MATERIAL SAFETY DATA SHEET
GASOLINE 95 E10, 98 E5, SULPHUR-FREE, SUMMER GRADE, WINTER GRADE

Date: 31.3.2015 **Former date:** 20.5.2013

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

1.1 Product identifier

Trade name	GASOLINE, SULPHUR-FREE, SUMMER GRADE, WINTER GRADE
Company product code	95E10, 98E5
REACH registration number	Mixture, see chapter 3.2.

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

The uses of the chemical	Distribution of Substance Use as a fuel See section 16 for PROC/SU/ERC-codes for identified uses.

1.3 Details of the supplier of the safety data sheet

Manufacturer, importer, other undertaking

	North European Oil Trade Oy
Street address	Urho Kekkosen katu 5C
Postcode and post office	FI-00100 Helsinki
Post-office box	P.O. Box 55
Postcode and post office	00088 S-RYHMÄ
Telephone number	+358 10 402 7001
E-mail address	tuotelaatu@neot.fi
Finnish Business ID (Y code)	1801056-5

1.4 Emergency telephone number

General emergency telephone number 112

Poison Information centre (in Finland), open 24 h daily
PL 340 (Haartmaninkatu 4)
00029 HUS
(09) 471977 or (09) 4711

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

1272/2008 (CLP)
Flam. Liq. 1, H224
Skin Irrit. 2, H315
STOT SE 3, H336
Asp. Tox. 1, H304
Carc. 1B, H350
Muta. 1B, H340
Repr. 2, H361fd
Aquatic Chronic 2, H411

67/548/ETY – 1999/45/EY (DSD/DPD)
F+, T, N: R12-38-45-46-62-63-65-67-51/53

2.2 Label elements

1272/2008 (CLP)

GHS02-GHS07-GHS08-GHS09

Signal word: **DANGER**

Contains: Gasoline; MTBE; ETBE; TAME; TAAE; Ethanol; Methanol; Renewable hydrocarbons (naphtha type fraction)

Hazard statements

H224	Extremely flammable liquid and vapour.
H315	Skin irritant.
H336	May cause drowsiness or dizziness.
H304	May be fatal if swallowed and enters airways.
H350	May cause cancer.
H340	May cause genetic defects.
H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child.
H411	Toxic to aquatic life with long lasting effects.

Precautionary statements

P210	Keep away from heat/sparks/open flames/hot surfaces – No smoking.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310	IF SWALLOWED: Immediately call a POISON CENTRE of doctor/physician
P331	Do NOT induce vomiting.
P403+P233	Stored in a well-ventilated place. Keep container tightly closed.
P273	Avoid release to the environment.

2.3 Other hazards

Highly volatile. Vapours are heavier than air and may form explosive mixtures with air. May irritate eyes. Risk of soil and groundwater contamination.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Hazardous ingredients

Name of the ingredient	CAS-number	EC-number	REACH-registration number	Concentration	Classification
Gasoline	86290-81-5	289-220-8	01-2119471335-39	≥ 78 til-%	CLP: Flam. Liq. 1, H224; Asp. Tox. 1, H304; Skin Irrit. 2, H315; STOT SE 3, H336; Muta. 1B, H340; Carc. 1B, H350; Repr.2, H361fd, Aquatic Chronic 2, H411 DSD/DPD: F+, T, N: R12-38-45-46-62-63-65-67-51/53

Methyl Tert-Butyl Ether (MTBE)	1634-04-4	216-653-1	01-2119452786-27	≤ 22 til-%	CLP: Flam. Liq. 2, H225; Skin Irrit. 2, H315 DSD/DPD: F, Xi: R11-38
Ethyl Tert-Butyl Ether (ETBE)	637-92-3	211-309-7	01-2119452785-29	≤ 22 til-%	CLP: Flam. Liq. 2, H225; STOT SE 3, H336 DSD/DPD: F: R11-67
tert-Amyl Methyl Ether (TAME)	994-05-8	213-611-4	01-2119453236-41	≤ 22 til-%	CLP: Flam. Liq. 2, H225; Acute Tox. 4, H302; STOT SE 3, H336 DSD/DPD: F, Xn: R11-22-67
tert-Amyl Ethyl Ether (TAEE)	919-94-8	-	01-2119489926-16	< 10 til-%	CLP: Flam. Liq. 2, H225; Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H336 DSD/DPD: F, Xi: R11-36/38-67
Ethanol	64-17-5	200-578-6	01-2119457610-43	≤ 10 til-%	CLP: Flam. Liq. 2, H225 DSD/DPD: F: R11
Methanol	67-56-1	200-659-6	01-2119433307-44	< 3 til-%	CLP: Flam. Liq. 2, H225; Acute Tox. 3, H301; Acute Tox. 3, H311; Acute Tox. 3, H331; STOT SE 1, H370 DSD/DPD: F, T: R11-23/24/25-39/23/24/25
Renewable hydrocarbons (naphtha type fraction)	-	700-918-8	01-2120052681-60	< 5 til-%	CLP: Flam. Liquid 2 H225; Skin Irrit. 2 H315; Asp. Tox. 1 H304; Repr. 2 H361; Muta. 1B H340; Carc. 1B H350; STOT Single Exp. 3 H336 Aquatic Chronic 2 H411 DSD: F; R11; Xn; R65, R67; Xi; R38, Carc. Cat. 2; R45, Muta. Cat. 2; R46, Repr. Cat. 3; R62-R63, N; R51/53
Gasoline-compound (CAS 86890-81-5) consists:					
Benzene	71-43-2	200-753-7		≤ 1 til-%	CLP: Flam. Liq. 2, H225; Carc. 1A, H350; Muta. 1B, H340; STOT RE 1, H372; Asp. Tox.1, H304; Eye Irrit. 2, H319; Skin Irrit. 2, H315 DSD/DPD: T, F: R11-36/38-48/23/24/25-45-46-65

Toluene	108-88-3	203-625-9		5-15 til-%	CLP: Flam. Liq. 2, H225; Repr. 2, H361d; Asp. Tox. 1, H304; STOT RE 2, H373; STOT SE 3, H336; Skin Irrit. 2, H315 DSD/DPD: F, Xn: R11-38-48/20-63-65-67
n-Hexane	110-54-3	203-777-6		< 5 til-%	CLP: Flam. Liq. 2, H225; Repr. 2, H361f; Asp. Tox. 1, H304; STOT RE 2, H373; STOT SE 3, H336; Skin Irrit. 2, H315; Aquatic Chronic 2, H411 DSD/DPD: F, Xn, N: R11-38-48/20-62-65-67-51/53

3.3 Other information

Mixture of petroleum products, oxygenates, renewable hydrocarbons (naphtha type fraction) and additives.

