Safety Data Sheet

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH)

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

1.1. Product identifier

Substance name: **Gasoline**
Code: 817798
MARPOL Annex I Category: Gasoline and Spirits
REACH Registration Number: 01-2119471335-39-0157
Issue date: 04-Feb-2020

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

Relevant identified uses: Fuel for spark ignition piston engines - **NOT** recommended for aviation piston engines

Uses advised against: Uses other than those covered by the exposure scenarios appended to this Safety Data Sheet are not supported.

1.3. Details of the supplier of the safety data sheet

Manufacturer/Supplier:
Phillips 66 CS Limited
7th Floor 200-202 Aldersgate Street
London
EC1A 4HD
UK

SDS Information:
URL: www.Phillips66.com/SDS
Email: ESDS@P66.com

1.4. Emergency telephone number

+44 (0)1469 571315 (24 Hours)
CHEMTREC UK +(44)-870-8200418

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

CLP Classification (EC No 1272/2008)
H224 -- Flammable liquids -- Category 1
H304 -- Aspiration Hazard -- Category 1
H315 -- Skin corrosion/irritation -- Category 2
H336 -- Specific target organ toxicity (single exposure) -- Category 3
H340 -- Germ cell mutagenicity -- Category 1B
H350 -- Carcinogenicity -- Category 1B
H361f -- Reproductive toxicity -- Category 2
H361d -- Reproductive toxicity -- Category 2
H411 -- Hazardous to the aquatic environment, chronic toxicity -- Category 2

2.2. Label elements

DANGER

H224 - Extremely flammable liquid and vapour
H315 - Causes skin irritation
H304 - May be fatal if swallowed and enters airways
H336 - May cause drowsiness or dizziness

H340 - May cause genetic defects
H350 - May cause cancer
H361f - Suspected of damaging fertility
H361d - Suspected of damaging the unborn child
H411 - Toxic to aquatic life with long lasting effects
P201 - Obtain special instructions before use
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P273 - Avoid release to the environment
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
P331 - Do NOT induce vomiting
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed

2.3. Other hazards

Electrostatic charge may be generated during pumping and other operations
Does not meet the criteria for persistent, bioaccumulative and toxic (PBT) or very persistent, very bioaccumulative (vPvB) substances.

SECTION 3: Composition/information on ingredients

3.1. Substances

Chemical Name	CASRN	EINECS	REACH Registration No	Concentration[1]	Classification[2]
Gasoline	86290-81-5	289-220-8	01-2119471335-39	100	H224, H304, H315, H336, H340,H350,H361d, H361f, H411
Toluene	108-88-3	203-625-9	01-2119471310-51	4-23	H225,H304,H315,H336,H361d,H373
Hexane	110-54-3	203-777-6	01-2119480412-44	<2	H225,H304,H315,H336,H361f,H373,H411
Benzene	71-43-2	200-753-7	01-2119447106-44	<1	H225,H304,H315,H319,H340,H350,H372

[1] All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.
[2] Regulation EC 1272/2008.

SECTION 4: First aid measures

4.1. Description of first aid measures

Eye Contact: If irritation or redness develops from exposure, flush eyes with clean water. If symptoms persist, seek medical attention.

Skin Contact: Remove contaminated shoes and clothing, and flush affected area(s) with large amounts of water. If skin surface is damaged, apply a clean dressing and seek medical attention. If skin surface is not damaged, cleanse affected area(s) thoroughly by washing with mild soap and water or a waterless hand cleaner. If irritation or redness develops, seek medical attention. Wash contaminated clothing before reuse. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician. (see Note to Physician)

Inhalation: If respiratory symptoms develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. If breathing is difficult, oxygen or artificial respiration should be administered by qualified personnel. If symptoms persist, seek medical attention.

Ingestion: Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. If victim is drowsy or unconscious and vomiting, place on the left side with the head down. If possible, do not leave victim unattended and observe closely for adequacy of breathing. Seek medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Effects of overexposure can include slight irritation of the respiratory tract, nausea, vomiting, and signs of nervous system depression (e.g., headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue). Continued exposure to high concentrations can result in vomiting, cardiac irregularities and sudden loss of consciousness. Prolonged or repeated contact may dry skin and cause irritation

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician: When using high-pressure equipment, injection of product under the skin can occur. In this case, the casualty should be sent immediately to the hospital. Do not wait for symptoms to develop. High-pressure hydrocarbon injection injuries may produce substantial necrosis of underlying tissue despite an innocuous appearing external wound. These injuries often require extensive emergency surgical debridement and all injuries should be evaluated by a specialist in order to assess the extent of injury. Early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in persons exposed to high concentrations of hydrocarbon solvents (e.g., in enclosed spaces or with deliberate abuse). The use of other drugs with less arrhythmogenic potential should be considered. If sympathomimetic drugs are administered, observe for the development of cardiac arrhythmias.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Dry chemical, carbon dioxide, or foam is recommended. Water spray is recommended to cool or protect exposed materials or structures. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam. Water may be ineffective for extinguishment, unless used under favorable conditions by experienced fire fighters.

5.2. Special hazards arising from the substance or mixture

Unusual Fire & Explosion Hazards: Extremely flammable. This material can be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, mechanical/electrical equipment, and electronic devices such as cell phones, computers, calculators, and pagers which have not been certified as intrinsically safe) Vapours may travel considerable distances to a source of ignition where they can ignite, flash back, or explode. May create vapour/air explosion hazard indoors, in confined spaces, outdoors, or in sewers. This product will float and can be reignited on surface water. Vapours are heavier than air and can accumulate in low areas. If container is not properly cooled, it can rupture in the heat of a fire.

Hazardous Combustion Products: Combustion may yield smoke, carbon monoxide, and other products of incomplete combustion. Oxides of nitrogen and sulphur may also be formed.

