
- 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, CO₂, water spray (fog) or foam.
- Unsuitable extinguishing media** : Do not use water jet.

5.2 Special hazards arising from the substance or mixture

SECTION 5: Firefighting measures

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

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.

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SECTION 7: Handling and storage

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

7.1 Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). 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 E2	10 tonnes 200 tonnes	50 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
Gasoline	Ministry of Social Affairs and Employment, Legal limit values (Netherlands, 5/2024) Carc B2. TWA 8 hours: 240 mg/m ³ . STEL 15 minutes: 480 mg/m ³ . STEL 15 minutes: 100 ppm. TWA 8 hours: 50 ppm.
tert-butyl methyl ether	Ministry of Social Affairs and Employment, Legal limit values (Netherlands, 5/2024)

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SECTION 8: Exposure controls/personal protection

ethanol	<p>STEL 15 minutes: 360 mg/m³. TWA 8 hours: 180 mg/m³. STEL 15 minutes: 98 ppm. TWA 8 hours: 49 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.</p> <p>Ministry of Social Affairs and Employment, Legal limit values (Netherlands, 5/2024) Carc B2. Absorbed through skin. TWA 8 hours: 260 mg/m³. STEL 15 minutes: 1900 mg/m³. STEL 15 minutes: 1000 ppm. TWA 8 hours: 137 ppm.</p>
toluene (Constituent)	<p>Ministry of Social Affairs and Employment, Legal limit values (Netherlands, 5/2024) TWA 8 hours: 150 mg/m³. STEL 15 minutes: 384 mg/m³. STEL 15 minutes: 100 ppm. TWA 8 hours: 39 ppm. 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.</p>
n-hexane (Constituent)	<p>Ministry of Social Affairs and Employment, Legal limit values (Netherlands, 5/2024) TWA 8 hours: 72 mg/m³. STEL 15 minutes: 144 mg/m³. STEL 15 minutes: 40 ppm. TWA 8 hours: 20 ppm. EU OEL (Europe, 1/2022) TWA 8 hours: 72 mg/m³. TWA 8 hours: 20 ppm.</p>
benzene (Constituent)	<p>Ministry of Social Affairs and Employment, Legal limit values (Netherlands, 5/2024) Carc B1. Absorbed through skin. TWA 8 hours: 0.7 mg/m³. TWA 8 hours: 0.2 ppm. EU OEL (Europe, 3/2024) Absorbed through skin. TWA 8 hours: 0.5 ppm. TWA 8 hours: 1.65 mg/m³.</p>
cumene (Constituent)	<p>Ministry of Social Affairs and Employment, Legal limit values (Netherlands, 5/2024) Absorbed through skin. TWA 8 hours: 50 mg/m³. STEL 15 minutes: 250 mg/m³. TWA 8 hours: 10 ppm. STEL 15 minutes: 50 ppm. 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.</p>

Biological exposure indices

No exposure indices known.

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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

Gasoline

Result

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

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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

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

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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

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

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	DNEL - General population - Short term - Inhalation 226 mg/m ³ <u>Effects:</u> Local
	DNEL - General population - Short term - Inhalation 226 mg/m ³ <u>Effects:</u> Systemic
	DNEL - Workers - Long term - Dermal 384 mg/kg bw/day <u>Effects:</u> Systemic
	DNEL - Workers - Short term - Inhalation 384 mg/m ³ <u>Effects:</u> Local
	DNEL - Workers - Short term - Inhalation 384 mg/m ³ <u>Effects:</u> Systemic
n-hexane (Constituent)	DNEL - General population - Long term - Oral 4 mg/kg bw/day <u>Effects:</u> Systemic
	DNEL - General population - Long term - Dermal 5.3 mg/kg bw/day <u>Effects:</u> Systemic
	DNEL - Workers - Long term - Dermal 11 mg/kg bw/day <u>Effects:</u> Systemic
	DNEL - General population - Long term - Inhalation 16 mg/m ³ <u>Effects:</u> Systemic
	DNEL - Workers - Long term - Inhalation 75 mg/m ³ <u>Effects:</u> Systemic
benzene (Constituent)	DNEL - General population - Long term - Inhalation 0.14 mg/m ³ <u>Effects:</u> Systemic
cumene (Constituent)	DNEL - General population - Long term - Dermal 1.2 mg/kg bw/day <u>Effects:</u> Systemic
	DNEL - Workers - Long term - Dermal 15.4 mg/kg bw/day <u>Effects:</u> Systemic
	DNEL - Workers - Long term - Inhalation 100 mg/m ³ <u>Effects:</u> Systemic
	DNEL - Workers - Short term - Inhalation 250 mg/m ³ <u>Effects:</u> Local
	DNEL - General population - Long term - Oral 5 mg/kg bw/day <u>Effects:</u> Systemic

SECTION 8: Exposure controls/personal protection

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

PNECs

Not available.

