1 IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier:

Identification on the label/Trade name(s): **GASOLINE NORMAL-80; GASOLINE PREMIUM-95; GASOLINE REGULAR-92**

Name of Substance:	CAS No.:	EC No.:	Index No.:
Gasoline	**86290-81-5**	**289-220-8**	**649-378-00-4**

REACH registration No.: **01-2119471335-39-0084**

1.2 Relevant identified uses of the substance and uses advised against:

1.2.1 Identified uses:

-Manufacture of substances, -Distribution of substance,
-Use of substance as intermediate, -Formulation and repackaging of substances & mixtures

1.2.2 Uses advised against: Uses other than those given above, are not recommended.

1.3 Manufacturer

"Orsknefteorgsintez", OJSC. Goncharova str., 1a, Orsk city, Orenburg region, 462407, Russian Federation

1.4 Details of the supplier of the safety data sheet:

Only Representative: **SpetsInterProject Oy** E-mail: hs@reach-registrator.net

1.5 Emergency telephone Number:

2 HAZARDS IDENTIFICATION

2.1 Classification of the substance

2.1.1 Classification:

EU CLP 1272/2008: This classification relates to low boiling point naphtha, (flashpoint < 23°C initial boiling point ≤ 35°C, benzene ≥ 0.1%, n-hexane ≥ 3%, OR toluene ≥ 3%, OR toluene ≥ 3% and n-hexane ≥ 3%)
Classification: Flam. Liq. 1; H224; Skin Irrit. 2; H315; Asp. Tox. 1; H304; Repr. 2; H361; Muta. 1B; H340; Carc. 1B; H350; STOT SE 3; H336; Aquatic Chronic 2; H411

For full text of H- phrases: see section 2.2.

67/548/EEC(DSD): This classification relates low boiling point naphtha, (flashpoint < 0°C initial boiling point ≤ 35°C, benzene ≥ 0.1%, toluene ≥ 5%)
Classification: F+; R12; Xn; R65; R67; Xi; R38; Carc. Cat. 2; R45; Muta. Cat. 2; R46; Repr. Cat. 3; R63; N; R51/53 Indication of danger: F+ - extremely flammable N - dangerous for the environment Xi - irritant Xn - harmful R-phrases: R12 - extremely flammable R38 - irritating to skin R45 - may cause cancer R46 - may cause heritable genetic damage R51/53 - toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment R63 - possible risk of harm to the unborn child R65 - harmful: may cause lung damage if swallowed R67 - vapours may cause drowsiness and dizziness S-phrases: S2 - keep out of the reach of children S23 - do not breathe gas/fumes/vapour/spray (appropriate wording to be specified by the manufacturer) S24 - avoid contact with skin S29 - do not empty into drains S36/37 - wear suitable protective clothing and gloves S43 - in case of fire, use: Foam (Specifically trained personnel only), Water fog (Specifically trained personnel only), Dry chemical powder, Carbon dioxide, Other inert gases (subject to regulations), Sand or earth. Do not use direct water jets on the burning product; they could cause splattering and spread the fire. Simultaneous use of foam and water on the same

surface is to be avoided as water destroys the foam.
S45 - in case of accident or if you feel unwell, seek medical advice immediately (show the lable where possible)
S51 - use only in well-ventilated areas
S53 - avoid exposure - obtain special instructions before use
S61 - avoid release to the environment. Refer to special instructions/safety data sheets
S62 - if swallowed, do not induce vomiting: seek medical advice immediately and show this container or label

2.1.2 The most important adverse effects

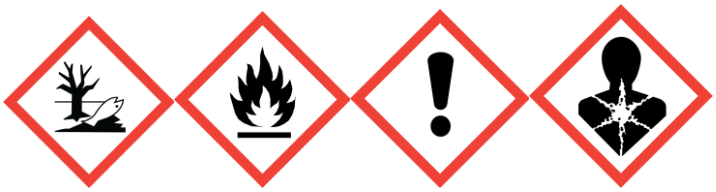
Physical/chemical hazards: Extremely flammable. During use, may form explosive or flammable mixture of vapours and air.

For health hazards: May cause lung damage if swallowed. Vapours may cause drowsiness or dizziness. Causes skin irritation. Vapour is irritating to skin, eyes and respiratory tract. Liquid product splashes irritate eyes and skin. Gasoline may contain up to 1 % vol. of benzene which is classified as carcinogen of 2nd category, therefore long-term exposure may cause cancer, anemia, leukemia and other diseases. May cause genetic defects. Suspected of damaging fertility or the unborn child.
DO NOT INGEST. IF SWALLOWED THEN SEEK IMMEDIATE MEDICAL ASSISTANCE.

For environmental hazards: Toxic to aquatic life with long lasting effects.

2.2 Label elements:

Hazard Pictograms:



GHS09 GHS02 GHS07 GHS08

Signal Word(S): **Danger**

Hazard Statements:
H224: Extremely flammable liquid and vapour
H304-May be fatal if swallowed and enters airways
H315-Causes skin irritation
H336-May cause drowsiness or dizziness
H340-May cause genetic defects
H350-May cause cancer
H361-Suspected of damaging fertility or the unborn child
H411-Toxic to aquatic life with long lasting effects

Precautionary Statements:
P201-Obtain special instructions before use
P210-Keep away from heat/sparks/open flames/…hot surfaces….no smoking.
P280-Wear protective gloves/protective clothing/eye protection/face protection.
P301 + P310-IF SWALLOWED: Immediately call a poison centre or doctor/physician
P403 + P233-Store in a well-ventilated place. Keep container tightly closed.
P501-Dispose of contents/container to….

