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ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) & 2020/878

Gasoline V4001

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

1.1	Product identifier			
	Product Name	Gasc	oline	
	Product Description	V4001-A-80-Gasoline		
	Trade Name	Gasoline		
	Product code	A-80		
	CAS No.	86290-81-5		
	EC No.	289-220-8		
	REACH Registration No.	01-2	119471335-39-xxxx	
1.2	Relevant identified uses of the substance or mixture and uses advised against			
	Identified Use(s)	No.	Exposure Scenario	Page:
		1	Distribution of Gasoline (0 – 1 % benzene content)	12
		2	Formulation and (re)packing of gasoline (0 – 1 % benzene content)	15
		3	Use of Gasoline (0 – 1 % benzene content) as a fuel - Industrial	18
		4	Use of Gasoline (0 – 1 % benzene content) as a fuel -	21
		-	Professional	
		5	Use of Gasoline (0 – 1 % benzene content) as a fuel - Consumer	24
	Uses Advised Against	Anytł	ning other than the above.	
1.3	Details of the supplier of the safety data sheet			
	Company Identification	Vitol	SA	
		Place	e des Bergues 3	
		1201 Geneva		
		Switzerland		
	Telephone	+31 10 498 7200		
	Fax	+31 10 452 9545		
	E-Mail (competent person)	xread	ch@vitol.com	
1.4	Emergency telephone number			
			(0) 1005 000 070 04/7	

Emergency telephone num Emergency Phone No. Languages spoken

+44 (0) 1235 239 670, 24/7 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

According to Regulation (EC) No. 1272/2008 (CLP) V4001-A-80-Gasoline

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Hazard Pictogram(s)

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DANGER Signal Word(s) 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. P301+P310: IF SWALLOWED: Immediately call a POISON CENTER/doctor. P331: Do NOT induce vomiting. P403+P233: Store in a well-ventilated place. Keep container tightly closed. 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.	%W/W
Gasoline	86290-81-5	289-220-8	100

SECTION 4: FIRST AID MEASURES



2.3

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. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Avoid all contact. Do not ingest. If swallowed then seek immediate medical assistance.

Hydrogen sulphide (H2S) can accumulate in the headspace of storage tanks and reach potentially hazardous concentrations.

If there is any suspicion of inhalation: A self contained breathing apparatus should be worn. Remove to fresh air immediately.

H2S Warning:

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	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	Inhalation: May cause drowsiness or dizziness. Headache, nausea and vomiting.
	and delayed	Skin Contact: Causes skin irritation.
		Eye Contact: Causes serious 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	Treat symptomatically.
	special treatment needed	
	Notes to a physician:	IF INHALED: If unconscious, place in recovery position and get medical attention
		immediately. Administer oxygen if available and artificial respiration if necessary.
		IF SWALLOWED: Do not induce vomiting because of risk of aspiration into the
		lungs. If aspiration is suspected obtain immediate medical attention. If vomiting

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	Extremely flammable liquid and vapour. Will float and can be reignited on surface water. 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. If sulphur compounds are present in appreciable amounts, combustion products may include also H2S and SOx
5.3	Advice for fire-fighters	(sulfur oxides) or sulfuric acid Fight fire with normal precautions from a reasonable distance. Fire fighters should
0.0		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. Ensure operatives are trained to minimise exposures. Ensure suitable personal protection during removal of spillages. Eliminate sources of ignition. Shut off leaks if without risk. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Avoid all contact with substance. Ensure adequate ventilation. Do not breathe vapour. Do not ingest. If swallowed then seek immediate medical assistance. Do not use sparking tools. Use non-sparking ventilation systems, approved explosion-proof equipment, and intrinsically safe electrical systems.

occurs spontaneously, keep head below hips to prevent aspiration into the lungs.

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	H2S Warning: Small spillages: Large spillages:	Product may release Hydrogen Sulphide. Exposure controls - 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. Please see section 8 for appropriate personal protection equipment Wear flame-resistant antistatic protective clothing. Evacuate the area and keep personnel upwind. Drench contaminated clothing with water before removing to avoid risk of sparks from static electricity. Avoid all contact. Wear chemical protection suit and breathing apparatus. See Also Section: 8.
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. If necessary: Dike area to contain the spill and prevent releases to sewers, drains, or other waterways.
6.3	Methods and material for containment and cleaning up	Provided it is safe to do so, isolate the source of the leak. Use non-sparking equipment when picking up flammable spill. The vapour is heavier than air; beware of pits and confined spaces. Ensure that the equipment is adequately grounded. Allow small spillages to evaporate provided there is adequate ventilation. Wear flame-resistant antistatic protective clothing. Wear chemical protection suit and breathing apparatus.
	Spillages onto land:	In case of soil contamination, remove contaminated soil and treat in accordance with local regulations. Adsorb spillages onto sand, earth or any suitable adsorbent material. Transfer to a lidded container for disposal or recovery. Dispose of this material and its container as hazardous waste. Small spillages: Allow small spillages to evaporate provided there is adequate ventilation. Wear flame-resistant antistatic protective clothing. Large spillages: Cover spillage with foam to reduce evaporation. Do not use water jet.
	Spillages on water or at sea:	Collect as much as possible in clean container for reuse or disposal. Small spillages: Contain product with floating barriers or other equipment. Collect spilled product by absorbing with specific floating absorbents. Large spillages: 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.
6.4	Reference to other sections	See Section: 8,13

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

H2S Warning:

7.2 Conditions for safe storage, including any incompatibilities

Obtain special instructions before use. 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. May form explosive mixtures with air. Take action to prevent static discharges. Use 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 all contact with substance. Do not ingest. If swallowed then seek immediate medical assistance. Do not breathe vapour. See Section: 8. Keep good industrial hygiene. Wash hands thoroughly after handling. Contaminated clothing should be thoroughly cleaned.

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. Light hydrocarbon vanours can build up in the headspace of containers. These

Light hydrocarbon vapours can build up in the headspace of containers. These can cause flammability / explosion hazards. Bund storage facilities to prevent soil

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and water pollution in the event of spillage. Keep only in original packaging. 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. Empty container may contain product residue which may result in flammable or explosive vapours inside the container. Stable at ambient temperatures. Suitable containers: Stainless steel, Mild steel Do not store in: Synthetic materials Keep away from oxidising agents. See Section: 1.2 and/or Exposure Scenario.

Storage temperature Storage measures

Incompatible materials7.3 Specific end use(s)

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1	Control parameters
-----	--------------------

- 8.1.1 Occupational Exposure Limits
- 8.1.2 Biological limit value
- 8.1.3 PNECs and DNELs

No Occupational Exposure Limit assigned. Users are advised to consider national Occupational Exposure Limits or other equivalent values.

Not established.

PNEC: Not established. Gasoline 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.

Gasoline Derived No Effect Level	Oral	Inhalation	Dermal
Worker - Long Term - Systemic effects	-	1300 mg/m ³	-
Worker - Long Term - Local effects	-	840 mg/m ³	-
Worker - Acute - Local effects	-	1100 mg/m ³	-
Consumer - Long Term - Systemic effects	-	1200 mg/m ³	-
Consumer - Long Term - Local effects	-	180 mg/m ³	-
Consumer - Acute - Local effects	-	640 mg/m ³	-

8.2 Exposure controls

8.2.1 Appropriate engineering controls

8.2.2 Individual protection measures, such as personal protective equipment (PPE)

Provide adequate ventilation, including appropriate local extraction if dusts, fumes or vapours are likely to be evolved. Store in a cool/low-temperature, wellventilated (dry) place away from heat and ignition sources. Guarantee that the eye flushing systems and safety showers are located close to the working place.

Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

Fuels are typically used, transferred and transported in closed systems. If exposure is likely (i.e. during sampling) the following advice may be appropriate. Keep good industrial hygiene. Always wash hands before smoking, eating and drinking. Do not eat, drink or smoke at the work place.

Refer to annexes for exposure scenarios detailing use specific exposure controls

Use eye protection according to EN 166, designed to protect against liquid splashes.