8.2 Exposure controls

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.

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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	: <input checked="" type="checkbox"/> Clear
Color	: <input checked="" type="checkbox"/> Colorless to light yellow
Odor	: <input checked="" type="checkbox"/> Characteristic
Odor threshold	: Not available.
Melting point/freezing point	: <input checked="" type="checkbox"/> -50°C (<-58°F)
Boiling point or initial boiling point and boiling range	: <input checked="" type="checkbox"/> 25 to 220°C (77 to 428°F) [ISO 3405]
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	: <input checked="" type="checkbox"/> Closed cup: <-40°C (<-40°F) [ASTM D56]
Auto-ignition temperature	: <input checked="" type="checkbox"/> 250°C (>482°F)
Decomposition temperature	: >250°C
pH	: <input checked="" type="checkbox"/> Not applicable.
Viscosity	: <input checked="" type="checkbox"/> Kinematic (40°C (104°F)): <1 mm ² /s (<1 cSt)
Solubility	:

Media	Result
<input checked="" type="checkbox"/> 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)]

Ingredient name	Vapor Pressure at 20°C			Vapor pressure at 50°C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
<input checked="" type="checkbox"/> Gasoline	263.16 to 751.88	35.1 to 100.2				

Density : 0.75 g/cm³ [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.

Gasoline 98 (E5)

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

Gasoline

Result

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

Gasoline 98 (E5)

SECTION 11: Toxicological information

composition (e.g., TP, bilirubin, cholesterol) Enzyme inhibition, induction, or change in blood or tissue levels - Phosphatases

toluene (Constituent)	<p>Rat - Inhalation - LC50 Vapor 124700 mg/m³ [4 hours]</p> <p>Rat - Oral - LD50 636 mg/kg</p> <p>Rat - Inhalation - LC50 Vapor 49 g/m³ [4 hours]</p>
n-hexane (Constituent)	<p>Rat - Oral - LD50 15840 mg/kg</p> <p>Rat - Inhalation - LC50 Gas. 48000 ppm [4 hours]</p>
benzene (Constituent)	<p>Rat - Oral - LD50 930 mg/kg <u>Toxic effects:</u> Behavioral - Tremor Behavioral - Convulsions or effect on seizure threshold</p>
cumene (Constituent)	<p>Rat - Oral - LD50 1400 mg/kg <u>Toxic effects:</u> Gastrointestinal - Gastritis</p> <p>Rat - Inhalation - LC50 Vapor 39000 mg/m³ [4 hours]</p>

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

Gasoline

Result

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

Gasoline 98 (E5)

SECTION 11: Toxicological information

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

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

Gasoline

Result

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

Gasoline 98 (E5)

SECTION 11: Toxicological information

	<p><u>Duration of treatment/exposure:</u> 24 hours <u>Amount/concentration applied:</u> 100 uL</p>
ethanol	<p>Rabbit - Eyes - Mild irritant <u>Duration of treatment/exposure:</u> 24 hours <u>Amount/concentration applied:</u> 500 mg</p> <p>Rabbit - Eyes - Moderate irritant <u>Duration of treatment/exposure:</u> 0.066666667 minutes <u>Amount/concentration applied:</u> 100 mg</p> <p>Rabbit - Eyes - Moderate irritant <u>Amount/concentration applied:</u> 100 uL</p> <p>Rabbit - Eyes - Severe irritant <u>Amount/concentration applied:</u> 500 mg</p> <p>Rabbit - Eyes - Mild irritant <u>Duration of treatment/exposure:</u> 1 hours <u>Amount/concentration applied:</u> 50 pph</p>
toluene (Constituent)	<p>Rabbit - Eyes - Mild irritant <u>Duration of treatment/exposure:</u> 0.5 minutes <u>Amount/concentration applied:</u> 100 mg</p> <p>Rabbit - Eyes - Mild irritant <u>Amount/concentration applied:</u> 870 ug</p> <p>Rabbit - Eyes - Severe irritant <u>Duration of treatment/exposure:</u> 24 hours <u>Amount/concentration applied:</u> 2 mg</p> <p>Rabbit - Eyes - Severe irritant <u>Amount/concentration applied:</u> 0.1 MI</p>
n-hexane (Constituent)	<p>Rabbit - Eyes - Mild irritant <u>Amount/concentration applied:</u> 10 mg</p>
benzene (Constituent)	<p>Rabbit - Eyes - Moderate irritant <u>Amount/concentration applied:</u> 88 mg</p> <p>Rabbit - Eyes - Severe irritant <u>Duration of treatment/exposure:</u> 24 hours <u>Amount/concentration applied:</u> 2 mg</p> <p>Rabbit - Eyes - Severe irritant <u>Amount/concentration applied:</u> 0.1 MI</p>
cumene (Constituent)	<p>Rabbit - Eyes - Mild irritant <u>Duration of treatment/exposure:</u> 24 hours <u>Amount/concentration applied:</u> 500 mg</p> <p>Rabbit - Eyes - Mild irritant <u>Amount/concentration applied:</u> 86 mg</p>

Conclusion/Summary [Product] : Not available.