2.3 Other hazards: The substance does not fulfill the PBT / vPvB criteria.

3 COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance:

Description: A complex combination of hydrocarbons consisting primarily of paraffins, cycloparaffins, aromatic and olefinic hydrocarbons having carbon numbers predominantly greater than C3 and boiling in the range of 30°C to 260°C (86°F to 500°F).

The substance is UCVB substance. The purity is 100%

Ingredient(s)/Constituent(s):

Name of Constituent:	CAS No.:	EC No.:	Index No.:	Composition, % (w/w):
Benzene	**71-43-2**	**200-753-7**	**601-020-00-8**	**3.32**
Toluene	**108-88-3**	**203-625-9**	**601-021-00-3**	**13.89**
Aromatics	**-**	**-**	**-**	**57**
Saturated hydrocarbons	**-**	**-**	**-**	**42.5**
Unknown Constituents	**-**	**-**	**-**	**0.5**

4 FIRST AID MEASURES

4.1 Description of first aid measures:

4.1.1 In case of inhalation:

Symptoms: inhalation of vapours may cause headache, nausea, vomiting and an altered state of consciousness.
If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If the casualty is unconscious and:
* Not breathing – ensure that there is no obstruction to breathing and give artificial respiration by trained personnel. If necessary, give external cardiac massage and obtain medical assistance.
* Breathing - place in the recovery position and keep the head below the level of the torso. Administer oxygen if ecessary; Obtain medical attention if casualty has an altered state of consciousness or if symptoms do not resolve. (Subject to applicability) If there is any suspicion of inhalation of H2S:
* Rescuers must wear breathing apparatus, belt and safety rope, and follow rescue procedures.
* Remove casualty to fresh air as quickly as possible.
* Immediately begin artificial respiration if breathing has ceased.
* Provision of oxygen may help.

4.1.2 In case of skin contact:

Symptoms: reddening, irritation.
Remove contaminated clothing and footwear, and dispose of safely. Wash affected area with soap and water. Seek medical attention if skin irritation, swelling or redness develops and persists. When using high-pressure equipment, injection of product can occur. If high-pressure injuries occur, immediately seek professional medical attention. Do not wait for symptoms to develop. For minor thermal burns: Cool the burn. Hold the burned area under cold running water for at least five minutes, or until the pain subsides. However, body hypothermia must be avoided.

4.1.3 In case of eyes contact:

Symptoms: slight irritation (unspecific).
Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.
If irritation, blurred vision or swelling occurs and persists, obtain medical advice from a specialist.

4.1.4 In case of ingestion/aspiration:

Symptoms: few or no symptoms expected. If any, nausea and diarrhoea might occur.
Ingestion (swallowing) of this material may result in an altered state of consciousness and loss of coordination. In case of ingestion, always assume that aspiration has occurred .The casualty should be sent immediately to a hospital. Do not wait for symptoms to develop. Do not induce vomiting as there is high risk of aspiration. Do not give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

Inhalation:	Inhalation of vapours may cause headache, nausea, vomiting and an altered state of consciousness.
Skin contact:	reddening, irritation
Eyes contact:	slight irritation (unspecific)
Ingestion/aspiration:	In case of ingestion/aspiration nausea and diarrhoea might occur. Ingestion (swallowing) of this material may result in an altered state of consciousness and loss of coordination. May be fatal if swallowed and enters airways.

4.3 Indication of any immediate medical attention and special treatment needed

Immediately call a POISON CENTER or doctor/physician.

5 FIRE-FIGHTING MEASURES

5.1 Extinguishing media:

Suitable extinguishing media: Foam (Specifically trained personnel only), water fog (Specifically trained personnel only), dry chemical powder, carbon dioxide, other inert gases (subject to regulations), sand or earth.
Unsuitable extinguishing media: Do not use direct water jets on the burning product; they could cause splattering and spread the fire. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

5.2 Special hazards arising from the substance or mixture

Combustion Products: Incomplete combustion is likely to give rise to a complex mixture of airborne solid and liquid particulates and Gases, including carbon monoxide and unidentified organic and inorganic compounds. If sulphur compounds are present in appreciable amounts, combustion products may include also H2S and SOx (sulfur oxides) or sulfuric acid.
This substance will float and can be reignited on surface water.

5.3 Advice for fire-fighters:

Firefighters must wear fire resistant protective equipment. Wear self contained breathing apparatus and protective gloves. Use of water mist and water spray for cooling the surfaces exposed to heat and for protection of persons. Only persons trained in fire-fighting should use water spray.
In case of a large fire or in confined or poorly ventilated spaces wear full fire resistant protective clothing and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:

6.1.1 For non-emergency personnel:

Stop or contain leak at the source if safe to do so. Avoid direct contact with released material. Stay upwind. In case of large spillages, alert occupants in downwind areas. Keep non-involved personnel away from the area of spillage. Alert emergency personnel. Except in case of small spillages, the feasibility of any actions should always be assessed and advised, if possible, by a trained, competent person in charge of managing the emergency. Eliminate all ignition sources if safe to do so (e.g. electricity, sparks, fires, flares). (Subject to applicability): In those cases when the presence of dangerous amounts of H2S around the spilled product is suspected or proved, additional or special actions may be warranted, including access restrictions, use of special protection equipment, procedures and personnel training. If required, notify relevant authorities according to all applicable regulations.

6.1.2 For emergency responders:

Small spillages: normal antistatic working clothes are usually adequate. Large spillages: full body suit of chemically resistant and antistatic material.
Work gloves providing adequate chemical resistance, specifically to aromatic hydrocarbons. Note: gloves made of PVA are not water-resistant, and are not suitable for emergency use.
Work helmet. Antistatic non-skid safety shoes or boots
Goggles or face shield, if splashes or contact with eyes is possible or anticipated.
Respiratory protection: A half or full-face respirator with filter(s) for organic vapours (and when applicable for H2S) or a Self Contained Breathing Apparatus (SCBA) can be used according to the extent of spill and predictable amount of exposure. If the situation cannot be completely assessed, or if an oxygen deficiency
is possible, only SCBA's should be used.

