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

1.1 Product identifier

Product Name	Naphtha (petroleum), full-range alkylate
Product Description	V4036a-Mogas / Naphtha alkylate-Naphtha (petroleum), full-range alkylate
Trade Name	Mogas / Naphtha alkylate
Product code	NAPALKYL
CAS No.	64741-64-6
EC No.	265-066-7
REACH Registration No.	-

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

Identified Use(s)

No.	Exposure Scenario	Page:
1	Distribution of Naphtha (petroleum), full range alkylate (0 – 1 % benzene content)	**10**
2	Formulation and (re)packing of Naphtha (petroleum), full range alkylate(0 – 1 % benzene content) and mixtures	**13**
3	Use of Naphtha (petroleum), full range alkylate (0 – 1 % benzene content) as a fuel (industrial)	**16**
4	Use of Naphtha (petroleum), full range alkylate (0 – 1 % benzene content) as a fuel (professional)	**18**
5	Use of Naphtha (petroleum), full range alkylate (0 – 1 % benzene content) as a fuel (consumer)	**20**

Uses Advised Against: Anything other than the above.

1.3 Details of the supplier of the safety data sheet

Company Identification

Vitol SA
Place des Bergues 3
P.O. Box 2056
1211 Geneva 1
Switzerland

Telephone	+31 10 498 7200
Fax	+31 10 452 9545
E-Mail (competent person)	xreach@vitol.com

1.4 Emergency telephone number

Emergency Phone No.	+44 (0) 1235 239 670, 24/7
Languages spoken	All official European languages.

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

2.1.1 Regulation (EC) No. 1272/2008 (CLP)

Flam. Liq. 1; H224
Asp. Tox. 1; H304
Skin Irrit. 2; H315
Muta. 1B; H340
Carc. 1B; H350
Repr. 2; H361fd
STOT SE 3; H336 (Central nervous system, Inhalation)
Aquatic Chronic 2; H411

2.1.2 Directive 67/548/EEC & Directive 1999/45/EC

F+; R12: Extremely flammable.
Xi; R38: Irritating to skin.
Carc. Cat. 2; R45: May cause cancer.
Muta. Cat. 2; R46: May cause heritable genetic damage.
Repr. Cat. 3; R62: Possible risk of impaired fertility.

Xn; R65: Harmful: may cause lung damage if swallowed.
R67: Vapours may cause drowsiness and dizziness.
N; R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

2.2 Label elements

According to Regulation (EC) No. 1272/2008 (CLP)

Product Description: V4036a-Mogas / Naphtha alkylate-Naphtha (petroleum), full-range alkylate

Hazard Pictogram(s):

Signal Word(s): Danger

Hazard Statement(s):

H224: Extremely flammable liquid and vapour.
H304: May be fatal if swallowed and enters airways.
H315: Causes skin irritation.
H340: May cause genetic defects.
H350: May cause cancer.
H361fd: Suspected of damaging fertility. Suspected of damaging the unborn child.
H336: May cause drowsiness or dizziness. (Central nervous system, Inhalation)
H411: Toxic to aquatic life with long lasting effects.

Precautionary Statement(s):

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.
P331: Do NOT induce vomiting.
P301+P310: IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P403+P233: Store in a well-ventilated place. Keep container tightly closed.

2.3 Other hazards

May form explosive mixture with air. The vapour is heavier than air; beware of pits and confined spaces. May cause irritation to eyes and air passages. Product may release Hydrogen Sulphide: A specific assessment of inhalation risks from the presence of hydrogen sulphide in tank headspaces, confined spaces, product residue, tank waste and waste water, and unintentional releases should be made to help determine controls appropriate to local circumstances.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

SUBSTANCE	CAS No.	EC No.	REACH Registration No.	%W/W
Naphtha (petroleum), full-range alkylate	64741-64-6	265-066-7	-	100

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Self-protection of the first aider: Eliminate sources of ignition. If it is suspected that fumes are still present, the responder should wear an appropriate mask or self-contained breathing apparatus. Drench contaminated clothing with water before removing to avoid

		risk of sparks from static electricity.
	Inhalation	IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical advice/attention if you feel unwell.
	Skin Contact	IF ON SKIN (or hair): Remove contaminated clothing immediately and wash affected skin with plenty of water or soap and water. If irritation (redness, rash, blistering) develops, get medical attention.
	Eye Contact	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.
	Ingestion	IF SWALLOWED: Do not induce vomiting because of risk of aspiration into the lungs. If vomiting occurs spontaneously, keep head below hips to prevent aspiration into the lungs. If unconscious, place in recovery position and get medical attention immediately. Do not give anything by mouth to an unconscious person. Get medical attention immediately. Do not wait for symptoms to appear.
4.2	**Most important symptoms and effects, both acute and delayed**	Inhalation: Irritation of the respiratory tract. Skin Contact: Repeated exposure may cause skin dryness or cracking. Eye Contact: May cause eye irritation. Ingestion: Aspiration into the lungs may cause chemical pneumonitis, which can be fatal. Ingestion may cause irritation of the gastrointestinal tract. Nausea, Vomiting and Diarrhoea.
4.3	**Indication of any immediate medical attention and special treatment needed**	IF SWALLOWED: Do NOT induce vomiting, if vomiting does occur, have victim lean forward to reduce risk of aspiration.