5.3. Special protective actions for fire-fighters

For fires beyond the initial stage, emergency responders in the immediate hazard area should wear protective clothing. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8). Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapours and to protect personnel. Avoid spreading burning liquid with water used for cooling purposes. Cool equipment exposed to fire with water, if it can be done safely.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Extremely flammable. Spillages of liquid product will create a fire hazard and may form an explosive atmosphere. Keep all sources of ignition and hot metal surfaces away from spill/release if safe to do so. The use of explosion-proof electrical equipment is recommended. Stay upwind and away from spill/release. Avoid direct contact with material. For large spillages, notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorised personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

6.2. Environmental precautions

Stop and contain spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorised drainage systems, and natural waterways. Use foam on spills to minimise vapours Use water sparingly to minimize environmental contamination and reduce disposal requirements. If spill occurs on water notify appropriate authorities and advise shipping of any hazard.

6.3. Methods and material for containment and cleaning up

Notify relevant authorities in accordance with all applicable regulations. Immediate cleanup of any spill is recommended. Dike far ahead of spill for later recovery or disposal. Absorb spill with inert material such as sand or vermiculite, and place in suitable container for disposal. If spilled on water remove with appropriate methods (e.g. skimming, booms or absorbents). In case of soil contamination, remove contaminated soil for remediation or disposal, in accordance with local regulations.

Recommended measures are based on the most likely spillage scenarios for this material; however local conditions and regulations may influence or limit the choice of appropriate actions to be taken.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharge. Use only non-sparking tools. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection. Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment (see section 8).

Extremely flammable. May vaporize easily at ambient temperatures. The vapour is heavier than air and may create an explosive mixture of vapor and air. Beware of accumulation in confined spaces and low lying areas. Open container slowly to relieve any pressure. Electrostatic charge may accumulate and create a hazardous condition when handling or processing this material. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. The use of explosion-proof electrical equipment is recommended and may be required (see appropriate fire codes for specific bonding/grounding requirements). Do not enter confined spaces such as tanks or pits without following proper entry procedures. Do not wear contaminated clothing or shoes. Keep contaminated clothing away from sources of ignition such as sparks or open flames.

High pressure injection of hydrocarbon fuels, hydraulic oils or greases under the skin may have serious consequences even though no symptoms or injury may be apparent. This can happen accidentally when using high pressure equipment such as high pressure grease guns, fuel injection apparatus or from pinhole leaks in tubing of high pressure hydraulic oil equipment.

For use as a motor fuel only. Do not use as a solvent due to its flammable and potentially toxic properties. Siphoning by mouth can result in lung aspiration which can be harmful or fatal.

The use of hydrocarbon fuel in an area without adequate ventilation may result in hazardous levels of incomplete combustion products (e.g. carbon monoxide, oxides of sulphur and nitrogen, benzene and other hydrocarbons) and/or dangerously low oxygen levels.

Gasoline engine exhaust contains hazardous combustion products and has been identified as a possible cancer hazard. Exposure should be minimized to reduce potential risk.

7.2. Conditions for safe storage, including any incompatibilities

Keep container(s) tightly closed and properly labeled. Use and store this material in cool, dry, well-ventilated areas away from heat, direct sunlight, hot metal surfaces, and all sources of ignition. Store only in approved containers. Post area "No Smoking or Open Flame." Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage.

Portable Containers: Static electricity may ignite gasoline vapours when filling portable containers. To avoid static buildup do not use a nozzle lock open device. Use only approved containers for the storage of gasoline. Place the container on the ground before filling. Keep the nozzle in contact with the container during filling. Do not fill any portable container in or on a vehicle or marine craft.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All

containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this material, refer to appropriate guidance pertaining to cleaning, repairing, welding, or other contemplated operations. Outdoor or detached storage is preferred. Indoor storage should meet Country or Committee standards and appropriate fire codes.

7.3. Specific end use(s)

Refer to supplemental exposure scenarios if attached.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational Exposure Limits:

Chemical Name	ACGIH	Ireland	United Kingdom	Phillips 66
Gasoline	TWA-8hr: 300 ppm STEL: 500 ppm	TWA-8hr: 300 ppm STEL: 500 ppm	---	TWA-8hr: 0.5 ppm STEL: 2.5 ppm Skin (with > 0.1% Benzene)
Toluene	TWA-8hr: 20 ppm	TWA-8hr: 192 mg/m^3 TWA-8hr: 50 ppm STEL: 384 mg/m^3 STEL: 100 ppm Skin	TWA-8hr: 50 ppm TWA-8hr: 191 mg/m^3 STEL: 100 ppm STEL: 384 mg/m^3 Skin	TWA-8hr: 20 ppm
Hexane	TWA-8hr: 50 ppm Skin	TWA-8hr: 20 ppm TWA-8hr: 72 mg/m^3 STEL: 60 ppm STEL: 216 mg/m^3 Skin	TWA-8hr: 20 ppm TWA-8hr: 72 mg/m^3	TWA-8hr: 50 ppm Skin
Benzene	TWA-8hr: 0.5 ppm STEL: 2.5 ppm Skin	TWA-8hr: 1 ppm TWA-8hr: 3 mg/m^3 STEL: 3 ppm STEL: 9 mg/m^3 Carcinogen Skin	TWA-8hr: 1 ppm TWA-8hr: 3.25 mg/m^3 Carcinogen Skin	TWA-8hr: 0.5 ppm STEL: 2.5 ppm Skin Carcinogen

Biological Limit Values:

Chemical Name	ACGIH	European Union	United Kingdom
Toluene	Toluene in blood: 0.02 mg/L, prior to last shift of workweek (background) Toluene in urine: 0.03 mg/L, end of shift (background) o-Cresol with hydrolysis in urine: 0.3 mg/g creatinine, end of shift (background)	---	---
Hexane	2,5-Hexanedione without hydrolysis in urine: 0.4 mg/L, end of shift at end of workweek (background)	---	---
Benzene	S-Phenylmercapturic acid in urine: 25 µg/g creatinine, end of shift (background) t,t-Muconic acid in urine: 500 µg/g creatinine, end of shift (background)	---	---

Chemical Name	ACGIH	European Union	United Kingdom

Relevant DNEL and PNEC:

Worker Derived No-Effect Level (DNEL)
Inhalation: 3.25 mg/m³ TWA-8hr (DNEL, as benzene)
Dermal: 23.4 mg/kgbw/day (DNEL, as benzene)

Consumer Derived No-Effect Level (DNEL)
Inhalation: Not applicable
Dermal: Not applicable
Ingestion: Not applicable

Environmental Predicted No-Effect Concentration (PNEC): No information available

8.2. Exposure controls

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

Eye/Face Protection: The use of eye protection that meets or exceeds EN 166 is recommended to protect against potential eye contact, irritation, or injury. Depending on conditions of use, close fitting eye protection and a face shield may be necessary.