Eye/ face protection



Skin protection



Hand protection: Wear impervious gloves (EN374). Gloves should be changed regularly to avoid permeation problems. Breakthrough time of the glove material: refer to the information provided by the gloves' producer. Recommended: Nitrile rubber.

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Body protection: Wear anti-static clothing and shoes.

small scale: Wear suitable coveralls to prevent exposure to the skin. large scale: Chemical protection suit.

Respiratory protection



Thermal hazards

8.2.3 Environmental Exposure Controls

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.

Not applicable.

Avoid release to the environment.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1	9.1 Information on basic physical and chemical properties		
	Physical state	Liquid	
	Colour	Colourless	
	Odour	Hydrocarbon	
	Melting point/freezing point	< - 60 °C	
	Boiling point or initial boiling point and boiling range	< 35 °C	
	Flammability	Not applicable - Liquid	
	Lower and upper explosion limit	Flammable Limits (Lower) (%v/v) 1	
		Flammable Limits (Upper) (%v/v) 10	
	Flash point	< 0 °C	
	Auto-ignition temperature	> 220 °C	
	Decomposition temperature	Not established.	
	рН	Not established.	
	Kinematic viscosity	1 mm²/s @ 20 °C	
	Solubility	Immiscible with water.	
	Partition coefficient: n-octanol/water (log value)	Not applicable. Substance is complex UVCB.	
	Vapour pressure	4 - 240 kPa @ 37.8°C	
	Density and/or relative density	0.62 – 0.88 g/cm ³ @ 15 °C	
	Relative vapour density	> 2	
	Particle characteristics	Not established.	

9.2 Other information

None known.

10.1 Reactivity Stable under normal conditions. Reacts with - Strong oxidising agents 10.2 **Chemical stability** Stable under normal conditions. Hazardous polymerisation will not occur. Product may release Hydrogen Sulphide. 10.3 Possibility of hazardous reactions Extremely flammable liquid and vapour. May form explosive mixture with air. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback. Product may release Hydrogen Sulphide. 10.4 Conditions to avoid Elevated temperature. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from direct sunlight. 10.5 Incompatible materials Keep away from oxidising agents. Strong Acids and Alkalis. 10.6 Hazardous decomposition products 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

SECTION 10: STABILITY AND REACTIVITY

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008 Acute toxicity - Ingestion All test data taken from existing ECHA registrations for the substances mentioned.

Based upon the available data, the classification criteria are not met.

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			LD50 > 5000 mg/kg bw/day (rat) (OECD 401)
	Acute toxicity - Inhalation		Based upon the available data, the classification criteria are not met.
			LC50 Vapour > 5600 mg/m ³ Air (rat) (OECD 403)
	Acute toxicity - Skin contact		Based upon the available data, the classification criteria are not met.
			LD50 > 2000 mg/kg bw/day (rabbit) (OECD 402)
	Skin corrosion/irritation		Skin Irrit. 2; Causes skin irritation.
			Irritating to skin. (rabbit) (OECD 404)
	Serious eye damage/irritation		Based upon the available data, the classification criteria are not met.
	Respiratory or skin sensitisation		Not irritating to eyes (rabbit) (OECD 405) Based upon the available data, the classification criteria are not met.
	nespiratory of skin sensitisation		Sensitisation (guinea pig) - Negative (OECD 406)
	Germ cell mutagenicity		Muta. 1B; May cause genetic defects. Harmonised Classification.
			ECHA Registration Endpoint summary: According to EU CLP Classification (EC
			no. 1272/2008), there is a regulatory requirement to classify gasoline and
			naphtha streams as hazardous for this endpoint when they contain >0.1%
			benzene
	Carcinogenicity		Carc. 1B; May cause cancer. Harmonised Classification.
			ECHA Registration Endpoint summary: According to EU CLP Classification (EC
			no. 1272/2008), there is a regulatory requirement to classify gasoline and
			naphtha streams as hazardous for this endpoint when they contain $>0.1\%$
			benzene
			Repr. 2; Suspected of damaging fertility or the unborn child.
			ECHA Registration Endpoint summary According to EU CLP Classification (EC
			no. 1272/2008), there is a regulatory requirement to classify gasoline and
			naphtha streams as hazardous for this endpoint when they contain >0.1%
			Toluene and/or n-hexane
	STOT - Single Exposure		STOT SE 3; May cause drowsiness or dizziness. Weight of evidence approach
	STOT - Repeated Exposure		Based upon the available data, the classification criteria are not met.
		Oral [.]	No adverse effect observed (rat) (Halder CA, et al. (1985))
			No adverse effect observed (rat) (OECD 453)
		Inhalation:	Chronic - Systemic effects NOAEC 1402 mg/m ³
			No adverse effect observed. (mouse) (OECD TG 410)
		Dermal:	Chronic - Systemic effects NOAEL 375 mg/kg bw/day
	Aspiration hazard		Asp. Tox. 1; May be fatal if swallowed and enters airways. Harmonised
			Classification.
	, and the second s		Viscosity: 1 mm ² /s @ 20 °C
11.2			
11.2.1	Endocrine disrupting properties		This substance does not have endocrine disrupting properties with respect to
			humans.
11.2.2	Other information		None.

SECTION 12: ECOLOGICAL INFORMATION

12.1	Toxicity Short Term (acute): Long Term (Chronic):	Aquatic Chronic 2; Toxic to aquatic life with long lasting effects. LL50 (Fish) (96hr) 10 mg/l (OCED 203) According to the EU CLP Regulation (EC No. 1272/2008) criteria, substances in the low boiling point naphtha category are classified as Chronic Category 2 (H411) for the environment based on acute invertebrate and alga toxicity.
12.2	Persistence and degradability	Readily biodegradable. (OECD 301F)
12.3	Bioaccumulative potential	Substance is complex UVCB. The BCF (fish) of this substance components is well below the criteria for bioaccumulation. Therefore, this substance is not considered as bioaccumulative substance. (ECHA registration dossier: PBT assessment 2)
12.4	Mobility in soil	The product is predicted to have low mobility in soil. Immiscible with water.
12.5	Results of PBT and vPvB assessment	Substance is complex UVCB. This substance does not contain PBT constituents included in the SVHC candidate list at concentrations above 0.1%.
12.6	Endocrine disrupting properties	This substance does not have endocrine disrupting properties with respect to non-target organisms.
12.7	Other adverse effects	None known.

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SECTION 13: DISPOSAL CONSIDERATIONS

13.1	Waste treatment methods	
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Dispose of this material and its container as hazardous waste. 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 01 EU Waste Codes: HP3, HP4, HP7, HP10, HP11, HP14

Waste classification according to Directive 2008/98/EC (Waste Framework Directive)

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	1	
14.5	Environmental hazards	MILEUGEVAARLIJK / ENVIRONMENTALLY	HAZARDOUS / UMWELTGEFÄHRDEND /	
		DANGEREUX POUR L'ENVIRONNEMENT		
14.6	Special precautions for user	Vapour may create explosive atmosphere. The vapour is heavier than air; beware of pits and confined spaces.		
14.7	Maritime transport in bulk according	This product is being carried under the scope of MARPOL Annex 1. Special Precautions: Refer		
	to IMO instruments	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 tran	sport.	
14.8	Additional Information	ADR HIN: 33	EmS: F-E, S-E	
		Tunnel Restriction Code: 1 (D/E)	Limited Quantity: 500ml	
		Limited Quantity: 500 ml		
	Special Provisions	664		

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	A REACH chemical safety assessment (CSA) has been carried out. Refer to annexes for exposure scenarios detailing use specific exposure controls.

SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: New SDS Regulation 2020/878 format, all sections have been updated to include new information. Please review SDS with care.

References:

Existing ECHA registration(s) for Gasoline (CAS No. 86290-81-5) and Chemical Safety Report.