Aromatic hydrocarbons ≤ 35 vol-%.
95 E10 grade gasoline: ethanol ≤ 10 vol-%, total ethers ≤ 22 vol-%.
98 E5 grade gasoline: ethanol ≤ 5 vol-%, total ethers ≤ 15 vol-%.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation
In case of product inhalation, remove the patient to fresh air and obtain medical attention.
Skin contact
Remove contaminated clothing. In case of skin contact, rinse immediately with plenty of water for several minutes, followed by washing of the affected areas with soap and water. If redness, swelling, pain and/or other skin reactions occur, consult a physician.
Eye contact
Rinse immediately with plenty of water for at least 15 minutes, also under the eyelids. If prolonged irritation, blurred vision or other symptoms occur, consult an eye specialist.
Ingestion
DO NOT INDUCE VOMITING: seek medical advice immediately. If spontaneous vomiting occurs, help to keep the victim's head down so that aspiration into the lungs will not occur (danger of chemical pneumonitis). If any of the following symptoms should occur within the next six hours, immediately seek medical advice: fever (> 37 °C), breathing difficulties, dyspnoea, continued coughing or wheezing. Do not give the patient anything to eat.

4.2 Most important symptoms and effects, both acute and delayed

Harmful by inhalation. Aspiration into the lungs may cause fatal chemical pneumonitis. If the product has found its way to the lungs, the following symptoms are possible: coughing, asphyxia, wheezing, breathing difficulties, dyspnoea, shortness of breath, and/or fever. Respiratory symptoms may occur immediately or several hours after exposure.

4.3 Indication of any immediate medical attention and special treatment needed

Symptomatic treatment.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing agents
Dry chemical or foam. Sand or earth are suitable in small fires. Heavy foam and water mist only for professional firefighters.

Unsuitable extinguishing agents
Do not use high pressure water jets for fire extinction.

5.2 Special hazards arising from the substance or mixture

Flammable liquid and vapour. Explosion risk due to pressure increase if product containers or tanks are subjected to fire.

Toxic or harmful gases may be formed (complex mixtures of airborne particles, gases (smoke), carbon monoxide, oxides of sulfur, organic and inorganic compounds). Carbon dioxide may be formed by incomplete burning. The product floats in water and may ignite there.

5.3 Advice for firefighters

Cool product containers and tanks near the fire with water spray from a sufficiently safe distance. Prevent entry of extinguishing media into waterways.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Evacuate people upwind from the spill area. Keep unnecessary and unprotected personnel from entering. Remove all ignition sources. Stop the leak if it can be done safely. Ensure effective ventilation at the leak site. The fumes are heavier than air, and may spread along ground.
Avoid contact with skin and breathing of oil mist. Use appropriate personal protection. Take precautionary measures (e.g. earthing) against static discharges.

6.2 Environmental precautions

Prevent spill from spreading and entry into sewers, soil and waterways. If the product contaminates soil, watercourses or drainage systems, inform the local authorities.

6.3 Methods and material for containment and cleaning up

Immediately start clean-up of the liquid and contaminated soil. Small volumes can be absorbed with inert materials (e.g. sand, diatomaceous earth, commercial absorbent) and collected in suitable labeled containers to be disposed of in accordance with local regulations. Large volumes should be pumped into containers. Pay attention to the fire and health hazards caused by the product. Ensure adequate ventilation.
If possible, contain the large leaks in open waters with barriers. The use of dispersants should be advised by an expert, and, if required, approved by local authorities.

6.4 Reference to other sections

Safe handling: see point 7.
Personal protection equipment: see point 8.
Disposal: see point 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Keep away from all sources of heat or ignition. Take precautionary measures (e.g. earthing) against static discharges. Concentrations in air must be kept below any lower explosive limits.
Ensure adequate ventilation (use process enclosures or local exhaust ventilation if necessary). Avoid evaporation of the product during handling and transfers. Avoid inhalation of vapours and contact with skin, eyes or clothing. Wear appropriate personal protective equipment. Wash hands after handling the product. Do not eat, drink or smoke during handling.

During tank operations follow special instructions (risk of oxygen displacement, ethers and hydrocarbons).

7.2 Conditions for safe storage, including any incompatibilities

Store in containers and areas suitable for the storage of combustible liquids. Store in tightly sealed, appropriately labeled containers which are impermeable to the product. Store away from all sources of heat or ignition and food and drink. Suitable containers: steel, stainless steel. For incompatible materials see point 10.5. Use appropriate containment to prevent environmental contamination.

7.3 Specific end use(s)

None reported.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

National occupational exposure limit values

Gasoline (solvent), group 3	100 mg/m^3 (8 h), HTP 2014/FIN
Benzene	1 ppm (8 h), 3,25 mg/m^3 (8 h) 48 mg/m^3 (15 min) Note: skin (can absorb through skin), binding limit value, Vna 716/2000/FIN
n-Hexane	20 ppm (8 h), 72 mg/m^3 (8 h) Note: skin (can absorb through skin) HTP 2014/FIN
Methyl-tert-butyl ether	50 ppm (8 h) 100 ppm (15 min) HTP 2014/FIN
Ethyl-tert-butyl ether	5 ppm (8 h), 25 mg/m^3 (8 h) HTP 2014/FIN
Tert-amyl-methyl ether	20 ppm (8 h), 84 mg/m^3 (8 h) HTP 2014/FIN
Toluene	25 ppm (8 h), 81 mg/m^3 (8 h) 100 ppm (15 min), 380 mg/m^3 (15 min) Note: skin (can absorb through skin) HTP 2014/FIN
Ethanol	1000 ppm (8 h), 1900 mg/m^3 (8 h) 1300 ppm (15 min), 2500 mg/m^3 (15 min) HTP 2014/FIN
Methanol	200 ppm (8 h), 270 mg/m^3 (8 h) 250 ppm (15 min), 330 mg/m^3 (15 min) Note: skin (can absorb through skin) HTP 2014/FIN
Renewable hydrocarbons (naphtha type fraction)	Occupational exposure limits according to the critical components in the renewable naphtha (benzene, n-hexane and toluene).