Skin/Hand Protection: The use of gloves impervious to the specific material handled that comply with EN 374 is advised to prevent skin contact. Users should check with manufacturers to confirm the breakthrough performance of their products. Depending on exposure and use conditions, additional protection may be necessary to prevent skin contact including use of items such as chemical resistant boots, aprons, arm covers, hoods, coveralls, or encapsulated suits. Suggested protective materials: Nitrile rubber

Respiratory Protection: Where there is potential for airborne exposure above the exposure limit an approved air purifying respirator equipped with Type A, organic gases and vapour filters (as specified by the manufacturer) may be used.

A respiratory protection programme that follows recommendations for the selection, use, care and maintenance of respiratory protective devices in EN 529:2005 should be followed whenever workplace conditions warrant a respirator's use. Air purifying respirators provide limited protection and cannot be used in atmospheres that exceed the maximum use concentration (as directed by regulation or the manufacturer's instructions), in oxygen deficient (less than 19.5 percent oxygen) situations, or under conditions that are immediately dangerous to life and health.

Other Protective Equipment: Eye wash and quick-drench shower facilities should be available in the work area. Thoroughly clean shoes and wash contaminated clothing before reuse.

Environmental Exposure Controls: Refer to Sections 6, 7, 12 and 13.

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Note: Unless otherwise stated, values are determined at 25°C (77°F) and 760 mm Hg (1 atm).
Data represent typical values and are not intended to be specifications. N/A = Not Applicable; N/D = Not Determined

Appearance:	Clear, pale yellow (may be dyed various colours)
Physical Form:	Liquid
Odour:	Gasoline
Odour Threshold:	N/D
pH	N/A
Melting/Freezing Point:	N/D
Initial Boiling Point/Range:	22 - 210 °C
Flash Point:	-40 °C; (ASTM D56)
Evaporation Rate (nBuAc=1):	10-11
Flammability (solid, gas):	N/A
Upper Explosive Limits (vol % in air):	7.6
Lower Explosive Limits (vol % in air):	1.3

Vapour Pressure:	60 kPa @20°C
Relative Vapour Density (air=1):	>1
Relative Density (water=1):	0.75 @ 15°C
Solubility (ies):	Solubility in water: 0.01g/L
Partition Coefficient (n-octanol/water) (Kow):	N/D
Auto-ignition Temperature:	450 °C
Decomposition Temperature:	N/D
Viscosity:	0.5-1.5 mm²/s @ 20°C
Explosive Properties:	N/D
Oxidising Properties:	N/D

9.2. Other information

Pour Point: N/D

SECTION 10: Stability and reactivity

10.1. Reactivity Not chemically reactive.

10.2. Chemical stability Stable under normal ambient and anticipated conditions of use.

10.3. Possibility of hazardous reactions Hazardous reactions not anticipated.

10.4. Conditions to avoid Avoid high temperatures and all sources of ignition. Prevent vapour accumulation.

10.5. Incompatible materials Avoid contact with strong oxidizing agents and strong reducing agents.

10.6. Hazardous decomposition products Not anticipated under normal conditions of use.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Substance / Mixture

Acute Toxicity	Hazard	Additional Information	LC50/LD50 Data
Inhalation	Expected to have a low degree of toxicity by inhalation		>5.2 mg/L (vapour) (rat)
Dermal	Unlikely to be harmful		3.75 g/kg (rabbit)
Oral	Unlikely to be harmful		14 g/kg g/kg (rat)

Likely Routes of Exposure: Inhalation, eye contact, skin contact

Aspiration Hazard: May be fatal if swallowed and enters airways.

Skin Corrosion/Irritation: Causes skin irritation. Repeated exposure may cause skin dryness or cracking.

Serious Eye Damage/Irritation: Causes mild eye irritation.

Skin Sensitisation: Not expected to be a skin sensitizer.

Respiratory Sensitisation: Not expected to be a respiratory sensitizer.

Specific Target Organ Toxicity (Single Exposure): May cause drowsiness and dizziness.

Specific Target Organ Toxicity (Repeated Exposure): Not expected to cause organ effects from repeated exposure. Two year inhalation studies of wholly vaporized unleaded gasoline, and 90 days studies of various petroleum naphthas, did not produce significant target organ toxicity in laboratory animals. Nephropathy in male rats, characterized by the accumulation of alpha-2-u- globulin in epithelial cells of the proximal tubules was observed, however follow-up studies suggest that these changes are unique to the male rat.

Carcinogenicity: May cause cancer. Based on component information. Two year inhalation studies of vaporized unleaded gasoline produced an increased incidence of kidney tumours in male rats and liver tumours in female mice. Repeated skin application of various petroleum naphthas in mice for two years resulted in an increased incidence of skin tumours but only in the presence of severe skin irritation. Follow-up mechanistic studies suggest that the occurrence of these tumours may be the consequence of promotional processes and not relevant to human risk assessment. Epidemiology data collected from a study of more than 18,000 petroleum marketing and distribution workers showed no increased risk of leukaemia, multiple myeloma, or kidney cancer from gasoline exposure. Unleaded gasoline has been identified as a possible carcinogen by the International Agency for Research on Cancer.

Germ Cell Mutagenicity: May cause genetic defects. Based on component information. Gasoline was negative in microbial mutagenicity and unscheduled DNA tests in rat hepatocytes. Gasoline did not induce chromosome aberrations in vivo in rat bone marrow cells and was negative in a mouse dominant lethal assay.

Reproductive Toxicity: Suspected of damaging the unborn child. Suspected of damaging fertility. Based on component information. No evidence of developmental toxicity was found in pregnant laboratory animals (rats and mice) exposed to high vapour concentrations of unleaded gasoline and petroleum naphthas via inhalation. A two-generation reproductive toxicity study of vapour recovery gasoline did not adversely affect reproductive function or offspring survival and development.