Literature References:

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Halder CA, et al., 1985, Hydrocarbon nephropathy in male rats: identification of the nephrotoxic components of unleaded gasoline., 1. Toxicol. Ind. Health 1:67-87

Vitol

Gasoline V4001

EU Classification: This Safety Data Sheet was prepared in accordance with EC Regulation (EC) 1907/2006 (REACH), 1272/2008 (CLP) & 2020/878

Legend	
ADR	ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
ADN	ADN: European Agreement on the International Transport of Dangerous Goods by Inland Waterways
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
DNEL	Derived no effect level
IATA	IATA: International Air Transport Association
ICAO	ICAO: International Civil Aviation Organization
IMDG	IMDG: International Maritime Dangerous Goods
LTEL	Long term exposure limit
PBT	PBT: Persistent, Bioaccumulative and Toxic
PNEC	Predicted No Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	RID: Regulations concerning the international railway transport of dangerous goods
STEL	Short term exposure limit
vPvB	vPvB: very Persistent and very Bioaccumulative
OECD	Organisation for Economic Cooperation and Development
ES	Exposure Scenario
NOAEC	no observed adverse effect concentration
NOAEL	No Observed Adverse Effect Level
Hazard classifica	ation / Classification code: Hazard Statement(s)

ard classification / Classification code:

Hazard Classification / Classification code.	Hazaru Statement(S)
Flam. Liq. 1, Flammable liquid, Category 1	H224: Extremely flammable liquid and vapour.
Asp. Tox. 1, Aspiration Toxicity, Category 1	H304: May be fatal if swallowed and enters airways.
Skin Irrit. 2, Skin irritation, Category 2	H315: Causes skin irritation.
Muta. 1B, Germ cell mutagen, Sub-category 1B	H340: May cause genetic defects.
Carc. 1B, Carcinogen, Category 1B	H350: May cause cancer.
Repr. 2, Reproductive toxicant, Category 2	H361fd: Suspected of damaging fertility. Suspected of damaging the unborn child.
STOT SE 3, Specific target organ toxicity - Single exposure, Category 3	H336: May cause drowsiness or dizziness. (central nervous system, inhalation)
Aquatic Chronic 2, Hazardous to the aquatic environment (Chronic), Category 2	H411: Toxic to aquatic life with long lasting effects.

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.

Disclaimers

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Annex to the extended Safety Data Sheet (eSDS)

See below -

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Gasoline (0 -1% benzene content)

CAS No. EC No. 86290-81-5 289-220-8

Summary of Parameters

Physical Para	ameters		
Vapour pressure (Pa)			4 – 240 @ 37.8 °C (Value used for exposure assessment = 340)
Partition Coeff	ficient (log K _{ow})		2.00 - 20.43
Aqueous solul	bility (mg L ⁻¹)		1.6E+03 - 5.1E-18 (Value used for exposure assessment = 2.0E+02)
Molecular wei	ght		Not applicable
Biodegradabil	ity		Not defined
Human healtl	h Parameter (DNELs)	
	Short term	Inhalation (mg/m³)	1100
Marilan.		Dermal (mg/kg bw/day)	Not applicable
Worker	Lange Tarres	Inhalation (mg/m ³)	3.2 (= 1 ppm)*
	Long Term	Dermal (mg/kg bw/day)	0.234*
	·	Inhalation (mg/m³)	0.0032 (=1 ppb)* (0.93 mg/kg bw/day)
Consumer		Dermal (mg/kg bw/day)	0.234*
		Oral (mg/kg ⁻¹ bw/day ⁻¹)	8.8
Environment	al Parameter (PNEC	s)	

Gasoline 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.

Concentration: benzene (Worst case assumption. Contains benzene. @1%).

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Contributing Scenarios

Workers	
PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes wit equivalent containment conditions
PROC2 (Storage)	Use in closed, continuous process with occasional controlled exposure. Bulk product storage.
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.
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 (charging/discharging) from/to vessels/large containers at dedicated facilities Bulk transfer in a closed system
PROC8b (Drum)	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Drum or batch transfers.
PROC8b (Refueling)	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Refueling vehicles, light aircraft or marine craft
PROC8b (aircraft)	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Refueling aircraft
PROC15	Use as 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.
Environment	
ERC1	Manufacture of substance
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, polymers
ERC7	Industrial use of substances in closed systems
ERC9a	Wide dispersive indoor use of substances in closed systems
ERC9b	Wide dispersive indoor use of substances in closed systems
Consumer	wide dispersive outdoor use of substances in closed systems
PC13	Fuels
F013	
	(Automotive refueling)
	(Scooter refueling)
	(Garden equipment refueling)
	(Garden equipment use)



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Exposure Scenario 1 – Distribution of gasoline (0 – 1 % benzene content)

1.0 Contributing Scenarios	I.0 Contributing Scenarios				
Sector of uses SU	SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites				
Process category [PROC]	PROC1 PROC2 PROC2 (Storage) PROC3 PROC3 (Sampling) PROC8a (Maintenance) PROC8b (Bulk) PROC15				
Chemical product category [PC]	Not applicable				
Article Categories [AC]	Not applicable				
Environmental release categories [ERC]	ERC1 ERC2 ERC3 ERC4 ERC5 ERC6a ERC6b ERC6c ERC6d ERC6d ERC7				
Specific Environmental Release Categories SPERC	ESVOC SpERC 1.1b v.1				

2.0 Operational conditions and risk management	measures		
2.1 Control of worker exposure			
Product characteristics			
Physical form of product	Liquid with high volatility.		
Concentration of substance in product	Covers concentrations up to 100)% (≤ 1 % benzene content)	
Human factors not influenced by risk manageme			
Potential exposure area	Not defined		
Frequency and duration of use			
Exposure duration per day	Covers daily exposures up to 8	hours (unless stated differently).	
Frequency of use (days per year)	300		
Other operational conditions affecting worker ex	posure		
X	PROC3, PROC2 (Storage)	Outdoor	
Area of use	All other PROC's	Not defined (default = Indoor)	
Characteristics of the surroundings	Not defined		
General measures (skin irritants) Avoid direct skin contact with product. Identify potent likely. Clean up contamination/spills as soon as the prevent/minimise exposures and to report any skin p General measures (carcinogens) Consider technical advances and process upgrades as closed systems, dedicated facilities and suitable containment. Clean/flush equipment, where possible persons; provide specific activity training to operator wear respiratory protection when its use is identified Ensure safe systems of work or equivalent arranger	ial areas for indirect skin contact. We ey occur. Wash off any skin contar problems that may develop. (including automation) for the elimin general/local exhaust ventilation. Dr. le, prior to maintenance Where the prs to minimise exposures; wear suited for certain contributing scenario; ments are in place to manage risks.	ation of releases. minimise exposure using measures such ain down systems and clear transfer lines prior to breaking re is potential for exposure: restrict access to authorised itable gloves and coveralls to prevent skin contamination; clear up spills immediately and dispose of waste safely. Regularly inspect, test and maintain all control measures.	
Consider the need for risk based health surveillance	·.		
Technical conditions of use			
PROC1, PROC2, PROC3	Handle substance within a close		
PROC8b (Bulk)	Ensure material transfers are under containment or extract ventilation. (Efficiency of at		
PROC15	Use fume cupboard. (Efficiency	of at least 90 %)	
Organisational measures	· · · · · ·		
PROC3 (Sampling)	Sample via a closed loop or othe	er system to avoid exposure. (Efficiency of at least 95 %)	
PROC8a (Maintenance)	Drain down and flush system prior to equipment break-in or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Clear spills immediately. (Inhalation - efficiency of at least 90 %)		