SECTION 5: FIREFIGHTING MEASURES

5.1	**Extinguishing media**	
	Suitable Extinguishing media	Extinguish with sand or dry chemical. Foam, Carbon dioxide, Water fog or dry powder
	Unsuitable extinguishing media	Do not use water jet. Direct water jet may spread the fire.
5.2	**Special hazards arising from the substance or mixture**	Decomposes in a fire giving off toxic fumes: A mixture of solid and liquid particulates and gases including unidentified organic and inorganic compounds. May form explosive mixture with air. Prevent liquid entering sewers, basements and any watercourses. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback.
5.3	**Advice for fire-fighters**	Fight fire with normal precautions from a reasonable distance. Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Keep containers cool by spraying with water if exposed to fire. Avoid release to the environment. Dike fire control water for later disposal.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1	**Personal precautions, protective equipment and emergency procedures**	Caution - spillages may be slippery. Eliminate sources of ignition. Stop leak if safe to do so. Ensure suitable personal protection during removal of spillages. Recommended: Large spillages: Chemical protection suit, boots and plastic or synthetic rubber gloves. Drench contaminated clothing with water before removing to avoid risk of sparks from static electricity. Avoid all contact. Keep upwind.
6.2	**Environmental precautions**	Avoid release to the environment. Do not allow to enter drains, sewers or watercourses. Spillages or uncontrolled discharges into watercourses must be alerted to the Environment Agency or other appropriate regulatory body.
6.3	**Methods and material for containment and cleaning up**	Use non-sparking equipment when picking up flammable spill. Adsorb spillages onto sand, earth or any suitable adsorbent material. Sweep up and shovel into waste drums or plastic bags. Transfer to a lidded container for disposal or recovery.
6.4	**Reference to other sections**	See Section: 8,13

SECTION 7: HANDLING AND STORAGE

7.1	**Precautions for safe handling**	Keep away from sources of ignition - No smoking. Use only outdoors or in a well-ventilated area. Prevent vapour build up by providing adequate ventilation during and after use. Take precautionary measures against static discharge. Use only non-sparking tools. All parts of the plant and equipment should be electrically bonded together and connected to earth. Electrical continuity should be checked at regular intervals. Antistatic clothing and footwear should be used. The vapour is heavier than air; beware of pits and confined spaces. Avoid contact with skin and eyes. Do not ingest. Avoid breathing vapours. See Section: 8. Keep good industrial hygiene. Wash hands thoroughly after handling. Contaminated clothing should be thoroughly cleaned. H2S Warning: Product may release Hydrogen Sulphide: A specific assessment of inhalation risks from the presence of hydrogen sulphide in tank headspaces, confined spaces, product residue, tank waste and waste water, and unintentional releases should be made to help determine controls appropriate to local circumstances. These controls may include: Segregation of areas, Access only to authorised persons, Permit to work systems, Confined space working procedures, Area H2S alarms, Personal H2S alarms, Personal escape sets, H2S awareness training.
7.2	**Conditions for safe storage, including any incompatibilities**	Light hydrocarbon vapours can build up in the headspace of containers. These can cause flammability / explosion hazards. Bund storage facilities to prevent soil and water pollution in the event of spillage. Keep only in original container. Keep containers properly sealed when not in use. Protect from sunlight. Containers of this material may be hazardous when empty since they retain product residue.
	Storage temperature	Stable at ambient temperatures.
	Storage measures	Suitable containers: Stainless steel, Mild steel
	Incompatible materials	Keep away from oxidising agents.
7.3	**Specific end use(s)**	See Section: 1.2 and/or Exposure Scenario.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1	**Control parameters**	
8.1.1	**Occupational Exposure Limits**	None assigned.
8.1.2	**Biological limit value**	Not established.
8.1.3	**PNECs and DNELs**	DNEL: Not established. PNEC: Not established. Naphtha (petroleum), full-range alkylate is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the environmental toxicity (HC5) of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore individual environmental compartments PNECs are not available for this product.
8.2	**Exposure controls**	
8.2.1	**Appropriate engineering controls**	Ensure adequate ventilation. Guarantee that the eye flushing systems and safety showers are located close to the working place.
8.2.2	**Individual protection measures, such as personal protective equipment (PPE)**	Fuels are typically used, transferred and transported in closed systems. If exposure is likely (i.e. during sampling) the following advice may be appropriate.
	Eye/ face protection	Wear eye protection with side protection (EN166).
		
	Skin protection	Hand protection: Wear impervious gloves (EN374). Recommended: Nitrile

rubber. Gloves should be changed regularly to avoid permeation problems. Breakthrough time of the glove material: refer to the information provided by the gloves' producer.

Body protection: Chemical protection suit.

Respiratory protection

When the product is heated /In case of inadequate ventilation wear respiratory protection. The use of a high efficiency filter (EN143) is recommended. Filter type A1

Closed system(s): Not normally required.

Thermal hazards — Not applicable.

8.2.3 Environmental Exposure Controls — Avoid release to the environment.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Liquid, Pale yellow
Odour	Hydrocarbon
Odour threshold	Not established.
pH	Not established.
Melting point/freezing point	< - 60 °C
Initial boiling point and boiling range	< 35 °C
Flash point	< 0 °C
Evaporation rate	Not established.
Flammability (solid, gas)	Not applicable - Liquid
Upper/lower flammability or explosive limits	Flammable Limits (Lower) (%v/v) 1 Flammable Limits (Upper) (%v/v) 10
Vapour pressure	200 mm Hg @ 20 °C
Vapour density	> 2
Relative density	0.62 – 0.88 g/cm³ @ 15 °C
Solubility(ies)	Immiscible with water.
Partition coefficient: n-octanol/water	1 - 8
Auto-ignition temperature	> 220 °C
Decomposition Temperature	Not established.
Viscosity	1 mm²/s @ 20 °C
Explosive properties	Not explosive.(Vapour may create explosive atmosphere.)
Oxidising properties	Not oxidising.

9.2 Other information — None known.

SECTION 10: STABILITY AND REACTIVITY

10.1	**Stability and reactivity**	Stable under normal conditions. Reacts with - Strong oxidising agents
10.2	**Chemical stability**	Stable under normal conditions.
10.3	**Possibility of hazardous reactions**	Flammable liquid. Product may release Hydrogen Sulphide.
10.4	**Conditions to avoid**	Keep away from heat, sources of ignition and direct sunlight.
10.5	**Incompatible materials**	Keep away from oxidising agents. Strong Acids and Alkalis.
10.6	**Hazardous decomposition product(s)**	A mixture of solid and liquid particulates and gases including unidentified organic and inorganic compounds. Decomposes in a fire giving off toxic fumes: COx, H2S, SOx,

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Ingestion	Not classified. LD50 > 5000 mg/kg bw/day (rat) OECD 401
Inhalation	Not classified. LC50 Vapour > 4800 mg/m³ Air (rat)
Skin Contact	Not classified. LD50 > 2000 mg/kg bw/day (rabbit) OECD 402

	Skin corrosion/irritation	Skin Irrit. 2; OECD 404 (rabbit) Mean erythema score 2.9 @ 24, 48 & 72 hours Mean edema score 1.39 @ 24, 48 & 72 hours
	Serious eye damage/irritation	Based upon the available data, the classification criteria are not met. Mean eye Irritiation score : 0 (rabbit) OECD 405
	Respiratory or skin sensitization	Based upon the available data, the classification criteria are not met.
	Germ cell mutagenicity	Muta. 1B; May cause genetic defects.
	Carcinogenicity	Carc. 1B: mouse OECD 451
	Reproductive toxicity	Repr. 2; Suspected of damaging fertility or the unborn child.
	STOT - single exposure	STOT SE 3; H336
	STOT - repeated exposure	Based upon the available data, the classification criteria are not met.
	Aspiration hazard	Asp. Tox. 1; Aspiration into the lungs may cause chemical pneumonitis, which can be fatal. Viscosity: 1 mm^2/s @ 20 °C
11.2	**Other information**	None.