Other Comments: Gasoline engine exhaust has been classified by the International Agency for Research on Cancer (IARC) as possibly carcinogenic to human.

11.2 Information on Hazardous Components

Toluene

Carcinogenicity: Exposure of rats and mice to toluene at concentrations ranging from 120-1200 ppm for two years did not demonstrate evidence of carcinogenicity. Toluene has not been listed as a carcinogen by IARC.

Target Organ(s): Epidemiology studies suggest that chronic occupational overexposure to toluene may damage colour vision. Subchronic and chronic inhalation studies with toluene produced kidney and liver damage, hearing loss and central nervous system (brain) damage in laboratory animals. Intentional misuse by deliberate inhalation of high concentrations of toluene has been shown to cause liver, kidney, and central nervous system damage, including hearing loss and visual disturbances.

Reproductive Toxicity: Exposure to toluene during pregnancy has demonstrated limited evidence of developmental toxicity in laboratory animals. Decreased fetal body weight and increased skeletal variations in both inhalation and oral studies, but only at doses that were maternally toxic. No fetal toxicity was seen at doses that were not maternally toxic. Decreased sperm counts have been observed in male rats in the absence of a reduction in fertility. Toluene has been reported to cause mental or growth retardation in the children of solvent abusers who directly inhale toluene during pregnancy.

Hexane

Target Organ(s): Excessive exposure to n-hexane can result in peripheral neuropathies. The initial symptoms are symmetrical sensory numbness and paresthesias of distal portions of the extremities. Motor weakness is typically observed in muscles of the toes and fingers but may also involve muscles of the arms, thighs and forearms. The onset of these symptoms may be delayed for several months to a year after the beginning of exposure. The neurotoxic properties of n-hexane are potentiated by exposure to methyl ethyl ketone and methyl isobutyl ketone.

Reproductive Toxicity: Prolonged exposure to high concentrations of n-hexane (>1,000 ppm) resulted in decreased sperm count and degenerative changes in the testes of rats but not those of mice.

Benzene

Carcinogenicity: Benzene is an animal carcinogen and is known to produce acute myelogenous leukaemia (a form of cancer) in humans. Benzene has been identified as a human carcinogen by IARC, the US National Toxicology Programme and the US-Occupational Safety and Health Administration.

Target Organ(s): Prolonged or repeated exposures to benzene vapours can cause damage to the blood and blood forming organs, including disorders like leukopenia, thrombocytopenia, and aplastic anaemia.

Reproductive Toxicity: Some studies in occupationally exposed women have suggested benzene exposure increased risk of miscarriage and stillbirth and decreased birth weight and gestational age. The size of the effects detected in these studies was small, and ascertainment of exposure and outcome in some cases relied on self-reports, which may limit the reliability of these results.

Additional Information (Mutagenicity) Benzene exposure has resulted in chromosomal aberrations in human lymphocytes and animal bone marrow cells. Exposure has also been associated with chromosomal aberrations in sperm cells in human and animal studies.

SECTION 12: Ecological information

12.1. Toxicity

Acute aquatic toxicity studies on samples of gasoline and naphtha streams show acute toxicity values greater than 1 mg/L and mostly in the range 1-100 mg/L. These tests were carried out on water accommodated fractions, in closed systems to prevent evaporative loss. Results are consistent with the predicted aquatic toxicity of these substances based on their hydrocarbon

composition. These substances should be regarded as toxic to aquatic organisms, with the potential to cause long term adverse effects in the aquatic environment.

12.2. Persistence and degradability

The hydrocarbons in this material are not readily biodegradable but are regarded as inherently biodegradable since their hydrocarbon components can be degraded by microorganisms.

Persistence per IOPC Fund definition: Non-Persistent

12.3. Bioaccumulative potential

Log Kow values measured for the hydrocarbon components of this material range from 3 to greater than 6 and therefore are regarded as having the potential to bioaccumulate. In practise, metabolic processes or physical properties may prevent this effect or limit bioavailability.

12.4. Mobility in soil

On release to water, hydrocarbons will float on the surface and since they are sparingly soluble, the only significant loss is volatilisation to air. In air, these hydrocarbons are photodegraded by reaction with hydroxyl radicals with half lives varying from 6.5 days for benzene to 0.5 days for n-dodecane.

12.5. Results of PBT and vPvB assessment
Not a PBT or vPvB substance.

12.6. Other adverse effects
None anticipated.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

European Waste Code: 13 07 02* petrol

This material, if discarded as produced, would be considered as hazardous waste pursuant to Directive 2008/98/EC on hazardous waste, and subject to the provisions of that Directive unless Article 1(5) of that Directive applies.
This code has been assigned based upon the most common uses for this material and may not reflect contaminants resulting from actual use. Waste generators/producers are responsible for assessing the actual process used when generating the waste and it's contaminants in order to assign the proper waste disposal code.

Disposal must be in accordance with Directive 2008/98/EC and other applicable national or regional provisions, and based upon material characteristics at time of disposal. For incineration of waste, follow Directive 2000/76/EC. For landfill of waste, follow Directive 1999/31/EC. Product is suitable for burning in an enclosed controlled burner for fuel value if >5000 BTU, or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products. Follow Directive 2000/76/EC.

Empty Containers: Container contents should be completely used and containers emptied prior to discard. Empty drums should be properly sealed and promptly returned to a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with applicable regulations.

SECTION 14: Transport information

14.1. UN number	UN1203
14.2. UN proper shipping name	GASOLINE **or** MOTOR SPIRIT **or** PETROL
14.3. Transport hazard class(es)	3
14.4. Packing group	II
14.5. Environmental hazards	Marine pollutant - Environmentally Hazardous
14.6. Special precautions for user	*If transported in bulk by marine vessel in international waters, product is being carried under the scope of MARPOL*

Annex I.