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Risk management measures related to hu Respiratory protection		o aro roquir	rod	
Respiratory protection				
	PROC2		Wear suitable gloves tested to EN374. (Efficiency of at least 80 %)	
Hand and/or Skin protection			Wear chemically resistant gloves (tested to EN374) in	
riand and/or Skin protection	DDOC9a (Maintana)			
	PROC8a (Maintenar	ice)		
Eye Protection	No special measure	s are requir	,	
Other operational conditions affecting wo		o are requi		
Wear suitable coveralls to prevent exposure		nrior to de-	coupling Avoid dip sampling	
2.2 Control of environmental exposure				
Amounts used				
Fraction of EU tonnage used in region:		0.1		
Regional use tonnage (tons/year):		1.11E+0)7	
Fraction of Regional tonnage used locally	tons/year	2.0E-03		
Annual site tonnage (tons/year):	*	21,202		
Average daily use (kg/day)		70,675		
Environment factors not influenced by ris	k management			
Flow rate of receiving surface water (m ³ /d):		Not defi	ned (default = 18,000)	
Local freshwater dilution factor:		10		
Local marine water dilution factor:		100	100	
Operational conditions				
Emission days (days/year):				
Release fraction to air from process (initial release prior to RMM):		1.0E-03		
Release fraction to wastewater from process (initial release prior to RMM):		1.0E-05		
Release fraction to soil from process (initial re		1.0E-05		
Technical onsite conditions and measures	0		sions and releases to soil	
Treat air emission to provide a typical remova	, , ,	90		
If there is no discharge to domestic sewage t	•			
wastewater (prior to receiving water discharg	e) to provide the required	0		
removal efficiency of (%):				
If discharging to domestic sewage treatment	plant, provide the required	0		
onsite wastewater removal efficiency of (%):		-		
Treat soil emission to provide a typical remov		0		
Common practices vary across sites thus co onsite wastewater treatment required.	onservative process release es	stimates us	ed. If discharging to domestic sewage treatment plant, no	
Organisational measures to prevent/limit	elesse from site			
Do not apply industrial sludge to natural soils		contained	or reclaimed	
Conditions and measures related to muni-				
Size of municipal sewage system/treatment plant (m ³ /d) 2000				
Degradation effectiveness (%)		96.1		
Conditions and measures related to extern	nal treatment of waste for dis	posal		
External treatment and disposal of waste sho			tional regulations.	
Substance release quantities after risk ma				
Maximum allowable site tonnage (MSafe) bas		0.505.0		
wastewater treatment removal (kg/d):		2.58E+0	טע	

3. Exposure estimation and reference to its source

3.1 Human exposure prediction

Exposure assessment (method/calculation model)

ECETOC TRA (benzene content) Dermal Inhalation Combined **Process category** inhalation Risk dermal Risk Risk [PROC] characterisation exposure characterisation exposure characterisation (mg/m³) ratio (RCR) (mg/kg bw/day) ratio (RCR) ratio (RCR) PROC1 0.03 0.00 0.00 0.15 0.15 PROC2 0.50 0.50 0.03 0.12 0.62 PROC2 0.35 0.35 0.14 0.57 0.94 (Storage) PROC3 0.70 0.70 0.03 0.15 0.85 PROC3 0.05 0.05 0.03 0.15 0.20 (Sampling)

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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

3.2 Environmental exposure prediction

Exposure assessment (method/calculation model)

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Gasoline 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 As the model assumes fractionation before entering the environment, the PEC is not of the substance as manufactured but is a some of the constituents expected to be present in the environmental compartment.

Environmental exposure	STP	freshwater	marine water	Soil	freshwater sediment	marine sediment
Predicted Environmental Exposure (PEC)	1.44 mg/L	5.06E-03 mg/L	1.45E-04 mg/L	1,68E-4 mg/kg ww	9.88E-03 mg/kg ww	9.88E-04 mg/kg ww
Risk characterisation ratio (RCR)	1.64E-03	2.74E-02	7.50E-04	7.99E-05	9.98E-03	9.93E-03

Human exposure prediction:

Route of Exposure	Exposure (µg/kg ⁻¹ day ⁻¹)	Risk characterisation ratio (RCR)	
Oral	0.36	3.62E-03	
Inhalation	5.66	6.10E-3	

4.0 Evaluation guidance to d	ownstream user	
For scaling see	risks are managed to at lea Available hazard data do no Further details on scaling a for-industries-libraries.html)	ot support the need for a DNEL to be established for other health effects. nd control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-). nzene and assumes that the substance contains 1 % benzene. Arithmetic scaling
Exposure assessment	Worker	ECETOC TRA
instrument/tool/method	Environment	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

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Exposure Scenario 2 – Formulation and (re)packing of gasoline (0 – 1 % benzene content)

1.0 Contributing Scenarios			
Sector of uses SU	SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites SU10 Formulation [mixing] of preparations and/or re-packaging (excluding alloys)		
Process category [PROC]	PROC1 PROC2 PROC2 (Storage) PROC3 PROC3 (Sampling) PROC8a (Maintenance) PROC8b (Bulk) PROC8b (Drum/batch transfers) PROC15		
Chemical product category [PC]	Not applicable		
Article Categories [AC]	Not applicable		
Environmental release categories [ERC]	ERC2		
Specific Environmental Release Categories SPERC	ESVOC SpERC 2.2.v1		

2.0 Operational conditions and risk management	measures			
2.1 Control of worker exposure				
Product characteristics				
Physical form of product	Liquid with high volatility.			
Concentration of substance in product	Covers concentrations up to 100°	% (≤ 1 % benzene content)		
Human factors not influenced by risk managemen				
Potential exposure area	Not defined			
Frequency and duration of use				
Exposure duration per day	Covers daily exposures up to 8 h	ours (unless stated differently).		
Frequency of use (days per year)	300			
Other operational conditions affecting worker exp	posure			
Area of use	PROC3	Outdoor		
Area of use	All other PROC's	Not defined (default = Indoor)		
Characteristics of the surroundings	Not defined			
General measures applicable to all activities				
	ene is implemented. Assumes activit	ties are at ambient temperature (unless stated differently).		
General measures (skin irritants)		······································		
		ar gloves (tested to EN374) if hand contact with substance		
		ination immediately. Provide basic employee training to		
prevent/minimise exposures and to report any skin pr	oblems that may develop.			
General measures (carcinogens)				
Consider technical advances and process upgrades (including automation) for the elimina	tion of releases. minimise exposure using measures such		
as closed systems, dedicated facilities and suitable g	eneral/local exhaust ventilation. Dra	in down systems and clear transfer lines prior to breaking		
containment. Clean/flush equipment, where possible	e, prior to maintenance Where there	e is potential for exposure: restrict access to authorised		
	•	able gloves and coveralls to prevent skin contamination;		
		clear up spills immediately and dispose of waste safely.		
		Regularly inspect, test and maintain all control measures.		
Consider the need for risk based health surveillance.	onto are in place to manage hold.			
Technical conditions of use				
PROC1, PROC2, PROC2 (Storage), PROC3	Handle substance within a closed			
PROC3 (Sampling)		r system to avoid exposure. (Efficiency of at least 95 %)		
RROCoh (Rulli) RROCoh (Ruur (hatah tuanafara)	Ensure material transfers are und	ler containment or extract ventilation. (Efficiency of at		
PROC8b (Bulk), PROC8b (Drum/batch transfers)	least 97 %)			
PROC15	Use fume cupboard. (Efficiency of at least 90 %)			
Organisational measures		,		
	Drain down and flush system price	r to equipment break-in or maintenance. Retain drain		
PROC8a (Maintenance)	downs in sealed storage pending disposal or for subsequent recycle. Clear spills			
	immediately. (Efficiency of at least			
Pick management measures related to human be				
Risk management measures related to human he		4		
Respiratory protection	No special measures are required	-		
Hand and/or Skin protection	PROC2, PROC2 (Storage)	Wear suitable gloves tested to EN374. (Efficiency of at		
	(c.c	least 80 %)		