Other limit values
Biological toluene limit: blood toluene concentration 500 nmol/l (BIOL 2011/FIN).

Individual limit values can be applied for hydrocarbons.
*Occupational exposure monitoring method: SFS-EN 689, NIOSH Method 5026

DNEL
Workers:
Gasoline, Inhalation: 1300 mg/m^3 /15 min (Acute, systematic effects)
Gasoline, Inhalation: 1100 mg/m^3 /15 min (Acute, local effects)
Gasoline, Inhalation: 840 mg/m^3 /8 h (Long term exposure, local effects)

Renewable hydrocarbons (naphtha type fraction), Inhalation: 51.5 mg/m^3 and skin: 5.7 mg/m^3 (Long term exposure, systematic effects)

General population exposed via the environment:
Gasoline, Inhalation: 1200 mg/m^3 /15 min (Acute, systematic effects)
Gasoline, Inhalation: 640 mg/m^3 /15 min (Acute, local effects)
Gasoline, Inhalation: 180 mg/m^3 /24 h (Long term exposure, local effects)

Renewable hydrocarbons (naphtha type fraction), Inhalation: 12.9 mg/m^3 and skin: 2.9 mg/kg/d (Long term exposure, systematic effects)

PNEC
Renewable hydrocarbons (naphtha type fraction):
PNEC (freshwater and marine water): The overall range (all representative components of the substance) for the PNEC(aqueous) values estimated with the PETRORISK tool are from 0.88 µg/L to 2100 µg/L.
PNEC (sediment freshwater and marine water): The overall range (all representative components of the substance) for the PNEC(sediment) values estimated with the PETRORISK tool are from 0.33 mg/kg ww to 6.7 mg/kg ww.
PNEC (sewage treatment plant): The overall range (all representative components of the substance) for the PNEC(wastewater) values estimated with the PETRORISK tool are from 13 µg/L to 34 000 µg/L.
PNEC (soil): The overall range (all representative components of the substance) for the PNEC(soil) values estimated with the PETRORISK tool are from 0.13 mg/kg ww to 2.7 mg/kg ww.

8.2 Exposure controls

Appropriate engineering controls

Handle the product in closed systems. Provide sufficient ventilation. Use process enclosures or local exhaust ventilation and personal protection if necessary.

Eye/face protection

Use tight-fitting safety goggles if splashing may occur or aerosol is formed. Use a face shield if necessary.

Skin protection

Wear appropriate antistatic protective clothing to prevent skin contact. If splashes may occur, wear chemical resistant gloves, shoes and apron.

Hand protection

Wear appropriate chemical-resistant, impervious protective gloves, e.g. of nitrile rubber, neoprene, PVA. Protection index: 6 (breakthrough time > 480 min, EN374). Change protective gloves regularly. Note: PVA gloves do not withstand water and are not suitable for use in case of emergency.

Respiratory protection

Filter device/Half mask/combined organic gas and vapour and particle filter (type A2-P3). The use of filter devices should be limited to max. 2 hrs per day. Filter devices must not be used when oxygen levels are low (< 17 vol.-%). The filter has a limited lifetime and must be changed sufficiently often. If significant amounts of mist or vapour form, use supplied-air respirator. Use respiratory protection according to EN140 and EN141.

Environmental exposure controls

Prevent entry into sewers or the environment. Precautions must be taken against leakages by constructing collecting pools and sewerage systems as well as by surfacing the loading and unloading stations.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Clear or slightly yellowish, bright liquid
Odour	Typical odour of hydrocarbons and ethers
Odour threshold	Unknown.
pH	Unknown.
Melting point/freezing point	< -20 ^{0}C
Initial boiling point and boiling range	20 - 220 ^{0}C (EN ISO 3405)
Flash point	< 0 ^{0}C (EN ISO 2719)
Evaporation rate	Unknown.
Flammability (solid, gas)	Unknown.
Upper/lower flammability or explosive limits	1 – 8,1 vol-% (estimated)
Vapour pressure	35 – 100 kPa (38 ^{0}C, estimated)
Vapour density	> 3
Relative density	0,7 – 0,79 mg/m^3 (water = 1) (EN ISO 12185)
Solubility(ies)	Soluble in organic solvents. Slightly soluble in water MTBE: 41,9 g/l ETBE: 16,4 g/l TAME: 10,4 g/l

	TAEE: 3,9 g/l Ethanol: fully soluble Methanol: fully soluble Renewable hydrocarbons (naphtha type fraction): slightly soluble
Partition coefficient: n-octanol/water	Gasoline hydrocarbons: log Kow > 3 MTBE: log Kow = 1,06 ETBE: log Kow = 1,48 TAME: log Kow = 1,55 TAEE: log Kow = 2.95 – 3,35 Ethanol: log Kow = 0,35 Methanol: log Kow = -0,77 Renewable hydrocarbons (naphtha type fraction): log Kow = 4,7
Auto-ignition temperature	> 280 ^{0}C
Decomposition temperature	Unknown.
Viscosity	< 1 mm^2/s (38 ^{0}C) (DIN EN ISO 3104)
Explosive properties	Not classified as explosive.
Oxidising properties	Not classified as oxidising.

9.1 Other information

None reported.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

Not reactive under normal use and storage conditions.

10.2 Chemical stability

Chemically stable under normal storage conditions.

10.3 Possibility of hazardous reactions

Explosive gas/air mixtures may form even at room temperature.

10.4 Conditions to avoid

Keep away from heat and ignition sources.

10.5 Incompatible materials

Oxidising agents.

10.6 Hazardous decomposition products

None known.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

The product has not been classified as acutely toxic. The product contains harmful and toxic ingredients.