SECTION 12: ECOLOGICAL INFORMATION

12.1	**Toxicity**	Toxic to aquatic life with long lasting effects. Aquatic Chronic 2; Classified as a Marine Pollutant. Aquatic Compartment LC50 1-10 mg/l OECD 204
12.2	**Persistence and degradibility**	Readily biodegradable (according to OECD criteria). OECD 301F
12.3	**Bioaccumulative potential**	The product has moderate potential for bioaccumulation. Partition coefficient n-octanol/water (log P O/W): $\geq$ 3
12.4	**Mobility in soil**	The product is predicted to have low mobility in soil.
12.5	**Results of PBT and vPvB assessment**	Not classified as PBT or vPvB.
12.6	**Other adverse effects**	None known.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1	**Waste treatment methods**	Dispose of this material and its container as hazardous waste (2008/98/EEC). Do not empty into drains, dispose of this material and its container at hazardous or special waste collection point. Disposal should be in accordance with local, state or national legislation. Containers of this material may be hazardous when empty since they retain product residue. Containers must not be punctured or destroyed by burning, even when empty. Allocation of a waste code number, according to the European Waste Catalogue, should be carried out in agreement with the regional waste disposal company. Waste code: 13 07 02

SECTION 14: TRANSPORT INFORMATION

		ADR/RID	**IMDG/ADN**
14.1	**UN number**	UN 1268	UN 1268
14.2	**Proper Shipping Name**	PETROLEUM DISTILLATES N.O.S.	PETROLEUM DISTILLATES N.O.S.
14.3	**Transport hazard class(es)**	3	3+(N2, CMR,F)
14.4	**Packing group**	I	I
14.5	**Environmental hazards**	MILIEUGEVAARLIJK / ENVIRONMENTALLY HAZARDOUS/ UMWELTGEFÄHREND /DANGEREUX POUR/ L'ENVIRONNEMENT	
14.6	**Special precautions for user**	See Section: 2	
14.7	**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**	This product is being carried under the scope of MARPOL Annex 1. Special Precautions: Refer to Chapter 7 'Handling and Storage' for special precautions which a user needs to be aware of, or needs to comply with, in connection with transport.	
14.8	**Additional Information**	ADR HIN: 33 Tunnel Restriction Code: 1 (D/E) Limited Quantity: 500 ml	EmS: F-E, S-E Limited Quantity: 500ml

SECTION 15: REGULATORY INFORMATION

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

	mixture	
15.1.1	**EU regulations**	
	Seveso	Upper Tier: 25000 tonnes Lower Tier: 2500 tonnes
	Annex XVII (Restrictions)	In accordance with REACH Annex XVII entry 30 (c) this substance is exempt from Entry 28 and 29 of REACH Annex XVII as it is to be sold as a fuel in a closed system.
15.1.2	**National regulations**	
	Germany	Wassergefährdungsklasse (Germany). WGK number: 3
15.2	**Chemical Safety Assessment**	This safety data sheet contains more than one ES in an integrated form. Contents of the exposure scenarios have been included into sections 1.2, 8, 9, 12, 15 and 16 of this safety data sheet.

SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements:
Header and Section 1.3

References:
Existing ECHA registration(s) for Naphtha (petroleum), full-range alkylate (CAS No. 64741-64-6)
and Chemical Safety Report.

This Safety Data Sheet was prepared in accordance with EC Regulation (EC) 1907/2006 (REACH), 1272/2008 (CLP) & 453/2010.

LEGEND

LTEL	Long Term Exposure Limit
STEL	Short Term Exposure Limit
DNEL	Derived No Effect Level
PNEC	Predicted No Effect Concentration
PBT	PBT: Persistent, Bioaccumulative and Toxic
vPvB	very Persistent and very Bioaccumulative
OECD	Organisation for Economic Cooperation and Development

Training advice: Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.

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Naphtha (petroleum), full range alkylate (0 – 1% benzene content)

CAS Number	64741-64-6
EC Number	265-066-7

Summary of Parameters

Physical parameters			
Vapor Pressure (Pa)			4 – 240 @ 37.8 °C Value used for exposure assessment = 3.4 E+04 Pa
Partition Co-efficient (log K_{OW})			Range between 2.00 and 20.43
Aqueous solubility (mg L^{-1})			Range between 1.6E+03 and 5.1E-18 Value used for exposure assessment = 1.8E+02
Molecular weight			Not applicable
Human health parameters (DNELs)			
Worker	Short-term	Inhalation (mg m^{-3})	1100
		Dermal (mg kg^{-1} bw day^{-1})	n/a
	Long-term	Inhalation (mg m^{-3})	3.2 (= 1 ppm)*
		Dermal (mg kg^{-1} bw day^{-1})	23.4*
Consumer		Inhalation (mg m^{-3})	0.0032 (=1 ppb)*
		Dermal (mg kg^{-1} bw day^{-1})	0.0234*
		Oral (mg kg^{-1} bw day^{-1})	0.234*
Environmental Parameters (PNECs)			
Naphtha (petroleum), full range alkylate is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the environmental toxicity (HC5) of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore a PNEC is not available for Naphtha (petroleum), full range alkylate for individual environmental compartments.			