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

SECTION 15: Regulatory information

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

EC 1272/2008 - Classification, labelling and packaging of substances and mixtures
EN166:2002 Eye Protection
EN 529:2005 Respiratory Protective devices
BS EN 374-1:2003 Protective gloves against chemicals and micro-organisms
Workplace Exposure Limits, EH40/2005, Control of Substances Hazardous to Health
Directive 2008/98/EC (Waste Framework Directive)
Directive 2000/76/EC on incineration of waste
Directive 1999/31/EC on landfill of waste

Export Rating: NLR (No Licence Required)

15.2. Chemical safety assessment

A chemical safety assessment has been carried out for the substance/mixture.

SECTION 16: Other information

Issue date	04-Feb-2020
Status:	FINAL
Previous Issue Date:	11-Nov-2014
Revised Sections or Basis for Revision:	Periodic review and update Format change
Safety Data Sheet Number:	**817798**
Language:	BE

List of Relevant Hazard Statements:
H224 - Extremely flammable liquid and vapour
H225 - Highly flammable liquid and vapour
H304 - May be fatal if swallowed and enters airways
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H336 - May cause drowsiness or dizziness
H340 - May cause genetic defects
H350 - May cause cancer
H361 - Suspected of damaging fertility or 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

Regulatory Basis of Classification

CLP Classification (EC No 1272/2008)	Regulatory Basis
H224 -- Flammable liquids -- Category 1	On basis of test data
H304 -- Aspiration Hazard -- Category 1	Based on component information.
H315 -- Skin corrosion/irritation -- Category 2	Based on component information.
H336 -- Specific target organ toxicity (single exposure) -- Category 3	Based on component information.
H340 -- Germ cell mutagenicity -- Category 1B	Based on component information.
H350 -- Carcinogenicity -- Category 1B	Based on component information.
H361d -- Reproductive toxicity -- Category 2	Based on component information.
H361f -- Reproductive toxicity -- Category 2	Based on component information.
H411 -- Hazardous to the aquatic environment, chronic toxicity -- Category 2	Based on component information.

Guide to Abbreviations:
ACGIH = American Conference of Governmental Industrial Hygienists; ADR = Agreement on Dangerous Goods by Road; BMGV = Biological Monitoring Guidance Value; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA = [US] Environmental Protection Agency; Germany-TRGS = Technical Rules for Dangerous Substances; IARC = International Agency for Research on Cancer; ICAO/IATA = International Civil Aviation Organisation / International Air

Transport Association; INSHT = National Institute for Health and Safety at Work; IMDG = International Maritime Dangerous Goods; Irland-HSA = Ireland's National Health and Safety Authority; LEL = Lower Explosive Limit; MARPOL = Marine Pollution; N/A = Not Applicable; N/D = Not Determined; NTP = [US] National Toxicology Programme; PBT = Persistent, Bioaccumulative and Toxic; RID = Regulations Concerning the International Transport of Dangerous Goods by Rail; STEL = Short Term Exposure Limit; TLV = Threshold Limit Value; TRGS 903 = Technical rules for hazardous substances; TWA = Time Weighted Average; UEL = Upper Explosive Limit; UK-EH40 = United Kingdom EH40/2005 OEL; vPvB = very Persistent, very Bioaccumulative

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1. Manufacture of substance - Industrial

Section 1 Exposure Scenario Low Boiling Point Naphthas Gasoline	
Title	Manufacture of substance
Use Descriptor	
Sector(s) of use	3, 8, 9
Process category(ies)	1, 2, 3, 8a, 8b, 15
Environmental release category(ies)	1, 4
Specific Environmental Release Category	ESVOC SpERC 1.1.v1
Processes, tasks, activities covered	
Manufacture of the substance or use as a process chemical or extraction agent within closed or contained systems. Includes incidental exposures during recycling/recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).	
Section 2 Operational conditions and risk management measures	
2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure > 10 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting exposure	Operation is carried out at elevated temperature (>20°C above ambient temperature). Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios / Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
General measures (carcinogens)	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.
General exposures (closed systems) with sample collection	Handle substance within a closed system Sample via a closed loop or other system to avoid exposure Wear suitable gloves tested to EN374.
General exposures (closed systems)	Provide extract ventilation to points where emissions occur

	Handle substance within a closed system Wear suitable gloves tested to EN374.
Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.
Bulk transfers	Ensure material transfers are under containment or extract ventilation Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance Retain drain downs in sealed storage pending disposal or for subsequent recycle Clear spills immediately Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. Avoid carrying out activities involving exposure for more than 1 hour Ensure operation is undertaken outdoors
Storage	Wear suitable gloves tested to EN374. Store substance within a closed system

Low Boiling Point Naphthas / Gasoline exhibits acute inhalation toxicity and is classified R20 (Harmful by inhalation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary / additional RMMs. Low Boiling Point Naphthas / Gasoline exhibits irritation to the skin and is classified R38 (Irritating to skin) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary RMMs. Low Boiling Point Naphthas / Gasoline exhibits carcinogenic effects and is classified R45 (May cause cancer) accordingly. The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from these adverse effects consistent with Directive 2004/37/E. Low Boiling Point Naphthas / Gasoline is classified R65 (Harmful: may cause lung damage if swallowed). The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from this adverse effect.

2.2 Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	1.87e7
Fraction of regional tonnage used locally	0.03

Frequency and duration of use
Continuous release.

Emission days (days/year)	300
Environmental 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)	0.05
Release fraction to wastewater from process (initial release prior to RMM)	0.003
Release fraction to soil from process (initial release prior to RMM)	0.0001

Technical conditions and measures at process level (source) to prevent release
Common practices vary across sites thus conservative process release estimates used.

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Prevent discharge of undissolved substance to or recover from onsite wastewater. Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation). Onsite wastewater treatment required.

Treat air emission to provide a typical removal efficiency of (%):	99.0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency >= (%):	95.2
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%):	80.4

Organisation measures to prevent/limit release from site
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%):	95.5
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment	99.1

plant) RMMs (%):	
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (kg/d):	2.0e6
Assumed domestic sewage treatment plant flow (m³/d):	10000
Conditions and measures related to external treatment of waste for disposal	
During manufacturing no waste of the substance is generated.	
Conditions and measures related to external recovery of waste	
During manufacturing no waste of the substance is generated.	
Section 3 Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	
Section 4 Guidance to check compliance with the Exposure Scenario	
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. 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 does not enable the derivation of a DNEL for dermal irritant effects. Available hazard data does not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterization.	
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. 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). Scaled local assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file – “Site-Specific Production” worksheet. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.	