Gasoline:
LD50, oral, rat > 5000 mg/kg (OECD 401)
LC50, inhalation, rat > 5610 mg/m^3 (OECD 403)
LD50, dermal, rabbit > 2000 mg/kg (OECD 402)

TAME:
LD50, oral, rat 1602-2417 mg/kg (OECD 401)
LC50, inhalation, rat (4 h) > 5400 mg/m^3 (OECD 403)
LD50, dermal, rabbit > 2000 mg/kg (OECD 402)

MTBE:
LD50, oral, rat > 2000 mg/kg
LC50, inhalation, rat (4 h) > 5000 mg/m^3
LD50, dermal, rabbit > 2000 mg/kg

TAEE:
LD50, oral > 2000 mg/kg

ETBE:
LD50, oral > 2000 mg/kg

Ethanol:
LD50, oral, rat > 2000 mg/kg
LC50, inhalation, rat > 5000 mg/m^3

Methanol:
LD50, oral, rat 1187-2769 mg/kg
LC50, inhalation, rat (4 h) 128 000 mg/m^3
LD50, dermal, rabbit app. 17100 mg/kg

Renewable hydrocarbons (naphtha type fraction):
LD50, oral, rat > 2000 mg/kg/d (OECD 420)
LC50, inhalation, rat (8 h) 23 400 mg/m^3
LD50, dermal, rabbit 2920 mg/kg/d

Skin corrosion/irritation

Irritates skin. Prolonged or repeated contact may cause dryness or irritation of the skin.

Serious eye damage/irritation

The product is not classified as irritant or damaging to eyes. However, splashes and mist may irritate eyes.

Respiratory or skin sensitisation

The product is not classified as a respiratory or skin sensitiser.

Germ cell mutagenicity, Carcinogenicity

Gasoline: The product may cause cancer. Gasoline contains benzene, which may cause cancer and damage fertility. Gasoline contains n-Hexane, which may damage fertility and suspected of damaging the unborn child. Gasoline contains toluene, which may damage the unborn child and cause genetic defects.

Renewable hydrocarbons (naphtha type fraction):
The substance was non-mutagenic in bacterial reverse mutagenicity test (OECD 471). Although this single study does not support the classification for mutagenicity, this substance is regarded as germ cell mutagen based on the benzene content in the substance. The substance is considered carcinogenic based on the benzene content.

STOT-single exposure

The product is classified as toxic to specific target organs in case of single exposure. Exposure to high concentrations by inhalation may cause headache, dizziness and nausea; prolonged exposure may result in unconsciousness and/or death.

STOT-repeated exposure

The product is not classified as toxic to specific target organs in case of repeated exposure. No known effects.

Aspiration hazard

The product may be fatal if swallowed and enters airways.

Other information

Ingestion may cause irritation of the gastrointestinal tract.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Toxic to aquatic life with long lasting effects.

The product mixture has not been tested. The product has been classified as hazardous to the environment based on its ingredients.

Gasoline hydrocarbons:
LL50 fish: 8,2 mg/l (96 h)
EL50 shellfish: 4,5 mg/l (48 h)
NOELR shellfish: 0,5 mg/l (48 h)
NOELR shellfish: 2,6 mg/l (21 d)
EL50 algae: 3,7 mg/l (96 h)
NOELR algae: 0,5 mg/l (72 h)

MTBE:
LC50 fish: 574 mg/l (96 h)
NOEC fish: 299 mg/l (31 d)
LC50 shellfish: 44 mg/l (96 h)
NOEC shellfish: 26 mg/l (28 d)
LOEC shellfish: 50 mg/l (28 d)
LC50 algae: 491 mg/l (96 h)
IC20 algae: 105 mg/l (96 h)

ETBE:
LC50 fish: 574 mg/l (96 h)
NOEC fish: 299 mg/l (31 d)
EC50 shellfish: 37 mg/l (96 h)
NOEC shellfish: 3,4 mg/l (28 d)
EC50 algae: 1100 mg/l (72 h)
NOEC algae: 7,5 mg/l (72 h)

TAME:
LC50 fish: 574 mg/l (96 h)
IC20 fish: 279 mg/l (31 d)
IC25 fish: 308 mg/l (31 d)
LC50 shellfish: 14 mg/l (96 h)
NOEC shellfish: 3,4 mg/l (28 d)
EC50 algae: 230 mg/l (72 h)
NOEC algae: 77 mg/l (72 h)

TAEE:
LC50 fish: 240 mg/l (96 h)
IC20 fish: 279 mg/l (31 d)
IC25 fish: 308 mg/l (31 d)
EC50 shellfish: 143 mg/l (48 h)
NOEC shellfish: 22 mg/l (21 d)
EC50 algae: 160 mg/l (72 h)
NOEC algae: 36 mg/l (72 h)

Ethanol:
LC50 fish: 14,2 mg/l (96 h)
LC50 shellfish: 5012 mg/l (48 h)
NOEC shellfish: 2 mg/l (10 d)
EC50 algae: 275 mg/l (3 d)
EC10 algae: 11,5 mg/l (3 d)

Methanol:
LC50 fish: 15400 mg/l (96 h)
EC50 shellfish: > 10 000 mg/l (48 h)
EC50 algae: app. 22 000 mg/l (96 h)

Renewable hydrocarbons (naphtha type fraction):
LL50 fish: 10 mg/l (96 h) (OECD 203)
EL50 daphnia: 7.6 mg/l (48 h) (OECD 202)
EL50 algae: > 100 mg/l (72 h)

Toxicity to micro-organisms
MTBE:
EC10: 710 mg/L (18 h)

Micro-organisms (sludge):
Gasoline:
EC50: 15.4 mg/L (40 h)

ETBE, TAME:
EC50: 510mg/L (16 h), NOEC: 78 mg/L (16 h)

TAEE:
EC10: > 483 mg/L (16 h)

Methanol:
IC50: > 1000 mg/L (3 h)

Renewable hydrocarbons (naphtha type fraction):
EL10: 34.78 mg/l (3 h)

12.2 Persistence and degradability

Biodegradability and chemical degradability

Gasoline hydrocarbons are biodegradable. MTBE, ETBE, TAEE and TAME are very slowly biodegradable. Ethanol and methanol degrades quickly. Gasoline, MTBE, ETBE, TAEE and TAME do not hydrolyse in water. Volatile compounds undergo atmospheric degradation. Volatile compounds are degradable by atmospheric chemistry.

Renewable hydrocarbons (naphtha type fraction): Biodegradation- % 8.05 after 28 days and 42 days. (OECD 301F Ready Biodegradability Manometric Respirometry test). Persistent (OECD 301F) as it contains both non-biodegradable hydrocarbons and readily biodegradable hydrocarbons. Hydrolytically stable.