6.2 Environmental precautions:

Prevent product from entering sewers, rivers, waterways or other bodies of water

6.3 Methods for containment and cleaning up:

Spillages onto land

Prevent product from entering sewers, rivers, waterways or other bodies of water. If necessary dike the product with dry earth, sand or similar non-combustible materials. Large spillages may be cautiously covered with foam, if available, to limit vapour cloud formation. Do not use direct jets. When inside buildings or confined spaces, ensure adequate ventilation. Absorb spilled product with suitable non-combustible materials. Collect free product with suitable means. Transfer collected product and other contaminated materials to suitable containers for recovery or safe disposal. In case of soil contamination, remove contaminated soil and treat in accordance with local regulations.

Spillages on water or at sea

In case of small spillages in closed waters (i.e. ports), contain product with floating barriers or other equipment. Collect spilled product by absorbing with specific floating absorbents. Large spillages in open waters should be contained with floating barriers or other mechanical means and recovered, only if this is strictly necessary and if fire/explosion risks can be adequately prevented. Otherwise control the spreading of the spillage, and let the substance evaporate naturally.

The use of dispersants should be advised by an expert, and, if required, approved by local authorities. Collect all waste materials in suitable tanks or containers for recovery or safe disposal.

6.4 Reference to other sections:

See Section 7 for information on safe handling.
See section 8 for information on personal protection equipment.
See Section 13 for information on disposal.

6.5 Additional information:

Note: recommended measures are based on the most likely spillage scenarios for this material; however, local conditions (wind, air temperature, wave/current direction and speed) may significantly influence the choice of appropriate actions. For this reason, local experts should be consulted when necessary. Local regulations may also prescribe or limit actions to be taken.
(Subject to applicability): Concentration of H2S in tank headspaces may reach hazardous values, especially in case of prolonged storage. This situation is especially relevant for those operations which involve direct exposure to the vapours in the tank.

(Subject to applicability): Spillages of limited amounts of products, especially in the open air when vapours will be usually quickly dispersed, are dynamic situations, which are unlikely to entail exposure to dangerous concentrations. As H2S has a density greater than ambient air, a possible exception may regard the build-up of dangerous concentrations in specific spots, like trenches, depressions or confined spaces. In all these circumstances, however, the correct actions should be assessed on a case-by-case basis.

7 HANDLING AND STORAGE

7.1 Precautions for safe handling:

7.1.1 Protective measures:

Take precautionary measures against static electricity. Ground/bond containers, tanks and transfer/receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment Use only non-sparking tools. The vapour is heavier than air. Beware of accumulation in pits and confined spaces. Use only bottom loading of tankers, in compliance with European legislation. Do not use compressed air for filling, discharging, or handling operations.

7.1.2 Advice on general occupational hygiene:

Avoid contact with skin and eyes. Do not ingest. Do not breathe vapours. Use personal protective equipment as required. For more information regarding protective equipment and operational conditions see Exposure scenarios.

7.2 Conditions for safe storage, including any incompatibilities

Storage area layout, tank design, equipment and operating procedures must comply with the relevant European, national or local legislation. Storage installations should be designed with adequate bunds so as to prevent ground and water pollution in case of leaks or spills. Cleaning, inspection and maintenance of the internal structure of storage tanks must be done only by properly equipped and qualified personnel as defined by national, local or company regulations. Before entering storage tanks and commencing any operation in a confined area check the atmosphere for oxygen content and flammability. (Subject to applicability) If sulphur compounds are suspected to be present in the product, check the atmosphere for H2S content. Store separately from oxidising agents.

Recommended and Unsuitable Materials for Storage

Recommended materials: For containers, or container linings use mild steel, stainless steel.
Unsuitable materials: Some synthetic materials may be unsuitable for containers or container linings depending on the material specification and intended use. Compatibility should be checked with the manufacturer.

Container Advice

If the product is supplied in containers:

- Keep only in the original container, or in an approved container for this kind of product. Keep containers tightly closed and properly labelled. Protect from the sunlight
- Light hydrocarbon vapours can build up in the headspace of containers. These can cause flammability / explosion hazards. Open slowly in order to control possible pressure release.
- Empty containers may contain flammable product residues. Do not weld, solder, drill, cut or incinerate empty containers, unless they have been properly cleaned.

7.3 Specific end use(s): Not applicable

8 EXPOSURE CONTROL/PERSONAL PROTECTION

8.1 Control parameters:

8.1.1 Occupational exposure limits: Consult local authorities for acceptable exposure limits

8.1.2 Additional exposure limits under the conditions of use: Not available.

8.1.3 DNEL/DMEL values (see tables below) and PNEC-Values (none)

DN(M)ELs for workers (Low boiling point naphthas (gasolines) (R45/46; R62/63)

	Effect	Route	DNEL	Dose Descriptor	Modified Dose Descriptor and Assessment Factors
Acute Exposure	Systemic	Dermal	(c) (a)		
		Inhalation	1300 mg/m^3/15 min (a)	4320 mg/m^3/h (LOAEC based on for neuromuscular symptoms in human volunteers)	Dose descriptor was modified to correct starting point of 3859 mg/m^3/15 min by adjustment for duration of exposure, LOAEC to NOAEC, and ventilation rate of workers. Then AF of 3 was applied for intraspecies differences.
	Local	Dermal	(d)		
		Inhalation	1100 mg/m^3/15 min	2400 mg/m^3/h (LOAEC based on irritation of nose and throat in human volunteers)	Dose descriptor was modified to correct starting point of 3200 mg/m^3/15 min by adjustment for duration of exposure and LOAEC to NOAEC. Then AF of 3 was applied for intraspecies differences.
Long-Term Exposure	Systemic (b)	Dermal	(c) (a)		
		Inhalation	(c) (a)		
	Local	Dermal	(d)		
		Inhalation	840 mg/m^3/8h	10,000 mg/m^3/6 h (NOAEC based on red nasal discharge in rats exposed by inhalation for 6 h/day, 5 days/wk for 13 wk)	Dose descriptor was modified to correct starting point of 5025 mg/m^3/8-h day by adjustment for duration of daily exposures and ventilation rate of workers. Then AF of 6 was applied for inter- and intraspecies differences and for overall duration of exposure.