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	PROC8a (Maintenand	ce)	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency of at least 90 %)		
Eye Protection	No special measures	are required	d.		
Other operational conditions affecting worker exp	osure				
Wear suitable coveralls to prevent exposure to the sk	in. Clear transfer lines p	rior to de-co	pupling. Avoid dip sampling.		
2.2 Control of environmental exposure					
Amounts used					
Fraction of EU tonnage used in region:		0.1			
Regional use tonnage (tons/year):		9.97E+06			
Fraction of Regional tonnage used locally: (tons/year))	3.0E-03			
Annual site tonnage (tons/year):		3.0E+04			
Average daily use (kg/day):		1.0E+05			
Environment factors not influenced by risk manage	gement				
Flow rate of receiving surface water (m ³ /d):		Not define	ed (default = 18,000)		
Local freshwater dilution factor:		10	· · ·		
Local marine water dilution factor:		100			
Operational conditions		1			
Emission days (days/year):			300		
Release fraction to air from process (initial release prior to RMM):					
Release fraction to wastewater from process (initial release prior to RMM):					
Release fraction to soil from process (initial release process)		1.0E-04			
Technical onsite conditions and measures to redu	· · ·		ions and releases to soil		
Treat air emission to provide a typical removal efficier	• • •	0			
If there is no discharge to domestic sewage treatment					
wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%):					
If discharging to domestic sewage treatment plant, pro onsite wastewater removal efficiency of (%):	ovide the required	0			
Treat soil emission to provide a typical removal efficie	ency of (%):	0			
		-	d. If discharging to domestic sewage treatment plant, no		
Organisational measures to prevent/limit release					
Do not apply industrial sludge to natural soils. Sludge		contained or	r reclaimed.		
Conditions and measures related to municipal set	<u> </u>				
Size of municipal sewage system/treatment plant (m3/d)		2000			
Degradation effectiveness (%)		96.1			
Conditions and measures related to external treat	ment of waste for disp	osal			
External treatment and disposal of waste should com	ply with applicable local	and/or natio	onal regulations.		
Substance release quantities after risk manageme					
Maximum allowable site tonnage (MSafe) based on re wastewater treatment removal (kg/d):	elease following total	1.0E+05			

3. Exposure estimation and reference to its source

3.1 Human exposure prediction

Exposure assessment (method/calculation model)

ECETOC TRA (benzene content)

	Inha	lation	Dei	Combined	
Process category [PROC]	inhalation exposure (mg/m³)	Risk characterisation ratio (RCR)	dermal exposure (mg/kg bw/day)	Risk characterisation ratio (RCR)	Risk characterisation ratio (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

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Vitol

Gasoline	V4001
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PR 3.2 Environmental e Exposure assessmen Gasoline is a hydroca the substance. These environment, the PEC compartment. Environr expos Predic Environr Expos	t (method/c rbon UVCE are used t c is not of th mental ure	rediction calculation r B. The hydro to estimate t	nodel) pcarbon block met he environmental	risk for the subs d but is a some marine	environme PETRORISK stance As th of the const	ntal exposu to calculat e model as ituents expo	sumes fractiona ected to be pres	rorisk model. ach group of ca ation before er sent in the env	omponents i ntering the
Exposure assessmen Gasoline is a hydroca the substance. These environment, the PEC compartment. Environr expos Predic Environr	t (method/c rbon UVCE are used t c is not of th mental ure	calculation r B. The hydro to estimate t he substanc	ocarbon block met he environmental e as manufacture	risk for the subs d but is a some marine	environme PETRORISK stance As th of the const	ntal exposu to calculat e model as ituents expo	are with the Petr e the PEC of ea sumes fractiona ected to be pres	rorisk model. ach group of ca ation before er sent in the env	omponents in ntering the
Gasoline is a hydroca the substance. These environment, the PEC compartment. Environr expos Predic Environr	are used t are used t is not of the mental sure	B. The hydro to estimate t he substanc	ocarbon block met he environmental e as manufacture	risk for the subs d but is a some marine	environme PETRORISK stance As th of the const	ntal exposu to calculat e model as ituents expo	are with the Petr e the PEC of ea sumes fractiona ected to be pres	rorisk model. ach group of ca ation before er sent in the env	omponents in ntering the
the substance. These environment, the PEC compartment. Environr expos Predic Environr	are used t is not of th mental sure	to estimate t he substanc	he environmental e as manufacture	risk for the subs d but is a some marine	PETRORISK stance As th of the const	to calculat e model as ituents exp	e the PEC of ea sumes fractiona ected to be pres	ach group of co ation before er sent in the env	ntering the
expos Predic Environr	ted	STP	freshwater						
Predic Environr	ted			water	Soil		freshwater sediment	marine sedimer	
(PEC	ure	1.31E+00 mg/L	1.32E-01 mg/L 1.32E-02 mg/L		1.67E-(mg/kg v	9 9 9 9	E-01 mg/kg ww	9.00E-0 mg/kg w	-
Ris character ratio (F	isation	1.49E-01	6.83E-01	6.83E-02	4.99E-0	03	9.09E-01	9.09E-0	2
luman exposure pred	diction:					·			
	Route o	of Exposure	e Expos	sure (µg/kg ⁻¹ d	ay ¹)	Risk ch	naracterisation (RCR)	ratio	
F		Oral 7.79 7.79E-02							
4.0 Evaluation guida	Int	Oral nalation			ay ⁻¹)	Risk ch	(RCR)	ratio	

	for-industries-libraries.html).			
	Exposure calculated for benzene and assumes that the substance contains 1 % benzene. Arithmetic scaling			
	may be possible if the batch contains < 1 % benzene			
Exposure assessment	Worker	ECETOC TRA		
instrument/tool/method	Environment	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.		

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Exposure Scenario 3 – Use of Gasoline (0 – 1 % benzene content) as a fuel - Industrial

1.0 Contributing Scenarios	
Sector of uses SU	SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites
Process category [PROC]	PROC1 PROC2 PROC2 (Storage) PROC3 PROC8a (Maintenance) PROC8b (Bulk) PROC8b (Drum/batch transfers) PROC8b (refuelling) PROC8b (refuelling aircraft) PROC16 PROC16 (Additive)
Chemical product category [PC]	Not applicable
Article Categories [AC]	Not applicable
Environmental release categories [ERC]	ERC7
Specific Environmental Release Categories SPERC	ESVOC SpERC 7.12a.v1

2.0 Operational conditions and risk management n	neasures			
2.1 Control of worker exposure				
Product characteristics				
Physical form of product	Liquid with high volatility.			
Concentration of substance in product	Covers concentrations up to 100% (≤ 1 % benzene content)			
Human factors not influenced by risk managemen				
Potential exposure area	Not defined			
Frequency and duration of use				
Exposure duration per day	Covers daily exposures up to 8 he	ours (unless stated differently).		
Frequency of use (days per year)	300			
Other operational conditions affecting worker exp	osure			
	PROC3	Outdoor		
Area of use	All other PROC's	Not defined (default = Indoor)		
Characteristics of the surroundings	Not defined			
General measures applicable to all activities				
Assumes a good basic standard of occupational hygier	ne is implemented. Assumes activit	ties are at ambient temperature (unless stated differently).		
likely. Clean up contamination/spills as soon as they prevent/minimise exposures and to report any skin pro <i>General measures (carcinogens)</i> Consider technical advances and process upgrades (ir as closed systems, dedicated facilities and suitable ge containment. Clean/flush equipment, where possible, persons; provide specific activity training to operators wear respiratory protection when its use is identified Ensure safe systems of work or equivalent arrangeme Consider the need for risk based health surveillance. <i>Technical conditions of use</i> PROC1, PROC2, PROC2 (Storage), PROC3,	r occur. Wash off any skin contamo oblems that may develop. Including automation) for the elimina eneral/local exhaust ventilation. Dra prior to maintenance Where there to minimise exposures; wear suits for certain contributing scenario; o	ar gloves (tested to EN374) if hand contact with substance ination immediately. Provide basic employee training to tion of releases. minimise exposure using measures such in down systems and clear transfer lines prior to breaking e is potential for exposure: restrict access to authorised able gloves and coveralls to prevent skin contamination; clear up spills immediately and dispose of waste safely. Regularly inspect, test and maintain all control measures.		
PROC16, PROC16 (Additive)		•		
PROC8b (Bulk), PROC8b (Drum/batch transfers), PROC8b (refuelling), PROC8b (refuelling aircraft)	Ensure material transfers are under containment or extract ventilation. (Efficiency of at least 90 %)			
Organisational measures	· ·			
PROC8a (Maintenance)		r to equipment break-in or maintenance. Retain drain disposal or for subsequent recycle. Clear spills st 86 %)		
Risk management measures related to human hea	lth			
Respiratory protection	No special measures are required	J.		
Hand and/or Skin protection	PROC2	Wear suitable gloves tested to EN374. (Efficiency of at least 80 %)		