Under anaerobic conditions, the degradation is very slow. Evaporation is the quickest and most significant degradation process in surface water, sediment and soil.

12.3 Bioaccumulative potential

Gasoline hydrocarbons may be bioaccumulative (log K_{ow} > 3). TAEE may be bioaccumulative (log K_{ow} = 2.95-3.35). MTBE is not bioaccumulative (BCF = 1.5 – fish). ETBE, TAME, ethanol and methanol are not bioaccumulative (log Kow = -0.77 – 1.55).

Renewable hydrocarbons (naphtha type fraction): The range of log Kow values and BCF-factors indicate that there might be constituents present in the substance having potential for bioaccumulation. However, there is evidence that the majority of organic chemicals with log Pow values of > ca. 7 would show low tendency to bioaccumulate.

12.4 Mobility in soil

The product readily evaporates from soil and water surfaces. Some of the components are partly water-soluble and readily evaporate from water solution (MTBE, ETBE, TAEE, ethanol, TAME, benzene and toluene). The product may leach into soil and pollute groundwater. Large-molecule petrol hydrocarbons may absorb into soil or sediment organic matter (log Kow > 3). Under anaerobic conditions, the degradation is very slow.

Renewable hydrocarbons (naphtha type fraction): Based on low water solubility and relatively high volatility and absorption potential to organic matter the migration to groundwater is expected to be low. According to the PETRORISK modelling results, major part of the emissions of the substance are distributed to air (ca. 97.6 %). Fractions distributed to other environmental compartments is expected to be low; water (1.7 %), sediment (0.45 %), soil (0.25 %).

12.5 Results of PBT and vPvB assessment

The product does not contain components considered persistent, bioaccumulative or toxic (PBT).
The product does not contain components considered very persistent or very bioaccumulative (vPvB).

12.6 Other adverse effects

The product forms a film on the water surface, which can affect the oxygen balance and damage the organisms.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Hazardous waste. Dispose of in accordance with local and national regulation.

13.2 Waste from residues/unused products

Empty containers may contain flammable remnants of product. Dispose of empty containers for recovery, recycling or waste.

SECTION 14: TRANSPORT INFORMATION

14.1 UN-number

1203

14.2 UN proper shipping name

GASOLINE

14.3 Transport hazard class(es)

3

14.4 Packing group

II

14.5 Environmental hazards

Marine pollutant

14.6 Special precautions for user

Keep away from sources of heat or ignition. Avoid contact with skin or eyes and inhalation of vapours.

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not applicable.

SECTION 15: REGULATORY INFORMATION

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

MSDS compiled according to Regulations (EC) No 1907/2006 REACH and amendment (EU) No 453/2010.

15.2 Chemical safety assessment

Chemical safety assessment has been performed for the ingredients.

SECTION 16: OTHER INFORMATION

16.1 Changes to the previous version

Section 1 Identification of the substance/mixture and the company undertaking
Section 2. Hazards identification
Section 3 Composition, information on ingredients
Section 4. First aid measures
Section 5. Firefighting measures
Section 6. Accidental release measures
Section 7. Handling and storage
Section 8. Exposure controls/Personal protection
Section 9. Physical and chemical properties
Section 10 Stability and reactivity
Section 11 Toxicological information
Section 12 Ecological information
Section 13 Disposal considerations
Section 14 Transport information
Section 15 Regulatory information
Section 16 Other information

Updates in identification of the product, company information, classification and labelling and guidance on safe use.

16.2 Glossary of abbreviations

CLP: REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006
DSD: Directive 67/548/EEC - classification, packaging and labelling of dangerous substances
DPD: Directive 1999/45/EC - classification, packaging and labelling of dangerous preparations
OEL (HTP): Occupational exposure
DNEL: Derived no-effect level.
DMEL: Derived minimum effect level.
EL50: Effective level 50 % (median effective level): loading rate of the substance which kills or immobilizes 50 % of exposed organisms
IL50: Inhibitory level 50 % (median inhibitory level): loading rate of the substance which inhibits a biological function by 50 %
LD50: Lethal dose 50 % (median lethal dose): dose of the substance which kills 50 % of exposed organisms
LL50: Lethal level 50 % (median lethal level): loading rate of the substance which kills 50 % of the exposed organisms
NOEC: No Observable Effect Concentration.
NOELR: No Observable Effect Loading Rate.
IC20: Inhibitory level: concentration at which a monitored function is inhibited in 20 % of exposed organisms.
IC25: Inhibitory level: concentration at which a monitored function is inhibited in 25 % of exposed organisms.

16.3 References

Finnish-language MSDS for the product (31 March 2015)

16.5 List of relevant R and H phrases

H224	Extremely flammable liquid and vapour.
H225	Highly flammable liquid and vapour.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H315	Skin irritant.
H319	Causes serious eye irritation.
H336	May cause drowsiness or dizziness.
H340	May cause genetic defects.
H350	May cause cancer.
H361f	Suspected of damaging fertility.
H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.
H411	Toxic to aquatic life with long lasting effects.

R11	Highly flammable.
R12	Extremely flammable.
R22	Harmful if swallowed.
R38	Irritating to skin.
R45	May cause cancer.
R62	Possible risk of impaired fertility.
R63	Possible risk of harm to the unborn child.
R65	Harmful: may cause lung damage if swallowed.
R67	Vapours may cause drowsiness and dizziness.
R23/24/25	Toxic by inhalation, in contact with skin and if swallowed.
R36/38	Irritating to eyes and skin.

R39/23/24/25	Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.
R48/20	Harmful: danger of serious damage to health by prolonged exposure through inhalation.
R51/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

16.7 Restrictions on use

Identified uses, gasoline:

Distribution of the substance (SU3; PROC: 1, 2, 3, 8a, 8b, 15; ERC: 1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7)

Use as a fuel

Industrial (SU 3; PROC: 1, 2, 3, 8a, 8b, 16; ERC: 7)

Professional (SU 22; PROC: 1, 2, 3, 8a, 8b, 16; ERC: 9a, 9b)

Consumers (SU 21; PC 13; ERC: 9a, 9b)

MOTOR FUEL USE ONLY. NO CLEANING AND SOLVENT USE. DO NOT TRY TO SUCK GASOLINE USING YOUR MOUTH.