a) Additional consideration should be given to an inhalation DMEL-worker for benzene of 1 ppm if benzene air concentrations are sufficiently high. A dermal reference value for workers of 23.4 mg of benzene/kg/day [1% absorption of benzene from benzene-containing petroleum naphtha streams via the skin] should be considered if dermal exposure is expected.

b) Long-term systemic effects include non-reproductive effects and developmental/reproductive effects. Lowest DNEL is shown.

c) No hazard identified for this route (data available)

d) The data do not allow setting a DNEL.

DN(M)ELs for the general population (Low boiling point naphthas (gasolines)) (R45/46; R62/63)

	Effect	Route	DNEL	Dose Descriptor	Modified Dose Descriptor and Assessment Factors
Acute Exposure	Systemic	Dermal	(a) (c)		
		Inhalation	1200 mg/m3/15 min (a)	4320 mg/m^3/h (LOAEC based on for neuromuscular symptoms in human volunteers)	Dose descriptor was modified to correct starting point of 5760 mg/m3/15 min by adjustment for duration of exposure and LOAEC to NOAEC. Then AF of 5 was applied for intraspecies differences.
	Local	Dermal	(e)		
		Inhalation	640 mg/m3/15 min	2400 mg/m^3/h (LOAEC based on irritation of nose and throat in human volunteers)	Dose descriptor was modified to correct starting point of 3200 mg/m3/15 min by adjustment for duration of exposure and LOAEC to NOAEC. Then AF of 5 was applied for intraspecies differences.
Long-	Systemic	Dermal	(a) (c)		

Term Exposure	(b)	Inhalation	(a) (c)		
		Oral	(a) (d)		
	Local	Dermal	(e)		
		Inhalation	180 mg/m3/24h	10,000 mg/m^3/6 h (NOAEC based on red nasal discharge in rats exposed by inhalation for 6 h/day, 5 days/wk for 13 wk)	Dose descriptor was modified to correct starting point of 1785 mg/m3/24-h day by adjustment for duration of daily exposures and number of exposures per week. Then AF of 10 was applied for inter- and intraspecies differences and for overall duration of exposure.

a) Additional consideration should be given to an inhalation DMEL-general population for benzene of 1 ppb if benzene air concentrations are sufficiently high. Using this air concentration reference value for benzene in air of 1 ppb (3.5 microgram/m3) and assuming a default inhalation rate of 20 m3/day and a body weight of 70 kg yields a reference value for indirect exposure of 1.0 microgram benzene/kg/d. The ratio of benzene to total gasoline vapor utilized was 0.01. Thus, the resulting reference value utilized for indirect exposure of man via the environment is 100 micrograms total naphtha hydrocarbon containing benzene /kg/d. A dermal reference value for general population of 23.4 micrograms of benzene/kg/day [1% absorption of benzene from benzene-containing petroleum naphtha streams via the skin], should be considered if dermal exposure is expected. An oral reference value for general population, of 0.234 micrograms of benzene/kg/day, from benzene-containing petroleum naphtha streams in the environment should be considered if exposure via the oral route is expected (this is not expected).

b) Long-term systemic effects include developmental/reproductive effects. Lowest DNEL is shown.

c) No hazard identified for this route (data available)

d) A DNEL for long-term oral exposures of the general population was not calculated for the reasons given below. The hazard from long-term oral exposures of the general population may be more dependent on the presence of benzene or toluene in gasoline; appropriate measures should be taken based on the levels of those substances.

c) Dermal or inhalation repeat-dose studies with gasoline or naphtha streams did not result in adverse systemic effects with doses at or above the limit dose.

d) Aside from potential neuromuscular effects from very high doses, acute exposures to gasoline and naphtha streams also have not resulted in significant adverse systemic effects.

d) Data on oral exposures were not available (possibly because it was not considered to be a relevant route).

e) The data do not allow setting a DNEL.

8.2 Exposure controls

Please refer to Annex of eSDS for controls of each exposure scenario.

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance:	Liquid	**Upper/lower explosive concentration of vapors in air:**	1 – 6 % (by volume)
Colour:	Colorless	**Vapour pressure:**	range of 4 to 240 kPa at 37.8°C
Odour:	Characteristic of petrol	**Vapour density:**	Not applicable
Odour threshold:	Not available	**Relative Density (at 15°C):**	700 – 780 kg/m^3
pH:	Not available	**Water solubility:**	Insoluble
Freezing point (°C):	-60	**n-Octanol/Water (log Po/w) :**	Not applicable
Boiling point/range (°C):	Approx. 29.5 – max. 215	**Auto-ignition temperature (°C):**	255 – 370
Flash point (°C):	-27 – -39	**Decomposition temperature:**	Not available
Evaporation rate:	Not applicable	**Viscosity:**	<1mm^2/sec @ 37.8◦C
Flammability:	Extremely flammable	**Explosive properties:**	Non explosive
Upper/lower flammability limits (°C):	-27/-39 – -8/-27	**Oxidising properties:**	No oxidising