2. Use of substance as an intermediate - Industrial

Section 1 Exposure Scenario Low Boiling Point Naphthas Gasoline	
Title	Use as an intermediate
Use Descriptor	
Sector(s) of use	3, 8, 9
Process category(ies)	1, 2, 3, 8a, 8b, 15
Environmental release category(ies)	6a
Specific Environmental Release Category	ESVOC SpERC 6.1a.v1
Processes, tasks, activities covered	
Use of substance as an intermediate (not related to Strictly Controlled Conditions). Includes recycling/recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).	
Section 2 Operational conditions and risk management measures	
2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure > 10 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting exposure	Operation is carried out at elevated temperature (>20°C above ambient temperature). Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios / Product Category	**Specific Risk Management Measures & Operating Conditions**
Re-manufacture of reject articles	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee

	training to prevent / minimise exposures and to report any skin problems that may develop.
General measures (carcinogens)	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.
General exposures (closed systems) with sample collection	Handle substance within a closed system Sample via a closed loop or other system to avoid exposure Wear suitable gloves tested to EN374.
General exposures (closed systems)	Provide extract ventilation to points where emissions occur Handle substance within a closed system Wear suitable gloves tested to EN374.
Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.
Bulk transfers	Ensure material transfers are under containment or extract ventilation Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance Retain drain downs in sealed storage pending disposal or for subsequent recycle Clear spills immediately Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. Avoid carrying out activities involving exposure for more than 1 hour Ensure operation is undertaken outdoors
Storage	Wear suitable gloves tested to EN374. Store substance within a closed system

Low Boiling Point Naphthas / Gasoline exhibits acute inhalation toxicity and is classified R20 (Harmful by inhalation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary / additional RMMs. Low Boiling Point Naphthas / Gasoline exhibits irritation to the skin and is classified R38 (Irritating to skin) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary RMMs. Low Boiling Point Naphthas / Gasoline exhibits carcinogenic effects and is classified R45 (May cause cancer) accordingly. The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from these adverse effects consistent with Directive 2004/37/E. Low Boiling Point Naphthas / Gasoline is classified R65 (Harmful: may cause lung damage if swallowed). The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from this adverse effect.

2.2 Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	2.21e6
Fraction of regional tonnage used locally	0.0068

Frequency and duration of use
Continuous release.

Emission days (days/year)	300

Environmental 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)	0.025
Release fraction to wastewater from process (initial release prior to RMM)	0.003
Release fraction to soil from process (initial release prior to RMM)	0.001
Technical conditions and measures at process level (source) to prevent release 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 Prevent discharge of undissolved substance to or recover from onsite wastewater. Risk from environmental exposure is driven by freshwater sediment. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%):	80
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency >= (%):	92.9
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%):	0
Organisation measures to prevent/limit release from site Sludge should be incinerated, contained or reclaimed.	
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 (Msafe) based on release following total wastewater treatment removal (kg/d):	7.8e4
Assumed domestic sewage treatment plant flow (m^3/d):	2000
Conditions and measures related to external treatment of waste for disposal	
This substance is consumed during use and no waste of the substance is generated.	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is generated.	
Section 3 Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	
Section 4 Guidance to check compliance with the Exposure Scenario	
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. 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 does not enable the derivation of a DNEL for dermal irritant effects. Available hazard data does not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterization.	
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. 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).	

3. Distribution of substance Industrial

Section 1 Exposure Scenario Low Boiling Point Naphthas Gasoline	
Title	Distribution of substance
Use Descriptor	
Sector(s) of use	3
Process category(ies)	1, 2, 3, 8a, 8b, 15
Environmental release category(ies)	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7
Specific Environmental Release Category	ESVOC SpERC 1.1b.v1
Processes, tasks, activities covered	
Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance within closed or contained systems,	

including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities.	
Section 2 Operational conditions and risk management measures	
2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure > 10 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios / Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
General measures (carcinogens)	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.
General exposures (closed systems) with sample collection	Handle substance within a closed system Sample via a closed loop or other system to avoid exposure Wear suitable gloves tested to EN374.
General exposures (closed systems)	Provide extract ventilation to points where emissions occur Handle substance within a closed system Wear suitable gloves tested to EN374.
Process sampling	Sample via a closed loop or other system to avoid exposure Wear suitable gloves tested to EN374.
Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.
bulk closed loading	Ensure material transfers are under containment or extract ventilation Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
bulk closed loading and unloading	Ensure material transfers are under containment or extract ventilation Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance Retain drain downs in sealed storage pending disposal or for subsequent recycle Clear spills immediately Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. Avoid carrying out activities involving exposure for more than 1 hour Ensure operation is undertaken outdoors
Storage	Wear suitable gloves tested to EN374. Store substance

	within a closed system
Low Boiling Point Naphthas / Gasoline exhibits acute inhalation toxicity and is classified R20 (Harmful by inhalation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary / additional RMMs. Low Boiling Point Naphthas / Gasoline exhibits irritation to the skin and is classified R38 (Irritating to skin) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary RMMs. Low Boiling Point Naphthas / Gasoline exhibits carcinogenic effects and is classified R45 (May cause cancer) accordingly. The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from these adverse effects consistent with Directive 2004/37/E. Low Boiling Point Naphthas / Gasoline is classified R65 (Harmful: may cause lung damage if swallowed). The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from this adverse effect.	
2.2 Control of environmental exposure	
Product characteristics Substance is complex UVCB. Predominantly hydrophobic.	
Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	1.87e7
Fraction of regional tonnage used locally	0.002
Frequency and duration of use Continuous release.	
Emission days (days/year)	300
Environmental 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)	0.001
Release fraction to wastewater from process (initial release prior to RMM)	0.00001
Release fraction to soil from process (initial release prior to RMM)	0.00001
Technical conditions and measures at process level (source) to prevent release Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation). If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
Treat air emission to provide a typical removal efficiency 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
Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via 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 (Msafe) based on release following total wastewater treatment removal (kg/d):	1.1e6
Assumed domestic sewage treatment plant flow (m^3/d):	2000
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.	
Section 3 Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	
Section 4 Guidance to check compliance with the Exposure Scenario	
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. 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 does not enable the derivation of a DNEL for dermal irritant effects. Available hazard data does not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterization.
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. 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).