16.8 Further information

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LIITE LAAJENNETTUUN KÄYTTÖTURVALLISUUSTIEDOTTEESEEN
Annex to extended Material Safety Data Sheet

Altistumisskenaariot 1 – 4
Exposure scenarios 1 – 4

AS1: Distribution of Substance - Industrial

1. Title

Use of descriptor	Sector(s) of Use: Industrial (SU3).
	Process Categories: PROC 1, PROC 2, PROC 3, PROC 8a, PROC 8b, PROC 15
	Environmental Release Categories (ERC): 1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7 Specific Environmental Release Category: ESVOC SpERC 1.1b.v1
Processes, Tasks and Activities Covered	Bulk loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading, maintenance and associated laboratory activities.

2. Operational conditions and risk management measures

2.1. Control of worker exposure

Product characteristics
Physical form of product: Liquid **Vapour pressure (kPa):** Liquid, vapour pressure > 10 kPa at STP [OC5].
Concentration of substance in product
Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently) [G2].
Other operational conditions affecting worker exposure
Assumes use at not more than 20 °C above ambient temperature, unless stated differently [G15]. Assumes a good basic standard of occupational hygiene is implemented [G1].
Specific Risk Management Measures and Operational Conditions
General measures (skin irritants) [G19]
Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop [E3].
General measures (carcinogens) [G18]
Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general / local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean /

flush equipment, where possible, prior to maintenance. Where there is potential for exposure: Restrict access to authorised staff; provide specific activity training to operators to minimise exposures; wear suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. [G20].
General exposures (closed systems) [CS15] + With sample collection [CS56]
Handle substance within a closed system [E47]. Sample via a closed loop or other system intended to avoid exposure. [E8]. Wear suitable gloves tested to EN374. [PPE15].
General exposures (open systems) [CS15] Outdoor [OC9]
Handle substance within a closed system [E47].
Process sampling [CS2]
Sample via a closed loop or other system to avoid exposure.[E8].
Laboratory activities [CS36]
Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. [E12].
Bulk closed loading and unloading [CS501]
Ensure material transfers are under containment or extract ventilation. [E66].
Equipment cleaning and maintenance [CS39]
Drain down and flush system prior to equipment break-in or maintenance. [E55]. Retain drain downs in sealed storage pending disposal or for subsequent recycle. [ENVT4]. Clear spills immediately. [C&H13]. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. [PPE16].
Storage [CS67]
Ensure operation is undertaken outdoors. [E69]. Store substance within a closed system. [E84].

2.2. Control of environmental exposure

Product characteristics
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].
Amounts used
Fraction of EU tonnage used in region: 0.1
Regional tonnage: 18.7 kilotonnes per year
Fraction of Regional tonnage used locally: 0.002
Annual site tonnage: 37.5 kilotonnes per year
Maximum daily site tonnage: 120 tonnes per day
Frequency and duration of use
Continuous release [FD2].
Emission days per year: 300
Environmental factors not influenced by risk management
Local freshwater dilution fraction: 10
Local marine dilution fraction: 100
Other Operational Conditions of use affecting environmental exposure

Release fraction to air from process (initial release prior to RMM): 0.001 Release fraction to wastewater from process (initial release prior to RMM): 0.00001 Release fraction to soil from process (initial release prior to RMM): 0.00001
Technical condition and measures at process level (source) to prevent release
TCS 1: Common practices vary across sites thus conservative process release estimates used.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
TCR1j: Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation). TCR9: If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.Treat air emission to provide a typical removal efficiency of 90 %. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ 12 % If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ 0 %
Organizational measures to prevent / limit release from site
Do not apply industrial sludge to natural soils. [OMS2]. Sludge should be incinerated, contained or reclaimed. [OMS3].
Conditions and measures related to municipal sewage treatment plant
Estimated substance removal from wastewater via domestic sewage treatment 95.5 %.
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs 95.5 %.
Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal 1.1 kilotonnes per day.
Assumed domestic sewage treatment plant flow 2000 m^3/day.
Conditions and measures related to external treatment of waste for disposal
ETW3: External treatment and disposal of waste should comply with applicable regulations.
Conditions and measures related to external recovery of waste
ERW1: External recovery and recycling of waste should comply with applicable regulations.

3. Exposure estimation

3.1 Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21].

3.2 Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with Petrorisk model [EE2] .

4. Guidence to check compliance with the exposure scenario

4.1 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 [G22].

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels [G23].

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects [G32]. Available hazard data do not enable the derivation of a DNEL for carcinogenic effects. [G33]. Available hazard data do not support the need for a DNEL to be established for other health effects. [G36]. Risk Management Measures are based on qualitative risk characterisation. [G37].

4.2 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 [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC.
Factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

AS2: Use as a Fuel - Industrial

1. Title

Use of descriptor	Sector(s) of Use: Industrial (SU3)
	Process Categories: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16
	Environmental Release Categories (ERC): 7 Specific Environmental Release Category: ESVOC SpERC 7.12a.v1
Processes, Tasks and Activities Covered	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.

2. Operational conditions and risk management measures

2.1. Control of worker exposure

Product characteristics
Physical form of product: Liquid **Vapour pressure (kPa):** Liquid, vapour pressure > 10 kPa at STP [OC5].
Concentration of substance in product
Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently) [G2].
Other operational conditions affecting worker exposure
Assumes use at not more than 20 °C above ambient temperature, unless stated differently [G15]. Assumes a good basic standard of occupational hygiene is implemented [G1].
Specific Risk Management Measures and Operational Conditions
General measures (skin irritants) [G19]
Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop [E3].
General measures (carcinogens) [G18]
Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general / local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean / flush equipment, where possible, prior to maintenance. Where there is potential for exposure: Restrict access to authorised staff; provide specific activity training to operators to minimise exposures; wear suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely.

Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. [G20].
Bulk closed unloading [CS502]
Ensure material transfers are under containment or extract ventilation. [E66].
Drum/batch transfers [CS8]
Ensure material transfers are under containment or extract ventilation. [E66].
Refuelling [CS507]
Ensure material transfers are under containment or extract ventilation. [E66].
Refuelling aircraft [CS508]
Ensure material transfers are under containment or extract ventilation. [E66].
General exposures (closed systems) [CS15]
Handle substance within a closed system. [E47]. Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. [E1].
Use as a fuel, (closed systems) [GEST_12I, CS107]
Handle substance within closed systems. [E47].
Equipment cleaning and maintenance [CS39]
Drain down system prior to equipment break-in or maintenance. [E65]. Retain drain downs in sealed storage pending disposal or for subsequent recycle. [ENVT4]. Clear spills immediately. [C&H13]. Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. [E1]. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. [PPE16].
Storage [CS67]
Store substance within a closed system. [E84]. Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. [E1].

2.2. Control of environmental exposure

Product characteristics
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].
Amounts used
Fraction of EU tonnage used in region: 0.1
Regional tonnage: 1.4 e^6 tonnes per year
Fraction of Regional tonnage: 1
Annual site tonnage: 1.4 e^6 tonnes per year
Maximum daily site tonnage: 4.6 kilotonnes per day
Frequency and duration of use
Continuous release [FD2].
Emission days per year: 300
Environmental factors not influenced by risk management
Local freshwater dilution fraction: 10
Local marine dilution fraction: 100
Other Operational Conditions of use affecting environmental exposure

Release fraction to air from process (initial release prior to RMM): 0.0025 Release fraction to wastewater from process (initial release prior to RMM): 0.00001 Release fraction to soil from process (initial release prior to RMM): 0
Technical condition and measures at process level (source) to prevent release
TCS 1: Common practices vary across sites thus conservative process release estimates used.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
TCR1k: Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation). TCR9: If discharging to domestic sewage treatment plant, no onsite wastewater treatment required. Treat air emission to provide a typical removal efficiency of 99.4 % Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ 76.9 % If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ 0 %
Organizational measures to prevent / limit release from site
Do not apply industrial sludge to natural soils. [OMS2]. Sludge should be incinerated, contained or reclaimed. [OMS3].
Conditions and measures related to municipal sewage treatment plant
Estimated substance removal from wastewater via domestic sewage treatment 95.5 %.
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs 95.5 %.
Maximum allowable site tonnage (M_{Safe}) 4.6 kilotonnes per day.
Assumed domestic sewage treatment plant flow 2000 m^3 /day.
Conditions and measures related to external treatment of waste for disposal
ETW1: Combustion emissions limited by required exhaust emission controls. ETW2: Combustion emissions considered in regional exposure assessment.
Conditions and measures related to external recovery of waste
ERW3: This substance is consumed during use and no waste of the substance is generated.

3. Exposure estimation

3.1 Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21].

3.2 Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with Petrorisk model [EE2] .

4. Guidence to check compliance with the exposure scenario

4.1 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 [G22].

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels [G23].

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects [G32]. Available hazard data do not support the need for a DNEL to be established for other health effects [G36]. Risk Management Measures are based on qualitative risk characterisation [G37].

4.2 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 [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC.
Factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

AS3: Use as a Fuel – Professional

1. Title

Use of descriptor	Sector(s) of Use: Professional (SU22).
	Process Categories PROC: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16
	Environmental Release Categories (ERC): 9a, 9b Specific Environmental Release Category: ESVOC SpERC 9.12b.v1
Processes, Tasks and Activities Covered	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.

2. Operational conditions and risk management measures

2.1. Control of worker exposure

Product characteristics
Physical form of product: Liquid **Vapour pressure (kPa):** Liquid, vapour pressure > 10 kPa at STP [OC5].
Concentration of substance in product
Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently) [G2].
Other operational conditions affecting worker exposure
Assumes use at not more than 20 °C above ambient temperature, unless stated differently [G15]. Assumes a good basic standard of occupational hygiene is implemented [G1].
Specific Risk Management Measures and Operational Conditions
General measures (skin irritants) [G19]
Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop [E3].
General measures (carcinogens) [G18]
Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general / local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean /flush equipment, where possible, prior to maintenance. Where there is potential for exposure: Restrict access to authorised staff; provide specific activity training to operators to minimise exposures; wear suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely.

Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. [G20].
General exposures (closed systems) [CS15], Outdoor. [OC9]
Handle substance within a closed system. [E47].
Bulk closed unloading [CS502]
Ensure material transfers are under containment or extract ventilation. [E66].
Drum/batch transfers [CS8]
Ensure material transfers are under containment or extract ventilation. [E66].
Refuelling [CS507]
Ensure material transfers are under containment or extract ventilation. [E66].
Use as a fuel (closed systems) [GEST_12I, CS107]
Handle substance within closed systems. [E47].
Equipment maintenance [CS5]
Drain down system prior to equipment break-in or maintenance. [E65]. Retain drain downs in sealed storage pending disposal or for subsequent recycle. [ENVT4]. Clear spills immediately. [C&H13]. Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. [E1]. Ensure operatives are trained to minimise exposures. [EI19].
Storage [CS67]
Store substance within a closed system. [E84]. Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. [E1].

2.2. Control of environmental exposure

Product characteristics
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].
Amounts used
Fraction of EU tonnage used in region: 0.1
Regional tonnage: 1.19 e^6 tonnes per year
Fraction of Regional tonnage used locally: 0.0005
Annual site tonnage: 590 tonnes per year
Maximum daily site tonnage: 1.6 tonnes per day
Frequency and duration of use
Continuous release [FD2].
Emission days per year: 365
Environmental factors not influenced by risk management
Local freshwater dilution fraction: 10
Local marine dilution fraction: 100
Other Operational Conditions of use affecting environmental exposure
Release fraction to air from process (initial release prior to RMM): 0.01 Release fraction to wastewater from process (initial release prior to RMM): 0.00001 Release fraction to soil from process (initial release prior to RMM): 0.00001
Technical condition and measures at process level (source) to prevent release
TCS 1: Common practices vary across sites thus conservative process release estimates used.

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
TCR1k: Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation). TCR9: If discharging to domestic sewage treatment plant, no onsite wastewater treatment required. Treat air emission to provide a typical removal efficiency of N/A. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ 3.4 % If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ 0 %
Organizational measures to prevent / limit release from site
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].
Conditions and measures related to municipal sewage treatment plant
Estimated substance removal from wastewater via domestic sewage treatment 95.5 %.
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs 95.5 %.
Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal 15 tonnes per day.
Assumed domestic sewage treatment plant flow 2000 m^3/day.
Conditions and measures related to external treatment of waste for disposal
ETW1: Combustion emissions limited by required exhaust emission controls. ETW2: Combustion emissions considered in regional exposure assessment.
Conditions and measures related to external recovery of waste
ERW3: This substance is consumed during use and no waste of the substance is generated.