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	PROC8a (Maintenand	ce)	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency of at least 90 %)		
Eye Protection	No special measures	are require	d.		
Other operational conditions affecting worker exp	osure				
Wear suitable coveralls to prevent exposure to the sk	in. Clear transfer lines p	rior to de-co	pupling. Avoid dip sampling.		
2.2 Control of environmental exposure					
Amounts used					
Fraction of EU tonnage used in region:		0.1			
Regional use tonnage (tons/year):		9.38E+05			
Fraction of Regional tonnage used locally: (tons/year))	1			
Annual site tonnage (tons/year):		9.38E+05			
Average daily use (kg/day):		3.13E+06			
Environment factors not influenced by risk manage	gement				
Flow rate of receiving surface water (m ³ /d):		Not define	ed (default = 18,000)		
Local freshwater dilution factor:		10			
Local marine water dilution factor:		100			
Operational conditions		1			
Emission days (days/year):			300		
Release fraction to air from process (initial release prior to RMM):		5.00E-02			
Release fraction to wastewater from process (initial release prior to RMM):		1.0E-05			
Release fraction to soil from process (initial release process)		0			
Technical onsite conditions and measures to redu			ions and releases to soil		
Treat air emission to provide a typical removal efficier		95.0			
If there is no discharge to domestic sewage treatment plant, Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%):		91.1			
If discharging to domestic sewage treatment plant, pro onsite wastewater removal efficiency of (%):	ovide the required	0			
Treat soil emission to provide a typical removal efficie		0			
onsite wastewater treatment required.		imates used	d. If discharging to domestic sewage treatment plant, no		
Organisational measures to prevent/limit release					
Do not apply industrial sludge to natural soils. Sludge		contained o	r reclaimed.		
Conditions and measures related to municipal set	<u> </u>				
Size of municipal sewage system/treatment plant (m ³ /	/d)	2000			
Degradation effectiveness (%)		96.1			
Conditions and measures related to external treat					
External treatment and disposal of waste should com		and/or natio	onal regulations.		
Substance release quantities after risk manageme					
Maximum allowable site tonnage (MSafe) based on re wastewater treatment removal (kg/d):	elease tollowing total	5.30E+06			

3. Exposure estimation and reference to its source

3.1 Human exposure prediction

Exposure assessment (method/calculation model)

ECETOC TRA (benzene content)

	Inhalation		Dei	Combined	
Process category [PROC]	inhalation exposure (mg/m³)	Risk characterisation ratio (RCR)	dermal exposure (mg/kg bw/day)	Risk characterisation ratio (RCR)	Risk characterisation ratio (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	0.59	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	0.15	0.15	0.07	0.30	0.45

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	(Drum/batch							
	transfers) PROC8b	0.7	15 0	.15	0.07	0.30	0.45	
	(refuelling) PROC8b							
	(refuelling aircra	ft) 0.1		.15	0.07	0.30	0.45	
	PROC16	0.2	25 0	.25	0.03	0.15	0.40	
	PROC16 (Additive)	0.2	25 0	.25	0.03	0.15	0.40	
	onmental exposure				-			
Exposure	assessment (metho	d/calculation m	nodel)			ocarbon Block Method Intal exposure with the P		
substance	e. These are used ent, the PEC is not	to estimate th	e environmental r	risk for the s	substance As	to calculate the PEC of the model assumes fronstituents expected to	ractionation bet	fore entering
	Environmental exposure	STP	freshwater	marine water	Soil	freshwater sediment	marin sedime	
Predicted Environmental 6.		6.39E-01 mg/L	6.40E-02 mg/L	6.40E-02 mg/L	5.07E-0 mg/kg v	$^{}$ $1/3/(-1)1 ma/ka w$	4 27E (02
	Risk characterisation 7.24E-							
	Risk	7.24E-02	3.32E-01	3.32E-02	1.52E-	02 4.41E-01	4.41E-0	02
Human ex	Risk characterisation	7.24E-02	3.32E-01	3.32E-02	1.52E-0	02 4.41E-01	4.41E-0	02
Human ex	Risk characterisation ratio (RCR) posure prediction:	7.24E-02		3.32E-02		Risk characterisatio		02
Human ex	Risk characterisation ratio (RCR) posure prediction:	e of Exposure Oral		ure (μg/kg ⁻¹ 3.90		Risk characterisatio (RCR) 3.90E-02		02
Human ex	Risk characterisation ratio (RCR) posure prediction:	e of Exposure		ure (µg/kg ⁻¹		Risk characterisatio (RCR)		02
	Risk characterisation ratio (RCR) posure prediction:	e of Exposure Oral nhalation	e Exposi	ure (μg/kg⁻¹ 3.90 511	day ¹)	Risk characterisatio (RCR) 3.90E-02 5.51E-01	on ratio	-
	Risk characterisation ratio (RCR) posure prediction: Route ation guidance to c	e of Exposure Oral nhalation Iownstream u Where o risks are Availab Further for-indu Exposu	e Exposi ser other Risk Manage e managed to at lea le hazard data do r details on scaling a stries-libraries.htm re calculated for be	ure (µg/kg ⁻¹ 3.90 511 ment Measu ast equivaler not support th and control te l). enzene and a	day ⁻¹) res/Operation It levels. The need for a pechnologies and assumes that	Risk characterisation (RCR) 3.90E-02 5.51E-01 al Conditions are adopted DNEL to be established re provided in SpERC fac the substance contains	on ratio	hould ensure effects. efic.org/en/re
4.0 Evalua	Risk characterisation ratio (RCR) posure prediction: Route ation guidance to c	e of Exposure Oral nhalation Iownstream u Where o risks are Availab Further for-indu Exposu	e Exposi ser other Risk Manage e managed to at le- le hazard data do r details on scaling a stries-libraries.htm re calculated for be possible if the bato	ure (µg/kg ⁻¹ 3.90 511 ment Measu ast equivaler not support th and control te l). enzene and a	day ¹) res/Operation at levels. he need for a echnologies an assumes that t 1 % benzene	Risk characterisation (RCR) 3.90E-02 5.51E-01 al Conditions are adopted DNEL to be established re provided in SpERC fac the substance contains	on ratio	hould ensure effects. efic.org/en/re

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Exposure Scenario 4 – Use of Gasoline (0 – 1 % benzene content) as a fuel - Professional

1.0 Contributing Scenarios	
Sector of uses SU	SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process category [PROC]	PROC1 PROC2 PROC2 (Storage) PROC3a (Maintenance) PROC8b (Bulk) PROC8b (Drum/batch transfers) PROC8b (refuelling) PROC16
Chemical product category [PC]	Not applicable
Article Categories [AC]	Not applicable
Environmental release categories [ERC]	ERC9a ERC9b
Specific Environmental Release Categories SPERC	ESVOC SpERC 9.12b.v1