9.2 Other information:

Fat solubility(solvent– oil to be specified) etc.:	Dissoluble in organic solvents, oils.
Bulk Density:	Not available
Dissociation constant in water(pKa):	Not available
Oxidation-reduction Potential:	Not available

10 STABILITY AND REACTIVITY

10.1 Reactivity: Stable at prescribed storage and use conditions.
10.2 Chemical stability: Under normal conditions, the product is stable. No hazardous reaction when handled and stored according to provisions.
10.3 Possibility of hazardous reactions: Under normal conditions, not hazardous reactions will occur.
10.4 Conditions to avoid: Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas. Avoid exposure - obtain special instructions before use. Avoid release to the environment. Refer to special instructions/safety data sheet.
10.5 Incompatible materials: Highly reactive or incompatible with the following materials: oxidizing materials.
10.6 Hazardous decomposition products: Thermal decomposition products vary depending on conditions. Partial decomposition produces fume, carbon dioxide, carbon monoxide and other harmful gases. Toxic gas concentration in a confined space or premises may reach a hazardous limit.

11 TOXICOLOGICAL INFORMATION

11.1 Toxicokinetics, metabolism and distribution

There are no experimental studies of the toxicokinetics of gasoline per se, but there have been numerous toxicokinetic studies of the major gasoline constituents. The principal route of exposure for most individuals is inhalation. It has been shown that absorption of inhaled constituents increases with increasing molecular weight, with n-paraffins being more highly absorbed than iso-paraffins and aromatics being more highly absorbed than the corresponding paraffins. The low molecular weight constituents (butanes and pentanes) are poorly absorbed and predominantly exhaled unchanged.
The higher molecular weight constituents are more efficiently absorbed, with metabolism, normally to the corresponding alcohols, and excretion in the urine becoming increasingly important. About 15% of the butanes and pentanes are absorbed with biological half-times measured in minutes. About 25% of the hexanes and 50% of the higher molecular weight constituents are absorbed with biological halftimes ranging from approximately 3-12 hours depending on whether the assessment is based on blood or urinary levels.
Dermal contact normally contributes little to overall dose as gasoline constituents in the vapor phase are poorly absorbed percutaneously. Studies with toluene indicate that dermal absorption from vapor is approximately 1% of the amount absorbed by inhalation. When contacted as liquid, gasoline constituents are also poorly absorbed if allowed to evaporate. However, if evaporation is impeded then the fraction absorbed can be substantial. Other toxicokinetic properties of percutaneously absorbed gasoline constituents are similar to material absorbed by inhalation.
Oral ingestion also normally contributes little to overall dose as gasoline is not intended for consumption. However, most of the constituents are well absorbed from the gastrointestinal tract. An assumption of 100% bioavailability of ingested material is reasonable.

11.2 Information on toxicological effects

Acute toxicity:	Acute oral LD50 > 5000 mg/kg Acute Inhalation LC50 > 5610 mg/m3 Acute dermal LD50 > 2000 mg/kg
Skin corrosion/Irritation:	In vivo skin irritation - Irritant.
Serious eye damage/irritation:	In vivo eye irritation - Not irritant
Skin sensitization:	No evidence of sensitisation
Germ cell mutagenicity:	Mutagenic In vitro cytogenicity study in mammalian cells– Negative. In vitro gene mutation study in mammalian cells – Mostly negative but isolated positive or equivocal mouse lymphoma studies. In vivo cytogenicity – Negative. In vivo gene mutation – Negative.

Carcinogenicity:	Carcinogenic (based on presence of more than 0.1% benzene).
Reproductive toxicity:	Developmental toxicity inhalation NOAEL 20000 mg/m^3 Reproductive toxicity inhalation NOAEL 20000 mg/m^3
STOT- single exposure:	Warnings for aspiration hazard and potential narcotic effects at high concentrations.
STOT-repeated exposure:	By inhalation - the various reported changes included body weight effects, organ weight changes, variations in hematologic parameters, and red nasal discharge. Repeated treatment at high levels can produce quite severe dermal effects at the application site. Short-term repeat dose dermal NOAEL 3750 mg/kg Short-term repeat dose inhalation NOAEL 9840 mg/m^3 Sub-chronic repeat dose inhalation NOAEL 20000 mg/m^3
Aspiration hazard:	Classified as aspiration hazard (Xn; R65 harmful, may cause lung damage if swallowed, according to EU DSD 67/548/EEC).

12 ECOLOGICAL INFORMATION

12.1 Toxicity:
Toxic to aquatic life with long lasting effects
Acute aquatic invertebrate EL50: 4.5mg/l
Acute aquatic algae EL50: 3.1mg/l
Acute aquatic fish LL50: 8.2mg/l
Long-term Invertebrate NOEC: 2.6mg/l

12.2 Persistence and degradability:
As such, the substance has a very low potential to hydrolyze. Therefore, this degradative process will not contribute to its removal from the environment.
An evaluation of representative hydrocarbon structures indicate some structures meet the Persistent (P) or very Persistent (vP) criteria (see CONCAWE, 2010).

12.3 Bioaccumulative potential:
An evaluation of representative hydrocarbon structures indicate no structures meet the very Bioaccumulative (vB) criterion but some structures meet the Bioaccumulative (B) criterion (see CONCAWE, 2010).

12.4 Mobility in soil:
Not available.

12.5 Results of PBT&vPvB assessment:
Anthracene is not present in this substance at greater than 0.1% (CONCAWE, 2010). No other representative hydrocarbon structures were found to meet the PBT / vPvB criteria. The substance does not fulfill the PBT / vPvB criteria.

12.6 Other adverse effects:
This substance may contribute to ozone formation in the near surface atmosphere. However, the photochemical formation of ozone depends on a complex interaction of other atmospheric pollutant sources and environmental conditions. Therefore, the contribution of this substance to ozone formation is outside the scope of this substance assessment and is more appropriately addressed via EU air quality directives.