3. Exposure estimation

3.1 Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21].

3.2 Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with Petrorisk model [EE2] .

4. Guidence to check compliance with the exposure scenario

4.1 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 [G22].

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels [G23].

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects [G32]. Available hazard data do not support the need for a DNEL to be established for other health effects [G36]. Risk Management Measures are based on qualitative risk characterisation [G37].

4.2 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 [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC.
Factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

AS4: Use as a Fuel - Consumer

1. Title

Use of descriptor	Sector(s) of Use: Consumer uses (SU21).
	Process Categories: PROC13
	Environmental Release Categories (ERC): 9a, 9b Specific Environmental Release Category: ESVOC SpERC 9.12b.v1
Processes, Tasks and Activities Covered	Covers the consumer use of substance in liquid fuels.

2. Operational conditions and risk management measures

2.1. Control of worker exposure

Product characteristics
Physical form of product: Liquid. **Vapour pressure (kPa):** Liquid, vapour pressure > 10 kPa at STP [OC5].
Concentration of substance in product
Unless otherwise stated, cover concentrations up to 100 %. [ConsOC1].
Amount used
Unless otherwise stated, covers use amounts up to 37500 g. [ConsOC2]; covers skin contact area up to 420 cm^2 [ConsOC5]
Frequency and duration of use
Unless otherwise stated, covers use frequency up to 0.143 times per day [ConsOC4]; covers exposure up to 2 hours per event [ConsOC14]
Other operational conditions affecting worker exposure
Unless otherwise stated assumes use at ambient temperatures [ConsOC15]; assumes use in a 20 m^3 room [ConsOC11]; assumes use with typical ventilation [ConsOC8].
Specific Risk Management Measures and Operational Conditions
PC13: Fuels – Liquid, Subcategories added: Automotive Refuelling
OC: Unless otherwise stated, covers concentrations up to 100 % [ConsOC1]; covers use up to 52 days/year [ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 210.00 cm^2 [ConsOC5]; for each use event, covers use amounts up to 37500 g [ConsOC2]; covers outdoor use [ConsOC12]; covers use in room size of 100 m^3 [ConsOC11]; for each use event, covers exposure up to 0.05 hr/event [ConsOC14]; RMM: No specific RMMs developed beyond those OCs stated.
PC13: Fuels – Liquid, Subcategories added: Scooter Refuelling
OC: Unless otherwise stated, covers concentrations up to 100 % [ConsOC1]; covers use up to 52 days/year [ConsOC3]; covers use up to 1 time/on day of use [ConsOC4]; covers skin contact area up to 210.00 cm^2 [ConsOC5]; for each use event, covers use amounts up to 3750 g [ConsOC2]; covers outdoor use [ConsOC12]; covers use in room size of 100 m^3 [ConsOC11]; for each use event, covers exposure up to 0.03 hr/event

[ConsOC14]; RMM: No specific RMMs developed beyond those OCs stated.
PC13: Fuels – Liquid, Subcategories added: Garden Equipment - Use
OC: Unless otherwise stated, covers concentrations up to 100 % [ConsOC1]; covers use up to 26 days/year [ConsOC3]; covers use up to 1 time/on day of use [ConsOC4]; for each use event, covers use amounts up to 750 g [ConsOC2]; covers outdoor use [ConsOC12]; covers use in room size of 100 m^3 [ConsOC11]; for each use event, covers exposure up to 2.00 hr/event [ConsOC14]; RMM: No specific RMMs developed beyond those OCs stated.
PC13: Fuels – Liquid, Subcategories added: Garden Equipment - Refuelling
OC: Unless otherwise stated, covers concentrations up to 100 % [ConsOC1]; covers use up to 26 days/year [ConsOC3]; covers use up to 1 time/on day of use [ConsOC4]; covers skin contact area up to 420.00 cm^2 [ConsOC5]; for each use event, covers use amounts up to 750 g [ConsOC2]; Covers use in a one car garage (34 m^3) under typical ventilation [ConsOC10]; covers use in room size of 34 m^3 [ConsOC11]; for each use event, covers exposure up to 0.03 hr/event [ConsOC14]; RMM: No specific RMMs developed beyond those OCs stated.

2.2. Control of environmental exposure

Product characteristics
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].
Amounts used
Fraction of EU tonnage used in region: 0.1
Regional tonnage: 1.39 e^7 per year
Fraction of Regional tonnage used locally: 0.0005
Annual site tonnage: 7 kilotonnes per year
Maximum daily site tonnage: 19 tonnes per day
Frequency and duration of use
Continuous release [FD2].
Emission days per year: 365
Environmental factors not influenced by risk management
Local freshwater dilution fraction: 10
Local marine dilution fraction: 100
Other Operational Conditions of use affecting environmental exposure
Release fraction to air from process (initial release prior to RMM): 0.01 Release fraction to wastewater from process (initial release prior to RMM): 0.00001 Release fraction to soil from process (initial release prior to RMM): 0,00001
Conditions and measures related to municipal sewage treatment plant
Estimated substance removal from wastewater via domestic sewage treatment 95.5 %.
Maximum allowable site tonnage (M_{Safe}) 180 tonnes per day.
Assumed domestic sewage treatment plant flow 2000 m^3/day.
Conditions and measures related to external treatment of waste for disposal
ETW1: Combustion emissions limited by required exhaust emission controls. ETW2: Combustion emissions considered in regional exposure assessment.
Conditions and measures related to external recovery of waste

ERW3: This substance is consumed during use and no waste of the substance is generated.

3. Exposure estimation

3.1 Health

The ECETOC TRA tool has been used to estimate consumer exposures, consistent with the content of ECETOC Report #107 and the Chapter R15 of the IR&CSA TGD. Where exposure determinants differ to these sources, then they are indicated.

3.2 Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with Petrorisk model [EE2] .

4. Guidence to check compliance with the exposure scenario

4.1 Health

Predicted exposures are not expected to exceed the applicable consumer reference values when the operational conditions/risk management measures given in section 2 are implemented. [G39].

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. [G23].

4.2 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 [DSU1]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].