* Values driven by benzene content in Naphtha (petroleum), full range alkylate (0 – 1 % benzene content)

Table of Contents

Definition of Contributing Scenarios

Contributing Scenario	
PROC1	Use in closed process, no likelihood of exposure.
PROC2	Use in closed, continuous process with occasional controlled exposure
PROC2 (storage)	Use in closed, continuous process with occasional controlled exposure. Bulk storage.
PROC3	Use in closed, continuous process with occasional exposure
PROC3 (sampling)	Use in closed, continuous process with occasional exposure. Sample collection
PROC8a (maintenance)	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities Clean down and maintenance of vessels and containers.
PROC8b (bulk)	Transfer of substance or preparation (charge/discharge) from/to vessels/large containers at dedicated facilities Bulk transfer in a closed system (e.g. bottom loading)
PROC8b (drum)	Transfer of substance or preparation (charge/discharge) from/to vessels/large containers at dedicated facilities. Drum or batch transfers.
PROC8b (refueling)	Transfer of substance or preparation (charge/discharge) from/to vessels/large containers at dedicated facilities. Refueling vehicles or light aircraft
PROC8b (aircraft)	Transfer of substance or preparation (charge/discharge) from/to vessels/large containers at dedicated facilities. Refueling aircraft
PROC15	Use as a laboratory reagent
PROC16	Using material as fuel sources, limited exposure to unburned product to be expected
PROC16 (additive)	Using material as fuel sources, limited exposure to unburned product to be expected. Use as a fuel additive diluent.

Exposure Scenario 1 – Distribution of naphtha petroleum full range alkylate (0 – 1 % benzene content)

1.0 Description of Contributing Scenarios	
Sector of Use	SU3 - Industrial uses
Process Category	PROC1 PROC2 PROC2 (storage) PROC3 PROC3 (sampling) PROC8a (maintenance) PROC8b (bulk) PROC15
Product Category	n/a
Article Category	n/a
Environmental Release Category	ERC1 - Manufacture of substances ERC2 - Formulation of preparations ERC3 - Formulation in materials ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles ERC5 – Industrial use resulting in inclusion into or onto a matrix ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates) ERC6b - Industrial use of reactive processing aids ERC6c - Industrial use of monomers for manufacture of thermoplastics ERC6d - Industrial use of process regulators for polymerisation processes in production of resins, rubbers and polymers ERC7 - Industrial use of substances in closed systems
Specific Environmental Release Category	ESVOC SpERC 1.1b v.1

2.0 Operation conditions and risk management measures		
2.1 Control of Worker exposure		
Product Characteristics		
Physical Form	liquid, high volatility	
Concentration of substance	up to 100 % (up to 1 % benzene content)	
Human factors not influenced by risk management		
Potentially exposed body parts	Not specified	
Frequency and Duration of Use		
Exposure duration (hours per day)	Up to 8 hours	
Frequency of Use (days per year)	300	
Operational conditions affecting worker exposure		
Location of use (Indoor/outdoor)	PROC3, PROC2 (storage)	Outdoors
	All other contributing scenarios	Not defined (default = indoor)
Location characteristics	Not defined	
Assumes uses at not > 20 °C above ambient, unless stated differently Assumes a good basic standard of occupational hygiene is implemented General measures for skin irritants: Avoid all skin contact with product, clean up contamination/spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely, 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 for 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.		
Technical protective measures		
PROC1, PROC2, PROC3	Use in a closed system	
PROC8b (bulk)	Ensure material transfers are under containment or extract ventilation (90 % effectiveness)	
PROC15	Use in a fume cupboard (90 % effectiveness)	
Organizational Measures to minimize worker exposure		
PROC3 (sampling)	Sample via a closed loop or other system intended to avoid exposure (equivalent to 95 % ventilation effectiveness)	
PROC8a (maintenance)	Drain down and flush system prior to equipment break-in or maintenance, retain drain downs in sealed storage pending disposal or subsequent recycle, clear spills immediately (equivalent to 90 % inhalation effectiveness)	
Risk Management Measures required to minimize worker exposure in the described scenario		
Respiratory protection	No specific measures identified	

Hand and Skin Protection	PROC2	Wear suitable gloves tested to EN374 (80 % effectiveness)
	PROC8a (maintenance)	Wear chemically resistant gloves tested to EN374 (in combination with 'basic' employee training (90 % effectiveness)
Eye protection	No specific measures identified	
Other measures recommended to further reduce worker exposure		
Wear suitable gloves tested to EN374 Wear suitable coveralls to prevent exposure to the skin Clear transfer lines prior to de-coupling Avoid dip sampling		
2.2 Control of Environmental Exposure		
Quantities Used		
Fraction of total tonnage used regionally		0.1
Regional annual tonnage (tonnes year^{-1})		1.87E+07
Fraction of regional tonnage used locally		2.0E-03
Annual site tonnage (tonnes year^{-1})		37,500
Average daily usage (kg day^{-1})		1.20E+05
Environmental Factors not affected by risk management		
Flow rate of receiving surface water (m^3 day^{-1})		Not defined (default = 18,000)
Dilution factor	Freshwater	10
	Marine water	100
Operational conditions recommended to minimize environmental exposure		
Number of emission days per year		300
Release fraction before RMM	Air	1.0E-03
	Waste water	1.0E-05
	Soil	1.0E-05
Efficiency of technical measures used to reduce emission to named environmental compartment		
Air (%)		90
Waste water (%)		12
Soil (%)		Not defined
Technical measures to achieve reduced emissions		Common practices vary across sites, thus conservative process release estimates used. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.
Organizational measures to 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		
Size (m^3 day^{-1})		2000
Degradation efficiency (%)		95.5
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		
Substance release quantities after risk management measures		
Typical release to water (mg l^{-1})		Not defined
Maximum allowable site tonnage based on wastewater treatment, M_{safe} (kg day^{-1})		1.10E+06

3.0 Exposure estimation and reference to its source

Predicted workers exposure

Tool used to calculate exposure	Ecetoc TRA

Process Category	Inhalation		Dermal		Combined
	Exposure (ppm)	RCR	Exposure (mg kg^{-1} day^{-1})	RCR	RCR
PROC1	0.00	0.00	0.03	0.15	0.15
PROC2	0.50	0.50	0.03	0.12	0.62
PROC2 (storage)	0.35	0.35	0.14	0.57	0.94
PROC3	0.70	0.70	0.03	0.15	0.85
PROC3 (sampling)	0.05	0.05	0.03	0.15	0.20
PROC8a (maintenance)	0.25	0.25	0.14	0.57	0.84
PROC8b (bulk)	0.15	0.15	0.07	0.30	0.45
PROC15	0.05	0.05	0.00	0.01	0.06

Predicted environmental exposure

Tool used to calculate exposure	Petrorisk model using Hydrocarbon Block Method

Naphtha (petroleum), full range alkylate is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the PEC of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore a PEC is not available for Naphtha (petroleum), full range alkylate for individual environmental compartments.