13 DISPOSAL CONSIDERATIONS

Methods of disposal: The generation of waste should be avoided or minimised wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.
Hazardous waste: It is recommended to handle product remnants as hazardous waste.

14 TRANSPORT INFORMATION

	Land transport (ADR/RID)	*Sea transport (IMDG)*	*Air transport (ICAO/IATA)*
UN-Number:	1203	1203	1203

UN Proper shipping name:	GASOLINE	MOTOR SPIRIT	GASOLINE
Transport hazard Class:	3	3	3
Packaging group:	I	I	I
Environmental hazards:	3 Flammable liquids. Environmentally hazardous substance mark	3 Flammable liquids. Marine pollutant mark.	3 Flammable liquids. Environmentally hazardous substance mark
Special precautions for user:	See section 2.2	See section 2.2	See section 2.2

15 REGULATORY INFORMATION

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

Relevant information regarding authorization: Not applicable
Relevant information regarding restriction: Not applicable
Other EU regulations: Regulation (EU) No 453/2010
Regulation (EC) No 1272/2008
Other National regulations: Not applicable.

The Chemical Safety Assessment has been performed for the substance.

16 OTHER INFORMATION

16.1 Indication of changes

Version 1.2 reflects a change of the Only Representative.
Version 1.1 amended by EU No 453/2010. The data was updated and is in consistency with the Chemical Safety Report provided by the Lead Registrant of the joint submission during REACH registration process. Section 3 was updated and is in consistency with the registration dossier on the substance provided by the manufacturer's Only Representative during REACH registration process.

16.2 Key sources for data

CONCAWE Chemical Safety Report prepared for Low Boiling Point Naphthas (Gasolines), 2010.

16.3 List of relevant R phrases, hazard statements, safety phrases and precautionary statements

Hazard Statements:	**R-phrases:**
H224: Extremely flammable liquid and vapour	R12 - extremely flammable
H304-May be fatal if swallowed and enters airways	R38 - irritating to skin
H315-Causes skin irritation	R45 - may cause cancer
H336-May cause drowsiness or dizziness	R46 - may cause heritable genetic damage
H340-May cause genetic defects	R51/53 - toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
H350-May cause cancer	R63 - possible risk of harm to the unborn child
H361-Suspected of damaging fertility or the unborn child	R65 - harmful: may cause lung damage if swallowed
H411-Toxic to aquatic life with long lasting effects	R67 - vapours may cause drowsiness and dizziness
Precautionary Statements:	**S-phrases:**
P201-Obtain special instructions before use	S2 - keep out of the reach of children
P210-Keep away from heat/sparks/open flames/…hot surfaces….no smoking.	S23 - do not breathe gas/fumes/vapour/spray (appropriate wording to be specified by the manufacturer)
P280-Wear protective gloves/protective clothing/eye protection/face protection.	S24 - avoid contact with skin
P301 + P310-IF SWALLOWED: Immediately call a poison centre or doctor/physician	S29 - do not empty into drains
P403 + P233-Store in a well-ventilated place. Keep container tightly closed.	S36/37 - wear suitable protective clothing and gloves
P501-Dispose of contents/container to….	S43 - in case of fire, use: Foam (Specifically trained personnel only), Water fog (Specifically trained personnel only), Dry chemical powder, Carbon dioxide, Other inert gases (subject to regulations), Sand or earth. Do not use direct water jets on the burning product; they could cause splattering and spread the fire. Simultaneous use of foam and water on the

	same surface is to be avoided as water destroys the foam. S45 - in case of accident or if you feel unwell, seek medical advice immediately (show the lable where possible) S51 - use only in well-ventilated areas S53 - avoid exposure - obtain special instructions before use S61 - avoid release to the environment. Refer to special instructions/safety data sheets S62 - if swallowed, do not induce vomiting: seek medical advice immediately and show this container or label

16.4 Acronyms, abbreviations

AC: Article category
ADR: European Agreement concerning international carriage of Dangerous goods by Road
ACGIH - American Conference of Governmental Industrial Hygienists
DNEL: Derivative No effect Level
DSD: Dangerous Substances Directive
EC: European Community
EU: European Union
EU CLP 1272/2008: Regulation (EC) No 1272/2008
EUH: European Hazard Statement
GHS: Global Harmonized System
IMDG: International Maritime Dangerous Goods
IATA: International Air Transport Association
LD50/LC50 - Lethal Dose/Concentration kill 50%
LC50: Median lethal dose
NOAEC/NOAEL: No Observable Adverse Effect Concentration / Level
OECD: Organization for Economic Co-Operation and Development
OSHA - Occupational Safety & Health Administration
PBT: Persistent, bioaccumulative, Toxic
PC: Product Category
PEL: Permissible exposure limits
PNEC: Predicted No effect Concentration
Ppm: Part per million
PROC: Process Category
eSDS: Extended Safety Data Sheet
STEL: Short Term Exposure Limit
SU: Sector of Use
TWA: Time weighted average
TVL: Threshold Limit Values
USEPA: United States Environmental Protection Agency
UCVB substances: Substances of Unknown or Variable Composition
vPvB: Very persistent and very bioaccumulative
WEL: Workplace Exposure Limit
WEL-STEL = Workplace Exposure Limit - Short-term exposure limit (15-minute reference period)
WEL-TWA = Workplace Exposure Limit - Long-term exposure limit (8-hour TWA (= time weighted average) reference period)
w/w: weight by weight

16.5 Notice to reader:

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgment of suitability of this information to ensure proper use and protect the health and safety of employees.