Respiratory corrosion/irritation

Not available.

Conclusion/Summary [Product] : Not available.

Gasoline 98 (E5)

SECTION 11: Toxicological information

Respiratory or skin sensitization

Not available.

Skin

Conclusion/Summary [Product] : Not available.

Respiratory

Conclusion/Summary [Product] : Not available.

Germ cell mutagenicity

Product/ingredient name

Gasoline

Result

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]

Result: Negative

Conclusion/Summary [Product] : Not available.

Carcinogenicity

Product/ingredient name

Gasoline

Result

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

Gasoline

Result

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

Gasoline

2-ethoxy-2-methylpropane

2-methoxy-2-methylbutane

toluene (Constituent)

n-hexane (Constituent)

cumene (Constituent)

Result

STOT SE 3, H336 (Narcotic effects)

STOT SE 3, H336 (Narcotic effects)

STOT SE 3, H336 (Narcotic effects)

STOT SE 3, H336 (Narcotic effects)

STOT SE 3, H336 (Narcotic effects)

STOT SE 3, H335 (Respiratory tract irritation)

Specific target organ toxicity (repeated exposure)

Product/ingredient name

Result

Gasoline 98 (E5)

SECTION 11: Toxicological information

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.
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 98 (E5)

SECTION 11: Toxicological information

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

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

Gasoline

Result

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

Gasoline 98 (E5)

SECTION 12: Ecological information

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

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

Gasoline 98 (E5)

SECTION 12: Ecological information

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

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

Gasoline 98 (E5)

SECTION 12: Ecological information

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

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]

Gasoline 98 (E5)

SECTION 12: Ecological information

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]

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

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

Gasoline 98 (E5)

SECTION 13: Disposal considerations

- 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.

Gasoline 98 (E5)

SECTION 15: Regulatory information

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

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

Annex XIV - List of substances subject to authorization

Annex XIV

None of the components are listed.

Substances of very high concern

None of the components are listed.

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

Product/ingredient name	%	Designation [Usage]
<input checked="" type="checkbox"/> 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; 'whoopie' 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

Gasoline 98 (E5)

SECTION 15: Regulatory information

Category

P5a
E2

National regulations

Germany

Hazard class for water (WGK) : 3

Netherlands

Ministry of Social Affairs and Employment (SZW) - Carcinogenic substances and processes, mutagenic or reprotoxic substances

Ingredient name	Carcinogen	Mutagen	Reproductive toxicity - Fertility	Reproductive toxicity - Development	Harmful via breastfeeding
Gasoline	Listed	Listed	-	-	-
ethanol	Listed	-	Fertility 1A	Development 1A	Listed
tolueen	-	-	-	Development 2	-
n-hexaan	-	-	Fertility 2	-	-
benzeen	Listed	Listed	-	-	-
cumeen	Listed	-	-	-	-

Water Discharge Policy (ABM) : Z(1) Non biodegradable substances with hazardous properties for humans and the environment (carcinogenicity/ mutagenicity/ reprotoxicity/ bioacumulative potential/ toxicity or persistence). Decontamination effort: Z

Switzerland

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

International regulations

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.

Gasoline 98 (E5)

SECTION 15: Regulatory information

- 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
- 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 \[CLP/GHS\]](#)

Gasoline 98 (E5)

SECTION 16: Other information

Classification	Justification
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	On basis of test data Calculation method Calculation method Expert judgment Calculation method Calculation method Calculation method 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]

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.
Date of printing	: 30-01-2026
Date of issue/ Date of revision	: 30-01-2026
Date of previous issue	: 06-04-2020
Version	: 1.06
Prepared by	: Kuwait Petroleum Research & Technology B.V., The Netherlands
Notice to reader	

Gasoline 98 (E5)

SECTION 16: Other information

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

Gasoline 98 (E5)

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): $1.1\text{E}+05$ Assumed domestic sewage treatment plant flow (m^3/d): $2.0\text{E}+03$
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

Gasoline 98 (E5)

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.

Gasoline 98 (E5)

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)

Gasoline 98 (E5)

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.

Gasoline 98 (E5)

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.

Gasoline 98 (E5)

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

Gasoline 98 (E5)

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 RCR_{air}: 2.1E-02
Maximum Risk Characterization Ratios for waste water emissions RCR_{water}: 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.