Exposure	STP	Freshwater	Marine water	Soil	Sediment freshwater	Sediment marine
RCR	3.0E-03	4.3E-02	4.6E-04	1.2E-04	1.8E-02	5.3E-04

Total Human Exposure due to the Environment:

Route of Exposure	Exposure (µg kg^{-1} day^{-1})	RCR
Oral	2.7	2.7E-02
Inhalation	21	7.3E-02

4.0 Guidance to Downstream Users		
Scaling	Where other Risk Management Measures or Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels Available hazard data do not support the need for a DNEL to be established for other health effects. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html)	
Exposure Tool used	Worker	Ecetoc TRA
	Environmental	Petrorisk model using Hydrocarbon Block Method

Exposure Scenario 2 – Formulation and (re)packing of naphtha petroleum full range alkylate (0 – 1 % benzene content) and mixtures

1.0 Description of Contributing Scenarios	
Sector of Use	SU3 - Industrial uses SU10 - Formulation (mixing) of preparations and/or re-packing
Process Category	PROC1 PROC2 PROC2 (storage) PROC3 PROC3 (sampling) PROC8a (maintenance) PROC8b (bulk) PROC8b (drum) PROC15
Product Category	n/a
Article Category	n/a
Environmental Release Category	ERC2 - Formulation of preparations
Specific Environmental Release Category	ESVOC SpERC 2.2 v.1

2.0 Operation conditions and risk management measures		
2.1 Control of Worker exposure		
Product Characteristics		
Physical Form	Liquid, high volatility	
Concentration of substance	Up to 100 % (up to 1 % benzene content)	
Human factors not influenced by risk management		
Potentially exposed body parts	Not defined	
Frequency and Duration of Use		
Exposure duration (hours per day)	Up to 8 hours	
Frequency of Use (days per year)	300	
Operational conditions affecting worker exposure		
Location of use (Indoor/outdoor)	PROC3	Outdoor
	All other contributing scenarios	Not defined (default = indoor)
Location characteristics	Not defined	
Assumes uses at not > 20 °C above ambient, unless stated differently Assumes a good basic standard of occupational hygiene is implemented General measures for skin irritants: Avoid all skin contact with product, clean up contamination/spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely, 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 for 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.		
Technical protective measures		
PROC1, PROC2, PROC2 (storage), PROC3	Use in a closed system	
PROC2, PROC3	Sample via a closed loop or other system intended to avoid exposure (equivalent to 95 % ventilation effectiveness)	
PROC8b (bulk), PROC8b (drum)	Ensure material transfers are under containment or extract ventilation (97 % effectiveness)	
PROC15	Use in a fume cupboard (90 % effectiveness)	
Organizational Measures to minimize worker exposure		
PROC8a (maintenance)	Drain down and flush system prior to equipment break-in or maintenance, retain drain downs in sealed storage pending disposal or subsequent recycle, clear spills immediately (equivalent to 90 % ventilation effectiveness)	
Risk Management Measures required to minimize worker exposure in the described scenario		
Respiratory protection	No specific measures identified	
Hand and Skin Protection	PROC2, PROC2 (storage)	Wear suitable gloves tested to EN374 (80 % effectiveness)
	PROC8a (maintenance)	Wear chemically resistant gloves tested to EN374 (in combination with 'basic' employee training (90 % effectiveness)
Eye protection	No specific measures identified	
Other measures recommended to further reduce worker exposure		
Wear suitable gloves tested to EN374 Wear suitable coveralls to prevent exposure to the skin Clear transfer lines prior to de-coupling		

Avoid dip sampling		
2.2 Control of Environmental Exposure		
Quantities Used		
Fraction of total tonnage used regionally		0.1
Regional annual tonnage (tonnes year^{-1})		1.65E+07
Fraction of regional tonnage used locally		1.8E-03
Annual site tonnage (tonnes year^{-1})		3.0E+04
Average daily usage (kg day^{-1})		1.0E+05
Environmental Factors not affected by risk management		
Flow rate of receiving surface water (m^3 day^{-1})		Not defined (default = 18,000)
Dilution factor	Freshwater	10
	Marine water	100
Operational conditions recommended to minimize environmental exposure		
Number of emission days per year		300
Release fraction before RMM	Air	2.5E-02
	Waste water	2.0E-03
	Soil	1.0E-04
Efficiency of technical measures used to reduce emission to named environmental compartment		
Air (%)		56.5
Waste water (%)		94.7
Soil (%)		Not defined
Technical measures to achieve reduced emissions		Common practices vary across sites, thus conservative process release estimates used. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.
Organizational measures to limit release from site		
Prevent discharge of undissolved substance to or recover from wastewater Do not apply industrial sludge to natural soils Sludge should be incinerated, contained or reclaimed		
Conditions and measures related to municipal sewage treatment plant		
Size (m^3 day^{-1})		2000
Degradation efficiency (%)		95.5
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		
Substance release quantities after risk management measures		
Typical release to water (mg l^{-1})		Not defined
Maximum allowable site tonnage based on wastewater treatment, M_{safe} (kg day^{-1})		1.0E+05

3.0 Exposure estimation and reference to its source

Predicted workers exposure

Tool used to calculate exposure	Ecetoc TRA

Process Category	Inhalation		Dermal		Combined
	Exposure (ppm)	RCR	Exposure (mg kg^{-1} day^{-1})	RCR	RCR
PROC1	0.00	0.00	0.03	0.15	0.15
PROC2	0.50	0.50	0.03	0.12	0.62
PROC2 (storage)	0.50	0.50	0.03	0.12	0.62
PROC3	0.70	0.70	0.03	0.15	0.85
PROC3 (sampling)	0.05	0.05	0.03	0.15	0.20
PROC8a (maintenance)	0.25	0.25	0.14	0.59	0.84
PROC8b (bulk)	0.05	0.05	0.07	0.30	0.35
PROC8b (drum)	0.05	0.05	0.07	0.30	0.35
PROC15	0.05	0.05	0.00	0.01	0.06

Predicted environmental exposure

Tool used to calculate exposure	Petrorisk model using Hydrocarbon Block Method

Naphtha (petroleum), full range alkylate is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the PEC of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore a PEC is not available for Naphtha (petroleum), full range alkylate for individual environmental compartments.