This information is furnished without warranty, and any use of the product not in conformance with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Appendix 1 - Exposure Scenarios

1. Manufacture of Low Boiling Point Naphthas (Gasoline) – Industrial

Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is classified as R45 and/or R46 and/or R62 and/or R63; (containing equal to or greater than 1% to 5% benzene)	
Title	
Manufacture of substances	
Use Descriptor	
Sector(s) of Use	3, 8, 9
Process Categories	1, 2, 3, 8a, 8b, 15
Environmental Release Categories	1, 4
Specific Environmental Release Category	ESVOC SpERC 1.1.v1
Processes, tasks, activities covered	
Manufacture of the substance within closed or contained systems. Includes incidental exposures during recycling / recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).	
Assessment Method	
See Section 3.	
Section 2 Operational conditions and risk management measures	
Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure > 10 kPa at STP OC5
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) G13
Amount used	Not applicable
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature). OC7. Assumes a good basic standard of occupational hygiene is implemented G1.
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions
General Measures (skin irritants). G19.	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3
General Measures (carcinogens). G18.	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general / local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean / flush equipment, where possible, prior to maintenance. Where there is potential for exposure: Restrict access to authorised staff; provide specific activity training to operators to minimise exposures; wear suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20.
CS15 General exposures	Handle substance within closed systems. E47.

(closed systems). + CS56 With sample collection.	Sample via a closed loop or other system intended to avoid exposure. E8. Wear suitable gloves tested to EN374. PPE15.
CS15 General exposures (closed systems).	Provide extract ventilation to points where emissions occur. E54. Handle substance within closed systems. E47.
CS36 Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. E12.
CS14 Bulk transfers	Ensure material transfers are under containment or extract ventilation. E66.
CS39 Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance. E55. Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENVT4. Clear spills immediately. C&H13. Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. PPE18.
CS67 Storage.	Store substance within a closed system. E84. Wear suitable gloves tested to EN374. PPE15.

Section 2.2 Control of environmental exposure	
Product characteristics	
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	1.87E7
Fraction of Regional tonnage used locally	0.03
Annual site tonnage (tonnes/year)	6.0e5
Maximum daily site tonnage (kg/day)	2.0e6
Frequency and duration of use	
Continuous release [FD2].	
Emission days (days/year)	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from 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 [TCS1].	
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 wastewater [TCR14]. Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation) [TCR1k] Onsite wastewater treatment required [TCR13].	
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 [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5

Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	99.1
Maximum allowable site tonnage (M_{Safe}) (kg/d)	2.0e6
Assumed domestic sewage treatment plant flow (m^3/d)	10000
Conditions and measures related to external treatment of waste for disposal	
During manufacturing no waste of the substance is generated [ETW4].	
Conditions and measures related to external recovery of waste	
During manufacturing no waste of the substance is generated [ERW2].	
Section 3 Exposure Estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.	
3.2. Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].	
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. G22. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.	
4.2. Environment	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4]. Scaled local assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file in IUCLID section 13 – "Site-Specific Production" worksheet [DSU6]. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required [DSU8]. Measured data have been used to demonstrate that the PETRORISK predicted fence-line concentrations in air are overestimated. These data support the conclusion that no refineries have RCRs>1 (Appendix 4 and PETRORISK file in IUCLID section 13 – "Tier II worksheet"). Max RCR Water = 9,09E-01 Max RCR Air = 7,03E-01	

2. Use of Low Boiling Point Naphthas (Gasoline) as Intermediate – Industrial

Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is classified as R45 and/or R46 and/or R62 and/or R63; (containing equal to or greater than 1% to 5% benzene)	
Title	
Use of substance as intermediate	
Use Descriptor	
Sector(s) of Use	3, 8, 9
Process Categories	1, 2, 3, 8a, 8b, 15
Environmental Release Categories	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) within closed or	

contained systems. Includes incidental exposures during recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).	
Assessment Method	
See Section 3.	
Section 2 Operational conditions and risk management measures	
Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure > 10 kPa at STP OC5
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) G13
Amount used	Not applicable
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature). OC7. Assumes a good basic standard of occupational hygiene is implemented G1.
Contributing Scenarios	**Specific Risk Management Measures and Operating Conditions**
General Measures (skin irritants). G19.	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3
General Measures (carcinogens). G18.	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general / local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean / flush equipment, where possible, prior to maintenance. Where there is potential for exposure: Restrict access to authorised staff; provide specific activity training to operators to minimise exposures; wear suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20.
CS15 General exposures (closed systems). + CS56 With sample collection.	Handle substance within closed systems. E47. Sample via a closed loop or other system intended to avoid exposure. E8. Wear suitable gloves tested to EN374. PPE15.
CS15 General exposures (closed systems).	Provide extract ventilation to points where emissions occur. E54. Handle substance within closed systems. E47.
CS67 Storage.	Wear suitable gloves tested to EN374. PPE15. Store substance within a closed system. E84.
CS36 Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. E12.
CS14 Bulk transfers	Ensure material transfers are under containment or extract ventilation. E66.
CS39 Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance. E55. Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENVT4. Clear spills immediately. C&H13.

	Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. PPE18.
Section 2.2 Control of environmental exposure	
Product characteristics	
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	2.21E6
Fraction of Regional tonnage used locally	0.0068
Annual site tonnage (tonnes/year)	1.5e4
Maximum daily site tonnage (kg/day)	5.0e4
Frequency and duration of use	
Continuous release [FD2].	
Emission days (days/year)	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from 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 [TCS1].	
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 wastewater [TCR14]. Risk from environmental exposure is driven by freshwater sediment [TCR1b]. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required [TCR9].	
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	
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	95.5
Maximum allowable site tonnage (M_{Safe}) (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 [ETW5].	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is generated [ERW3].	
Section 3 Exposure Estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.	
3.2. Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model	

[EE2].
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. G22. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.
4.2. Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4]. Max RCR Water = 6,39E-01 Max RCR Air = 2,07E-01

3. Distribution of Low Boiling Point Naphthas (Gasoline) – Industrial

Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is classified as R45 and/or R46 and/or R62 and/or R63; (containing equal to or greater than 1% to 5% benzene)	
Title	
Distribution of substance	
Use Descriptor	
Sector(s) of Use	3
Process Categories	1, 2, 3, 8a, 8b, 15
Environmental Release Categories	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.	
Assessment Method	
See Section 3.	
Section 2 Operational conditions and risk management measures	
Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure > 10 kPa at STP OC5
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) G13
Amount used	Not applicable
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting	Assumes use at not more than 20°C above ambient temperature, unless stated differently. G15. Assumes a good basic standard of occupational hygiene is implemented G1.

exposure	
Contributing Scenarios	**Specific Risk Management Measures and Operating Conditions**
General Measures (skin irritants). G19.	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3
General Measures (carcinogens). G18.	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general / local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean / flush equipment, where possible, prior to maintenance. Where there is potential for exposure: Restrict access to authorised staff; provide specific activity training to operators to minimise exposures; wear suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20.
CS15 General exposures (closed systems). + CS56 With sample collection.	Handle substance within closed systems. E47. Sample via a closed loop or other system intended to avoid exposure. E8. Wear suitable gloves tested to EN374. PPE15.
CS15 General exposures (closed systems).	Provide extract ventilation to points where emissions occur. E54. Handle substance within closed systems. E47.
CS2 Process sampling	Sample via a closed loop or other system to avoid exposure. E8.
CS36 Laboratory activities.	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. E12.
CS501 Bulk closed loading and unloading.	Ensure material transfers are under containment or extract ventilation. E66.
CS39 Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance. E55. Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENVT4. Clear spills immediately. C&H13. Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. PPE18.
CS67 Storage.	Ensure operation is undertaken outdoors. E69. Store substance within a closed system. E84.
Section 2.2 Control of environmental exposure	
Product characteristics	
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	1.87E7
Fraction of Regional tonnage used locally	0.002
Annual site tonnage (tonnes/year)	3.75E4
Maximum daily site tonnage (kg/day)	1.2E5
Frequency and duration of use	
Continuous release [FD2].	
Emission days (days/year)	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other given operational conditions affecting environmental exposure	

Release fraction to air from 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 [TCS1].	
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) [TCR1k]. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required [TCR9].	
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 [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	95.5
Maximum allowable site tonnage (M_{Safe}) (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 [ETW3].	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations [ERW1].	
Section 3 Exposure Estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.	
3.2. Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].	
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. G22. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.	
4.2. Environment	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination	

[DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4]. Max RCR Water = 4,32E-02 Max RCR Air = 7,28E-02

4. Formulation & (re)packing of Low Boiling Point Naphthas (Gasoline) – Industrial

Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is classified as R45 and/or R46 and/or R62 and/or R63; (containing equal to or greater than 1% to 5% benzene)	
Title	
Formulation & (re)packing of substances and mixtures	
Use Descriptor	
Sector(s) of Use	3, 10
Process Categories	1, 2, 3, 8a, 8b, 15
Environmental Release Categories	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.	
Assessment Method	
See Section 3.	
Section 2 Operational conditions and risk management measures	
Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure > 10 kPa at STP OC5
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) G13
Amounts used	Not applicable
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. G15. Assumes a good basic standard of occupational hygiene is implemented G1.
Contributing Scenarios	**Specific Risk Management Measures and Operating Conditions**
General Measures (skin irritants). G19.	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3
General Measures (carcinogens). G18.	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general / local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean / flush equipment, where possible, prior to maintenance. Where there is potential for exposure: Restrict access to authorised staff; provide specific activity training to operators to minimise exposures; wear

	suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20.
CS15 General exposures (closed systems). + CS56 With sample collection.	Handle substance within closed systems. E47. Sample via a closed loop or other system intended to avoid exposure. E8. Wear suitable gloves tested to EN374. PPE15.
CS15 General exposures (closed systems).	Provide extract ventilation to points where emissions occur. E54. Handle substance within closed systems. E47.
CS2 Process sampling	Sample via a closed loop or other system intended to avoid exposure. E8.
CS36 Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. E12.
CS14 Bulk transfers	Ensure material transfers are under containment or extract ventilation. E66.
CS8 Drum/batch transfers	Ensure material transfers are under containment or extract ventilation. E66.
CS39 Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance. E55. Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENVT4. Clear spills immediately. C&H13. Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. PPE18.
CS67 Storage.	Store substance within a closed system. E84. Wear suitable gloves tested to EN374. PPE15.

Section 2.2 Control of environmental exposure	
Product characteristics	
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	1.65e7
Fraction of Regional tonnage used locally	0.0018
Annual site tonnage (tonnes/year)	3.0e4
Maximum daily site tonnage (kg/day)	1.0e5
Frequency and duration of use	
Continuous release [FD2].	
Emission days (days/year)	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from 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 [TCS1].	
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 wastewater [TCR14]. Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation) [TCR1k]. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required [TCR9].	
Treat air emission to provide a typical removal efficiency of (%)	56.5
Treat onsite wastewater (prior to receiving water discharge) to provide	94.7

the required removal efficiency ≥ (%)	
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%)	0
Organisation measures to prevent/limit release from site	
Prevent discharge of undissolved substance to or recover from wastewater [OMS1]. Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	95.5
Maximum allowable site tonnage (M_{Safe}) (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 disposal of waste should comply with applicable regulations [ETW3].	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations [ERW1].	
Section 3 Exposure Estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.	
3.2. Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].	
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. G22. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.	
4.2. Environment	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4]. Max RCR Water = 8,52E-01 Max RCR Air = 7,69E-01	