4. Formulation & (Re)packing of substance - Industrial

Section 1 Exposure Scenario Low Boiling Point Naphthas Gasoline	
Title	Formulation & (re)packing of substances and mixtures
Use Descriptor	
Sector(s) of use	3, 10
Process category(ies)	1, 2, 3, 8a, 8b, 15
Environmental release category(ies)	2
Specific Environmental Release Category	ESVOC SpERC 2.2.v1
Processes, tasks, activities covered	
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.	
Section 2 Operational conditions and risk management measures	
2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure > 10 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios / Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
General measures (carcinogens)	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.
General exposures (closed systems) with sample collection	Handle substance within a closed system Sample via a

	closed loop or other system to avoid exposure Wear suitable gloves tested to EN374.
General exposures (closed systems)	Provide extract ventilation to points where emissions occur Handle substance within a closed system Wear suitable gloves tested to EN374.
Storage	Wear suitable gloves tested to EN374. Store substance within a closed system
Process sampling	Handle substance within a closed system Sample via a closed loop or other system to avoid exposure Wear suitable gloves tested to EN374.
Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.
Bulk transfers	Ensure material transfers are under containment or extract ventilation Wear suitable gloves tested to EN374.
Drum/batch transfers	Ensure material transfers are under containment or extract ventilation Wear suitable gloves tested to EN374.
Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance Retain drain downs in sealed storage pending disposal or for subsequent recycle Clear spills immediately Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. Avoid carrying out activities involving exposure for more than 1 hour Ensure operation is undertaken outdoors

Low Boiling Point Naphthas / Gasoline exhibits acute inhalation toxicity and is classified R20 (Harmful by inhalation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary / additional RMMs. Low Boiling Point Naphthas / Gasoline exhibits irritation to the skin and is classified R38 (Irritating to skin) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary RMMs. Low Boiling Point Naphthas / Gasoline exhibits carcinogenic effects and is classified R45 (May cause cancer) accordingly. The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from these adverse effects consistent with Directive 2004/37/E. Low Boiling Point Naphthas / Gasoline is classified R65 (Harmful: may cause lung damage if swallowed). The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from this adverse effect.

2.2 Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	1.65e7
Fraction of regional tonnage used locally	0.0018

Frequency and duration of use
Continuous release.

Emission days (days/year)	300
Environmental 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)	0.025
Release fraction to wastewater from process (initial release prior to RMM)	0.002
Release fraction to soil from process (initial release prior to RMM)	0.0001

Technical conditions and measures at process level (source) to prevent release
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
Prevent discharge of undissolved substance to or recover from onsite wastewater. Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation). If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.

Treat air emission to provide a typical removal efficiency of (%):	56.5
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency >= (%):	94.7

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%):	0
Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via 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 (Msafe) based on release following total wastewater treatment removal (kg/d):	1.0e5
Assumed domestic sewage treatment plant flow (m^3/d):	2000
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.	
Section 3 Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	
Section 4 Guidance to check compliance with the Exposure Scenario	
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. 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 does not enable the derivation of a DNEL for dermal irritant effects. Available hazard data does not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterization.	
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. 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).	

5. Use of substance as a Fuel - Industrial

Section 1 Exposure Scenario Low Boiling Point Naphthas Gasoline	
Title	Use as a fuel
Use Descriptor	
Sector(s) of use	3
Process category(ies)	1, 2, 3, 8a, 8b, 16
Environmental release category(ies)	7
Specific Environmental Release Category	ESVOC SpERC 7.12a.v1
Processes, tasks, 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.	
Section 2 Operational conditions and risk management measures	
2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure > 10 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios / Product Category	Specific Risk Management Measures & Operating Conditions

General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
General measures (carcinogens)	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.
bulk closed unloading	Ensure material transfers are under containment or extract ventilation
Drum/batch transfers	Ensure material transfers are under containment or extract ventilation
Refuelling	Ensure material transfers are under containment or extract ventilation
Refuelling aircraft	Ensure material transfers are under containment or extract ventilation
General exposures (closed systems)	Handle substance within a closed system 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
Use as a fuel (closed systems)	Handle substance within a closed system
Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance Retain drain downs in sealed storage pending disposal or for subsequent recycle Clear spills immediately 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 Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Storage	Store substance within a closed system 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

Low Boiling Point Naphthas / Gasoline exhibits acute inhalation toxicity and is classified R20 (Harmful by inhalation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary / additional RMMs. Low Boiling Point Naphthas / Gasoline exhibits irritation to the skin and is classified R38 (Irritating to skin) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary RMMs. Low Boiling Point Naphthas / Gasoline exhibits carcinogenic effects and is classified R45 (May cause cancer) accordingly. The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from these adverse effects consistent with Directive 2004/37/E. Low Boiling Point Naphthas / Gasoline is classified R65 (Harmful: may cause lung damage if swallowed). The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from this adverse effect.

2.2 Control of environmental exposure

Product characteristics

Substance is complex UVCB. Predominantly hydrophobic.	
Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	1.4e6
Fraction of regional tonnage used locally	1
Frequency and duration of use Continuous release.	
Emission days (days/year)	300
Environmental 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)	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 conditions and measures at process level (source) to prevent release 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 Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation). If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%):	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
Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via 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 (Msafe) based on release following total wastewater treatment removal (kg/d):	4.6e6
Assumed domestic sewage treatment plant flow (m^3/d):	2000
Conditions and measures related to external treatment of waste for disposal	
Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment.	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is generated.	
Section 3 Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	
Section 4 Guidance to check compliance with the Exposure Scenario	
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. 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 does not enable the derivation of a DNEL for dermal irritant effects. Available hazard data does not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterization.	
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. 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).	