Exposure	STP	Freshwater	Marine water	Soil	Sediment freshwater	Sediment marine
RCR	4.8E-01	7.4E-01	7.4E-02	1.7E-03	8.5E-01	8.5E-02

Total Human Exposure due to the Environment:

Route of Exposure	Exposure (µg kg^{-1} day^{-1})	RCR
Oral	21	2.1E-01
Inhalation	77	7.7E-01

4.0 Guidance to Downstream Users		
Scaling	Where other Risk Management Measures or Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels Available hazard data do not support the need for a DNEL to be established for other health effects. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html)	
Exposure Tool used	Worker	Ecetoc TRA
	Environmental	Petrorisk model using Hydrocarbon Block Method

Exposure Scenario 3 – Use of naphtha petroleum full range alkylate (0 – 1 % benzene content) as a fuel (industrial)

1.0 Description of Contributing Scenarios	
Sector of Use	SU3 - Industrial uses
Process Category	PROC1 PROC2 PROC2 (storage) PROC3 PROC8a (maintenance) PROC8b (bulk) PROC8b (drum) PROC8b (refueling) PROC8b (aircraft) PROC16 PROC16 (additive)
Product Category	N/a
Article Category	N/a
Environmental Release Category	ERC7 - Industrial use of substances in closed systems
Specific Environmental Release Category	ESVOC SpERC 7.12a v.1

2.0 Operation conditions and risk management measures		
2.1 Control of Worker exposure		
Product Characteristics		
Physical Form	liquid, high volatility	
Concentration of substance	up to 100 % (benzene content up to 1 %)	
Human factors not influenced by risk management		
Potentially exposed body parts	Not defined	
Frequency and Duration of Use		
Exposure duration (hours per day)	Up to 8 hours	
Frequency of Use (days per year)	300	
Operational conditions affecting worker exposure		
Location of use (Indoor/outdoor)	PROC3	Outdoor
	All other contributing scenarios	Not defined (default = indoors)
Location characteristics	Not defined	
Assumes uses at not > 20 °C above ambient, unless stated differently Assumes a good basic standard of occupational hygiene is implemented General measures for skin irritants: Avoid all skin contact with product, clean up contamination/spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely, 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 for 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.		
Technical protective measures		
PROC1, PROC2, PROC2 (storage) PROC3, PROC16, PROC16 (additive)	Use in a closed system	
PROC2 (storage), PROC8a (maintenance)	Provide good standard of general ventilation. Natural ventilation is from door, windows etc. Controlled ventilation means air is supplied or removed by a powered fan (30 % effectiveness)	
PROC8b (bulk), PROC8b (drum), PROC8b (refueling), PROC8b (aircraft)	sure material transfers are under containment or extract ventilation (90 % effectiveness)	
Organizational Measures to minimize worker exposure		
PROC8a (maintenance)	Drain down and flush system prior to equipment break-in or maintenance, retain drain downs in sealed storage pending disposal or subsequent recycle, clear spills immediately (equivalent to 86 % ventilation effectiveness)	
Risk Management Measures required to minimize worker exposure in the described scenario		
Respiratory protection	No specific measures identified	
Hand and Skin Protection	PROC8a (maintenance)	Wear chemically resistant gloves tested to EN374 (in combination with 'basic' employee training (90 % effectiveness)
Eye protection	No specific measures identified	
Other measures recommended to further reduce worker exposure		
Wear suitable gloves tested to EN374 Wear suitable coveralls to prevent exposure to the skin Clear transfer lines prior to de-coupling		

2.2 Control of Environmental Exposure		
Quantities Used		
Fraction of total tonnage used regionally		0.1
Regional annual tonnage (tonnes year^{-1})		1.4E+06
Fraction of regional tonnage used locally		1
Annual site tonnage (tonnes year^{-1})		1.4E+06
Average daily usage (kg day^{-1})		4.6E+06
Environmental Factors not affected by risk management		
Flow rate of receiving surface water (m^3 day^{-1})		Not defined (default = 18,000)
Dilution factor	Freshwater	10
	Marine water	100
Operational conditions recommended to minimize environmental exposure		
Number of emission days per year		300
Release fraction before RMM	Air	2.5E-03
	Waste water	1.0E-05
	Soil	0
Efficiency of technical measures used to reduce emission to named environmental compartment		
Air (%)		99.4
Waste water (%)		76.9
Soil (%)		0
Technical measures to achieve reduced emissions		Common practices vary across sites, thus conservative process release estimates used. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.
Organizational measures to 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		
Size (m^3 day^{-1})		2000
Degradation efficiency (%)		95.5
Conditions and measures related to external treatment of waste for disposal		
The substance is consumed during use and no waste of the substance is generated. Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment.		
Substance release quantities after risk management measures		
Typical release to water (mg l^{-1})		Not defined
Maximum allowable site tonnage based on wastewater treatment, M_{safe} (kg day^{-1})		4.6E+06

3.0 Exposure estimation and reference to its source

Predicted workers exposure

Tool used to calculate exposure	Ecetoc TRA

Process Category	Inhalation		Dermal		Combined
	Exposure (ppm)	RCR	Exposure (mg kg^{-1} day^{-1})	RCR	RCR
PROC1	0.00	0.00	0.03	0.15	0.15
PROC2	0.50	0.50	0.03	0.12	0.62
PROC2 (sampling)	0.35	0.35	0.14	0.59	0.94
PROC3	0.70	0.70	0.03	0.15	0.85
PROC8a (maintenance)	0.35	0.35	0.14	0.59	0.94
PROC8b (bulk)	0.09	0.09	0.07	0.30	0.39
PROC8b (drum)	0.15	0.15	0.07	0.30	0.45
PROC8b (refueling)	0.15	0.15	0.07	0.30	0.45
PROC8b (aircraft)	0.15	0.15	0.07	0.30	0.45
PROC16	0.25	0.25	0.03	0.15	0.40
PROC16 (additives)	0.25	0.25	0.03	0.15	0.40

Predicted environmental exposure

Tool used to calculate exposure	Petrorisk model using Hydrocarbon Block Method

Naphtha (petroleum), full range alkylate is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the PEC of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore a PEC is not available for Naphtha (petroleum), full range alkylate for individual environmental compartments.