2.1 Control of worker exposure Product characteristics Physical form of product Covers concentrations up to 100% (≤ 1 % benzene content) Human factors nol influenced by risk management Prequency and duration of use Prequency and duration of use Exposure area Exposure duration per day Covers daily exposures up to 8 hours (unless stated differently). Frequency of use (days per year) 300 Other operational conditions affecting worker exposure Outdoor Area of use PROC3 Outdoor Characteristics of the surroundings Not defined Not defined Sesures a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently General measures (skin irritants) Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substant likely. Clean up contamination/splits as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training prevent/inimines exposures and to report any skin problems that may develop. General measures (carcinogens) Consider technical advances and process upgrades (including automation) for the elimination of releases. minimise exposure using measures suc as closed system, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breakin contain there with subst	2.0 Operational conditions and risk management	neasures				
Physical form of product Liquid with high volatility. Concentration of substance in product Covers concentrations up to 100% (≤ 1 % benzene content) Human factors not influenced by risk management Not defined Prequency and duration of use Exposure area Exposure duration per day Covers daily exposures up to 8 hours (unless stated differently). Frequency of use (days per year) 300 Other operational conditions affecting worker exposure Outdoor Area of use PROC3 Outdoor Characteristics of the surroundings Not defined Not defined General measures applicable to all activities Assumes a good basic standard of occupational hygione is implemented. Assumes activities are at ambient temperature (unless stated differently General measures applicable to all activities Assumes a good basic standard of occupational hygione is implemented. Assumes activities are at ambient temperature (unless stated differently General measures (ackin irritants) Avoid direct skin contact. Wear gloves (tested to EN374) if hand contact with substant is exposure and breport any skin problems that may develop. General measures (carcinogens) Consider technical advances and to report any skin problems that may develop. General measures (carcinogens) Consider technical advances and procesus uparades (i						
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Potential exposure area Not defined Frequency and duration of use Exposure duration of use (asys per year) 300 Other operational conditions affecting worker exposure Outdoor Area of use PROC3 Outdoor Area of use PROC3 Outdoor Not defined Outdoor Characteristics of the surroundings Not defined Outdoor Not defined General measures applicable to all activities Assumes activities are at ambient temperature (unless stated differently). Avoid direct skin contact with product. Identify potential areas for indirect skin contanination immediately. Provide basic employee training prevent/minimise exposures and to report any skin problems that may develop. General measures (arkin irritants) Avoid direct skin contact with product. Identify potential areas for indirect skin contamination immediately. Provide basic employee training prevent/minimise exposures and to report any skin problems that may develop. General measures (arkin exposures) Consider technical advances and process upgrades (including automation) for the elimination of releases. minimise exposure using measures us a dioead systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to maintenance Where there is potential for exposure. restrict access to authoris: Consider technical advances and process upgrades (including automation) for the eliminatio rexpourent skin	Concentration of substance in product	Covers concentrations up to 1009	% (≤ 1 % benzene content)			
Frequency and duration of use Covers daily exposures up to 8 hours (unless stated differently). Prequency of use (days per year) 300 Other operational conditions affecting worker exposure 0 Area of use PROC3 Outdoor Characteristics of the surroundings Not defined 0 General measures applicable to all activities Not defined 0 General measures (skin irritants) Not contamination splicable to even the provide basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently General measures (skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substant likely. Clean up contamination/splils as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training prevent/minimise exposures and to report any skin problems that may develop. General measures (carcinogens) Consider technical advances and process upgrades (including automation) for the elimination of releases. minimise exposure: restrict access to authorise perioritory protection when its use is identified for certain contributing scenario: clear up splils immediately and dispose of waste safe Ensure safe systems, dedicated facilities us is identified for certain contributing scenario: clear up splils immediately and dispose of waste safe Consider the need tor risk based health surveillance. Frequency and and a suitable general/local exhaust ventiliatio	Human factors not influenced by risk managemen					
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Area of use All other PROC's Not defined (default = Indoor) Characteristics of the surroundings Not defined General measures applicable to all activities Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently General measures (skin irritants) Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substant avoid direct skin contact with substant system contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training prevent/minimise exposures and to report any skin problems that may develop. General measures (acrinogens) Consider technical advances and process upgrades (including automation) for the elimination of releases. minimise exposure using measures suct as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breakin contact much releaves (exposure: restrict access to authoris 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 scenaric; clear up spills immediately and dispose of waste safel Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measure (acrinocal conditions of use PROC1, PROC2, PROC2 (Storage), PROC3, PROC3, PROC2 (Storage), PROC3, PROC2 (Storage), PROC3, PROC2 (Storage), PROC3, PROC4 Handle substance within a closed system.	Other operational conditions affecting worker exp					
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PROC16 Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. (Efficiency of at least 30 %) PROC8b (Bulk), PROC8b (Drum/batch transfers), PROC8b (refuelling) Ensure material transfers are under containment or extract ventilation. (Efficiency of at least 90 %) Organisational measures Drain down and flush system prior to equipment break-in or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Clear spills immediately. (Efficiency of at least 83 %) Risk management measures related to human health						
PROC2 (Storage) etc. Controlled ventilation means air is supplied or removed by a powered fan. (Efficiency of at least 30 %) PROC8b (Bulk), PROC8b (Drum/batch transfers), PROC8b (refuelling) Ensure material transfers are under containment or extract ventilation. (Efficiency of at least 90 %) Organisational measures Drain down and flush system prior to equipment break-in or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Clear spills immediately. (Efficiency of at least 83 %) Risk management measures related to human health		Handle substance within a closed	l system.			
PROC8b (refuelling) least 90 %) Organisational measures Drain down and flush system prior to equipment break-in or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Clear spills immediately. (Efficiency of at least 83 %) Risk management measures related to human health	PROC2 (Storage)	etc. Controlled ventilation means of at least 30 %)	air is supplied or removed by a powered fan. (Efficiency			
PROC8a (Maintenance) Drain down and flush system prior to equipment break-in or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Clear spills immediately. (Efficiency of at least 83 %) Risk management measures related to human health	PROC8b (Bulk), PROC8b (Drum/batch transfers), PROC8b (refuelling)		der containment or extract ventilation. (Efficiency of at			
PROC8a (Maintenance) downs in sealed storage pending disposal or for subsequent recycle. Clear spills immediately. (Efficiency of at least 83 %) Risk management measures related to human health	Organisational measures					
	PROC8a (Maintenance) downs in sealed storage pending disposal or for subsequent recycle. Clear spills					
Respiratory protection No special measures are required.	Respiratory protection	No special measures are required	d.			

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Gasoline V4001

	PROC2		Wear suitable gloves tested to EN374. (Efficiency of at least 80 %)	
Hand and/or Skin protection	PROC8a (Maintena	nce)	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency of at least 98 %)	
Eye Protection	No special measure	s are require	ed.	
Other operational conditions affecting worke	er exposure			
Wear suitable coveralls to prevent exposure to t	the skin. Clear transfer lines	prior to de-o	coupling. Avoid dip sampling.	
2.2 Control of environmental exposure				
Amounts used				
Fraction of EU tonnage used in region:		0.1		
Regional use tonnage (tons/year):		8.85E+0	5	
Fraction of Regional tonnage used locally: (tons	/year)	5.0E-04		
Annual site tonnage (tons/year):		442		
Average daily use (kg/day):		1211		
Environment factors not influenced by risk r	management			
Flow rate of receiving surface water (m ³ /d):		Not defin	ned (default = 18,000)	
Local freshwater dilution factor:		10		
Local marine water dilution factor:		100		
Operational conditions				
Emission days (days/year):		365		
Release fraction to air from process (initial relea		1.0E-02		
Release fraction to wastewater from process (in		1.0E-05		
Release fraction to soil from process (initial rele		1.0E-05	ciona and valazzas to acil	
Technical onsite conditions and measures to	Ũ		sions and releases to soli	
Treat air emission to provide a typical removal e		0		
If there is no discharge to domestic sewage trea	•	0		
wastewater (prior to receiving water discharge)	to provide the required	0m		
removal efficiency of (%): If discharging to domestic sewage treatment pla	ant provide the required	_		
onsite wastewater removal efficiency of (%):	ant, provide the required	0		
Treat soil emission to provide a typical removal	officiency of (%)	0		
		-	ad If discharging to domestic sources treatment plant, po	
onsite wastewater treatment required.	servative process release es	sumates use	ed. If discharging to domestic sewage treatment plant, no	
Organisational measures to prevent/limit rel	ease from site			
Do not apply industrial sludge to natural soils. S		, contained of	or reclaimed.	
Conditions and measures related to municip	oal sewage treatment plant			
Size of municipal sewage system/treatment plan	nt (m³/d)	2000		
Degradation effectiveness (%)		96.1		
Conditions and measures related to external	I treatment of waste for dis	posal		
External treatment and disposal of waste should	d comply with applicable loca	al and/or nat	tional regulations.	
Substance release quantities after risk mana				
Maximum allowable site tonnage (MSafe) based wastewater treatment removal (kg/d):	d on release following total	6.06E+0	4	