6. Use of substance as a Fuel - Professional

Section 1 Exposure Scenario Low Boiling Point Naphthas Gasoline	
Title	Use as a fuel
Use Descriptor	
Sector(s) of use	22
Process category(ies)	1, 2, 3, 8a, 8b, 16
Environmental release category(ies)	9a, 9b
Specific Environmental Release Category	ESVOC SpERC 9.12b.v1
Processes, tasks, 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.	
Section 2 Operational conditions and risk management measures	
2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure > 10 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios / Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
General measures (carcinogens)	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.
General exposures (closed systems) Outdoor	Handle substance within a closed system
bulk closed unloading	Ensure material transfers are under containment or extract ventilation
Drum/batch transfers	Ensure material transfers are under containment or extract ventilation
Refuelling	Ensure material transfers are under containment or extract ventilation
Use as a fuel (closed systems)	Handle substance within a closed system
Equipment maintenance	Drain down system prior to equipment break-in or maintenance Retain drain downs in sealed storage pending disposal or for subsequent recycle Clear spills immediately 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 Ensure operatives are trained to minimise

	exposures.
Storage	Store substance within a closed system 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

Low Boiling Point Naphthas / Gasoline exhibits acute inhalation toxicity and is classified R20 (Harmful by inhalation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary / additional RMMs. Low Boiling Point Naphthas / Gasoline exhibits irritation to the skin and is classified R38 (Irritating to skin) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary RMMs. Low Boiling Point Naphthas / Gasoline exhibits carcinogenic effects and is classified R45 (May cause cancer) accordingly. The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from these adverse effects consistent with Directive 2004/37/E. Low Boiling Point Naphthas / Gasoline is classified R65 (Harmful: may cause lung damage if swallowed). The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from this adverse effect.

2.2 Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	1.19e6
Fraction of regional tonnage used locally	0.0005

Frequency and duration of use
Continuous release.

Emission days (days/year)	365
Environmental 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)	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 conditions and measures at process level (source) to prevent release
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
Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation). If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.

Treat air emission to provide a typical removal efficiency of (%):	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

Organisation measures to prevent/limit release from site
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via 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 (Msafe) based on release following total wastewater treatment removal (kg/d):	1.5e4
Assumed domestic sewage treatment plant flow (m^3/d):	2000

Conditions and measures related to external treatment of waste for disposal
Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment.

Conditions and measures related to external recovery of waste
This substance is consumed during use and no waste of the substance is generated.

Section 3 Exposure Estimation

3.1 Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.
3.2 Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.
Section 4 Guidance to check compliance with the Exposure Scenario
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. 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 does not enable the derivation of a DNEL for dermal irritant effects. Available hazard data does not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterization.
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. 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).

7. Use of substance as a Fuel - Consumer

Section 1 Exposure Scenario Low Boiling Point Naphthas Gasoline	
Title	Use as a fuel
Use Descriptor	
Sector(s) of use	21
Product category(ies)	13
Environmental release category(ies)	9a, 9b
Specific Environmental Release Category	ESVOC SpERC 9.12c.v1
Processes, tasks, activities covered	
Covers consumer uses of automotive fuels only.	
Section 2 Operational conditions and risk management measures	
2.1 Control of consumer exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure > 10 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Amounts used	For each use event, covers use amounts up to (g): 37500. Covers skin contact area up to (cm2): 420.
Frequency and duration of use	Covers use up to (times/day of use): 0.143 Covers exposure up to (hours/event): 2

Contributing Scenarios / Product Category	**Specific Risk Management Measures & Operating Conditions**
Liquid: Automotive Refuelling	Covers concentrations up to (%): 1%. Covers use up to (days/year): 52. Covers use up to (times/day of use): 1. Covers skin contact area up to (cm2): 210. For each use event, covers use amounts up to (g): 37500. Covers outdoor use Covers use in room size of (m^3): 100. Covers exposure up to (hours/event): 0.05. No specific risk management measure identified beyond those operational conditions stated
Liquid Scooter Refuelling	Covers concentrations up to (%): 1%. Covers use up to (days/year): 52. Covers use up to (times/day of use): 1. Covers skin contact area up to (cm2): 210.00. For each use event, covers use amounts up to (g): 37500. Covers outdoor use Covers use in room size of (m^3): 100. Covers exposure up to (hours/event): 0.03. No specific risk management measure identified beyond those operational conditions stated
Liquid Garden Equipment - Use	Covers concentrations up to (%): 1%. Covers use up to (days/year): 26. Covers use up to (times/day of use): 1. For each use event, covers use amounts up to (g): 750. Covers outdoor use Covers use in room size of (m^3): 100.

	Covers exposure up to (hours/event): 2. No specific risk management measure identified beyond those operational conditions stated
Liquid: garden equipment - refuelling	Covers concentrations up to (%): 1%. Covers use up to (days/year): 26. Covers use up to (times/day of use): 1. Covers skin contact area up to (cm2): 420. For each use event, covers use amounts up to (g): 750. Covers use in a one car garage (34 m³) under typical ventilation. Covers use in room size of (m³): 34. Covers exposure up to (hours/event): 0.03. No specific risk management measure identified beyond those operational conditions stated

Low Boiling Point Naphthas / Gasoline exhibits acute inhalation toxicity and is classified R20 (Harmful by inhalation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary / additional RMMs. Low Boiling Point Naphthas / Gasoline exhibits irritation to the skin and is classified R38 (Irritating to skin) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary RMMs. Low Boiling Point Naphthas / Gasoline exhibits carcinogenic effects and is classified R45 (May cause cancer) accordingly. The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from these adverse effects consistent with Directive 2004/37/E. Low Boiling Point Naphthas / Gasoline is classified R65 (Harmful: may cause lung damage if swallowed). The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from this adverse effect.

2.2 Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	1.39e7
Fraction of regional tonnage used locally	0.0005

Frequency and duration of use
Continuous release.

Emission days (days/year)	365

Environmental 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)	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 (Msafe) based on release following total wastewater treatment removal (kg/d):	1.8e5
Assumed domestic sewage treatment plant flow (m³/d):	2000

Conditions and measures related to external treatment of waste for disposal
Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment.

Conditions and measures related to external recovery of waste
This substance is consumed during use and no waste of the substance is generated.

Section 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 the Petrorisk model.

Section 4 Guidance 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. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
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. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).