Exposure	STP	Freshwater	Marine water	Soil	Sediment freshwater	Sediment marine
RCR	1.1E-01	1.7E-01	1.7E-02	2.0E-03	2.0E-01	2.0E-02

Total Human Exposure due to the Environment:

Route of Exposure	Exposure (µg kg^{-1} day^{-1})	RCR
Oral	5	5.0E-02
Inhalation	94	9.4E-01

4.0 Guidance to Downstream Users		
Scaling	Where other Risk Management Measures or Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels Available hazard data do not support the need for a DNEL to be established for other health effects. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html)	
Exposure Tool used	Worker	Ecetoc TRA
	Environmental	Petrorisk model using Hydrocarbon Block Method

Exposure Scenario 4 – Use of naphtha petroleum full range alkylate (0 – 1 % benzene content) as a fuel (professional)

1.0 Description of Contributing Scenarios	
Sector of Use	SU22 - Public domain (administration, education, entertainment, services, craftsmen)
Process Category	PROC1 PROC2 PROC2 (storage) PROC3 PROC8a (maintenance) PROC8b (bulk) PROC8b (drum) PROC8b (refueling) PROC16
Product Category	N/a
Article Category	N/a
Environmental Release Category	ERC9a - Wide dispersive indoor use in closed systems ERC9b - Wide dispersive outdoor use in closed systems
Specific Environmental Release Category	ESVOC SpERC 9.12b v.1

2.0 Operation conditions and risk management measures		
2.1 Control of Worker exposure		
Product Characteristics		
Physical Form	liquid, high volatility	
Concentration of substance	up to 100 % (up to 1 % total benzene content)	
Human factors not influenced by risk management		
Potentially exposed body parts	Not defined	
Frequency and Duration of Use		
Exposure duration (hours per day)	Up to 8 hours	
Frequency of Use (days per year)	365	
Operational conditions affecting worker exposure		
Location of use (Indoor/outdoor)	PROC3	Outdoor
	All other contributing scenarios	Not defined (default = indoor)
Location characteristics	Not defined	
Assumes uses at not > 20 °C above ambient, unless stated differently Assumes a good basic standard of occupational hygiene is implemented General measures for skin irritants: Avoid all skin contact with product, clean up contamination/spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely, 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 for 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.		

Technical protective measures		
PROC1, PROC2, PROC2 (storage), PROC3, PROC16	Use in a closed system	
PROC2 (sampling), PROC8a (maintenance)	Provide good standard of general ventilation. Natural ventilation is from door, windows etc. Controlled ventilation means air is supplied or removed by a powered fan (30 % effectiveness)	
PROC8b (bulk), PROC8b (drum, PROC8b (refueling)	Ensure material transfers are under containment or extract ventilation (90 % effectiveness)	
Organizational Measures to minimize worker exposure		
PROC8a (maintenance)	Drain down and flush system prior to equipment break-in or maintenance, retain drain downs in sealed storage pending disposal or subsequent recycle, clear spills immediately (equivalent to 80 % ventilation effectiveness)	
Risk Management Measures required to minimize worker exposure in the described scenario		
Respiratory protection	No specific measures identified	
Hand and Skin Protection	PROC2	Wear suitable gloves tested to EN374 (80 % effectiveness)
	PROC8a (maintenance)	Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls (98 % effectiveness)
Eye protection	No specific measures identified	
Other measures recommended to further reduce worker exposure		
Wear suitable gloves tested to EN374 Wear suitable coveralls to prevent exposure to the skin Clear transfer lines prior to de-coupling		

2.2 Control of Environmental Exposure		
Quantities Used		
Fraction of total tonnage used regionally		0.1
Regional annual tonnage (tonnes year^{-1})		1.19E+06
Fraction of regional tonnage used locally		5.0E-04
Annual site tonnage (tonnes year^{-1})		590
Average daily usage (kg day^{-1})		1600
Environmental Factors not affected by risk management		
Flow rate of receiving surface water (m^3 day^{-1})		Not defined (default = 18,000)
Dilution factor	Freshwater	10
	Marine water	100
Operational conditions recommended to minimize environmental exposure		
Number of emission days per year		365
Release fraction before RMM	Air	1.0E-02
	Waste water	1.0E-05
	Soil	1.0E-05
Efficiency of technical measures used to reduce emission to named environmental compartment		
Air (%)		N/a
Waste water (%)		3.4
Soil (%)		0
Technical measures to achieve reduced emissions		Common practices vary across sites, thus conservative process release estimates used. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.
Organizational measures to 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		
Size (m^3 day^{-1})		2000
Degradation efficiency (%)		95.5
Conditions and measures related to external treatment of waste for disposal		
The substance is consumed during use and no waste of the substance is generated. Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment.		
Substance release quantities after risk management measures		
Typical release to water (mg l^{-1})		Not defined
Maximum allowable site tonnage based on wastewater treatment, M_{safe} (kg day^{-1})		1.5E+04

3.0 Exposure estimation and reference to its source	
Predicted workers exposure	
Tool used to calculate exposure	Ecetoc TRA

Process Category	Inhalation		Dermal		Combined
	Exposure (ppm)	RCR	Exposure (mg kg^{-1} day^{-1})	RCR	RCR
PROC1	0.00	0.00	0.03	0.15	0.15
PROC2	0.50	0.50	0.03	0.12	0.62
PROC2 (sampling)	0.35	0.35	0.14	0.59	0.94
PROC3	0.70	0.70	0.03	0.15	0.85
PROC8a (maintenance)	0.85	0.85	0.03	0.12	0.97
PROC8b (bulk)	0.25	0.25	0.07	0.30	0.55
PROC8b (drum)	0.25	0.25	0.07	0.30	0.55
PROC8b (refueling)	0.25	0.25	0.07	0.30	0.55
PROC16	0.50	0.50	0.03	0.15	0.65

Predicted environmental exposure

Tool used to calculate exposure	Petrorisk model using Hydrocarbon Block Method

Naphtha (petroleum), full range alkylate is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the PEC of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore a PEC is not available for Naphtha (petroleum), full range alkylate for individual environmental compartments.

Exposure	STP	Freshwater	Marine water	Soil	Sediment freshwater	Sediment marine
RCR	3.9E-05	3.9E-02	1.3E-04	1.5E-04	1.3E-02	4.1E-05

Total Human Exposure due to the Environment:

Route of Exposure	Exposure (µg kg^{-1} day^{-1})	RCR
Oral	2.6	2.6E-02
Inhalation	6.4	6.4E-02

4.0 Guidance to Downstream Users		
Scaling	Where other Risk Management Measures or Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels Available hazard data do not support the need for a DNEL to be established for other health effects. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html)	
Exposure Tool used	Worker	Ecetoc TRA
	Environmental	Petrorisk model using Hydrocarbon Block Method

Exposure Scenario 5 – Use of naphtha petroleum full range alkylate (0 – 1 % benzene content) as a fuel (consumer)

1.0 Description of Contributing Scenarios	
Sector of Use	SU21 - Consumer uses: Private households (=general public = consumers)
Process Category	N/a
Product Category	PC13 – Fuels, consisting of PC13 (automotive) PC13 (scooter) PC13 (garden equipment use) PC13 (garden equipment refueling)
Article Category	N/a
Environmental Release Category	ERC9a - Wide dispersive indoor use in closed systems ERC9b - Wide dispersive outdoor use in closed systems
Specific Environmental Release Category	ESVOC SpERC 9.12c v.1

2.0 Operation conditions and risk management measures

2.1 Control of consumer exposure

Product Characteristics

Physical Form	Liquid, high volatility
Concentration of substance	Up to 100 %

Human factors not influenced by risk management

Potentially exposed body parts

Product Category	Sub category	Skin contact area (cm^3)
PC13	Automotive	210

			Scooter	
			Garden equipment use Garden equipment refueling	420

Frequency and Duration of Use

Exposure duration (hours per event)

Product Category	Sub category	Duration
PC13	Automotive	0.05
	Scooter Garden equipment – refueling	0.03
	Garden equipment – use	2.00

Frequency of Use (days per year)

Product category	Sub category	Frequency (days per year)
PC13	Automotive Scooter	52
	Garden Equipment – use Garden equipment - refueling	26

Amounts used per usage (g)

Product Category	Sub category	amount user per use (g)
PC13	Automotive	37500
	Scooter	3750
	Garden Equipment – use Garden equipment - refueling	750

Operational conditions affecting worker exposure

Location characteristics

Product Category	Sub category	Room size (m^3)
PC13	Automotive Scooter Garden equipment – use	100
	Garden Equipment - refueling	34

Risk Management Measures required to minimize worker exposure in the described scenario

No specific risk management measures beyond the operational conditions stated

2.2 Control of Environmental Exposure

Quantities Used

Fraction of total tonnage used regionally		0.1
Regional annual tonnage (tonnes $year^{-1}$)		1.39E+07
Fraction of regional tonnage used locally		5.0E-04
Annual site tonnage (tonnes $year^{-1}$)		7.0E+03
Average daily usage (kg day^{-1})		1.9E+04
Environmental Factors not affected by risk management		
Flow rate of receiving surface water (m^3 day^{-1})		Not defined (default = 18,000)
Dilution factor	Freshwater	10
	Marine water	100
Operational conditions recommended to minimize environmental exposure		
Number of emission days per year		365
Release fraction before RMM	Air	1.0E-02
	Waste water	1.0E-05
	Soil	1.0E-05
Conditions and measures related to municipal sewage treatment plant		
Size (m^3 day^{-1})		2000
Degradation efficiency (%)		95.5

Conditions and measures related to external treatment of waste for disposal

The substance is consumed during use and no waste of the substance is generated.
Combustion emissions limited by required exhaust emission controls.
Combustion emissions considered in regional exposure assessment.

Substance release quantities after risk management measures

Typical release to water (mg l^{-1})	Not defined
Maximum allowable site tonnage based on wastewater treatment, M_{safe} (kg day^{-1})	1.8E+05

3.0 Exposure estimation and reference to its source

Predicted workers exposure

Tool used to calculate exposure	Ecetoc TRA

Yearly Use (chronic)
No oral exposure predicted

Process Category	Inhalation		Dermal		Combined
	Exposure (mg m^{-3})	RCR	Exposure (mg kg^{-1} day^{-1})	RCR	RCR
PC13 (automotive)	0.002	0.69	0.00	0.01	0.70
PC13 (scooter)	0.001	0.46	0.00	0.01	0.47
PC13 garden equipment use)	0.003	0.87	0.00	0.00	0.87
PC13 (garden equipment refueling)	0.001	0.18	0.00	0.02	0.20

Predicted environmental exposure

Tool used to calculate exposure	Petrorisk model using Hydrocarbon Block Method

Naphtha (petroleum), full range alkylate is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the PEC of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore a PEC is not available for Naphtha (petroleum), full range alkylate for individual environmental compartments.

Exposure	STP	Freshwater	Marine water	Soil	Sediment freshwater	Sediment marine
RCR	4.5E-04	3.9E-02	2.0E-04	7.1E-04	1.3E-02	1.2E-04

Total Human Exposure due to the Environment:

Route of Exposure	Exposure (µg kg^{-1} day^{-1})	RCR
Oral	2.6	2.6E-02
Inhalation	6.4	6.4E-02

4.0 Guidance to Downstream Users

Scaling	Where other Risk Management Measures or Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html)	
Exposure Tool used	Worker	Ecetoc TRA
	Environmental	Petrorisk model using Hydrocarbon Block Method