3. Exposure estimation and reference to its source

3.1 Human exposure prediction

Exposure assessment (method/calculation model)

Dermal Combined Inhalation **Process category** inhalation Risk dermal Risk Risk [PROC] characterisation characterisation characterisation exposure exposure ratio (RCR) (mg/kg bw/day) ratio (RCR) ratio (RCR) (mg/m³) PROC1 0.00 0.00 0.03 0.15 0.15 PROC2 0.50 0.50 0.03 0.12 0.62 PROC2 0.35 0.35 0.14 0.59 0.94 (Storage) 0.70 0.70 0.03 0.15 0.85 PROC3 PROC8a 0.85 0.85 0.03 0.12 0.97 (Maintenance) PROC8b 0.25 0.25 0.07 0.30 0.55 (Bulk)

ECETOC TRA (benzene content)

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Gasoline V4001

PROC8b (Drum/batch transfers)	0.25	0.25	0.07	0.30	0.55
PROC8b (refuelling)	0.25	0.25	0.07	0.30	0.55
PROC16	0.50	0.50	0.03	0.15	0.65

3.2 Environmental exposure prediction Exposure assessment (method/calculation model) The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Gasoline 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 As the model assumes fractionation before entering the environment, the PEC is not of the substance as manufactured but is a some of the constituents expected to be present in the environmental compartment.

Environmental exposure	STP	freshwater	marine water	Soil	freshwater sediment	marine sediment
Predicted Environmental Exposure (PEC)	2.48E-05 mg/L	3.64E-03 mg/L	1.42E-04 mg/L	2.18E-04 mg/kg ww	7.20E-03 mg/kg ww	3.60E-05 mg/kg ww
Risk characterisation ratio (RCR)	2.81E-05	2.00E-02	7.56E-05	1.99E-04	7.33E-03	3.59E-05

Human exposure prediction:

Route of Exposure	Exposure (µg/kg ⁻¹ day ⁻¹)	Risk characterisation ratio (RCR)
Oral	2.79	2.79E-03
Inhalation	5.18	5.58E-03

4.0 Evaluation guidance to downstream user						
For scaling see	risks are managed to at Available hazard data d Further details on scalin for-industries-libraries.h Exposure calculated for	o not support the need for a DNEL to be established for other health effects. g and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach- tml). benzene and assumes that the substance contains 1 % benzene. Arithmetic scaling atch contains < 1 % benzene				
Exposure assessment	Worker	ECETOC TRA				
instrument/tool/method	Environment	Environment The Hydrocarbon Block Method has been used to calculate environme exposure with the Petrorisk model.				

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Gasoline V4001

Exposure Scenario 5 – Use of Gasoline (0 – 1 % benzene content) as a fuel - Consumer

1.0 Contributing Scenarios	
Sector of uses SU	SU21 Consumer uses: Private households (= general public = consumers)
Process category [PROC]	Not applicable
Chemical product category [PC]	PC13 PC13 (Automotive refueling) PC13 (Scooter refueling) PC13 (Garden equipment refueling) PC13 (Garden equipment use)
Article Categories [AC]	Not applicable
Environmental release categories [ERC]	ERC9a ERC9b
Specific Environmental Release Categories SPERC	ESVOC SpERC 9.12c.v1

2.0 Operational conditions and risk managem	nent measures				
2.1 Control of worker exposure					
Product characteristics					
Physical form of product		igh volatility.			
Concentration of substance in product		centrations up to 100% (≤ 1 % benzen	e content)		
Human factors not influenced by risk manage	ement				
Potential exposure area (Skin Contact)	PC13	Automotive refueling; Scooter refueling	210 cm ²		
		Garden equipment use; Garden equipment refueling	420 cm ²		
Frequency and duration of use					
Evenestics (hours/Event)	PC13	Automotive refueling; Scooter refueling	0.05		
Exposure duration (hours/Event)	PC13	Garden equipment use	0.03		
		Garden equipment refueling	2.00		
Frequency of use (days per year)	PC13	Automotive refueling; Scooter refueling	52 (Covers frequency up to: weekly use)		
		Garden equipment use; Garden equipment refueling	26 (Covers frequency up to: once in two weeks.)		
		Automotive refueling	37500		
Amounts used (g/Event)	PC13	Scooter refueling	3750		
		Garden equipment use;	750		
Other operational conditions affecting worke		Garden equipment refueling			
Area of use	Not defined				
Alea ol use	Not delined	Automotive refueling;			
		Scooter refueling;	Outdoor		
Characteristics of the surroundings	PC13	Garden equipment use	Outdoor		
		Garden equipment refueling	34 m ³		
Risk Management Measures		Carden equipment relidening	04 m		
Respiratory protection	No specific	measures identified.			
Hand and/or Skin protection		measures identified.			
Eve Protection		measures identified.			
2.2 Control of environmental exposure	no specific				
Amounts used					
Fraction of EU tonnage used in region:		0.1			
Regional use tonnage (tons/year):		8.15E+06			
Fraction of Regional tonnage used locally: (tons/	vear)	5.0E-04			
Annual site tonnage (tons/year):	,		4.08E+03		
Average daily use (kg/day):					
$\pi v = i a q = u a l q u b = (\pi q/u a v).$					
	nanagement	1.12E+04			
Environment factors not influenced by risk m	nanagement	1.12E+04	000)		
	nanagement	1.12E+04 Not defined (default = 18,	000)		
Environment factors not influenced by risk m Flow rate of receiving surface water (m ³ /d):	nanagement	1.12E+04	000)		
Environment factors not influenced by risk m Flow rate of receiving surface water (m ³ /d): Local freshwater dilution factor: Local marine water dilution factor:	nanagement	1.12E+04 Not defined (default = 18, 10	000)		
Environment factors not influenced by risk m Flow rate of receiving surface water (m ³ /d): Local freshwater dilution factor:	nanagement	1.12E+04 Not defined (default = 18, 10	000)		

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Gasoline V4001 Release fraction to wastewater from process (initial release prior to RMM) 1.0E-05 Release fraction to soil from process (initial release prior to RMM): 1.0E-05 Conditions and measures related to municipal sewage treatment plant Size of municipal sewage system/treatment plant (m3/d) 2000 Degradation effectiveness (%) 96.1

ECETOC TRA (benzene content)

5.31E+05

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

Maximum allowable site tonnage (MSafe) based on release following total

wastewater treatment removal (kg/d):

3. Exposure estimation and reference to its source

3.1 Human exposure prediction

Exposure assessment (method/calculation model)

Yearly Use (Chronic)

	Inha	lation	Dei	Combined	
Chemical product category [PC]	inhalation exposure (mg/m³)	Risk characterisation ratio (RCR)	dermal exposure (mg/kg bw/day)	Risk characterisation ratio (RCR)	Risk characterisation ratio (RCR)
PC13 (Automotive refueling)	0.002	0.69	0.00	0.01	0.70
PC13 (Scooter refueling)	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

3.2 Environmental exposure prediction Exposure assessment (method/calculation model)

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Vitol

Gasoline 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 As the model assumes fractionation before entering the environment, the PEC is not of the substance as manufactured but is a some of the constituents expected to be present in the environmental compartment.

Environmental exposure	STP	freshwater	marine water	Soil	freshwater sediment	marine sediment
Predicted Environmental Exposure (PEC)	2.28E-03 mg/L	3.85E-03 mg/L	2.29E-05 mg/L	5.04E-04 mg/kg ww	8.59E-03 mg/kg ww	1.56E-04 mg/kg ww
Risk characterisation ratio (RCR)	2.59E-04	2.10E-02	1.18E-04	1.24E-03	8.73E-03	1.58E-04

Human exposure prediction:

Route of Exposure	Exposure (µg/kg ⁻¹ day ⁻¹)	Risk characterisation ratio (RCR)
Oral	0.30	2.95E-03
Inhalation	5.18	5.58E-03

4.0 Evaluation guidance to downstream user Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not 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 scaling see for-industries-libraries.html). Exposure calculated for benzene and assumes that the substance contains 1 % benzene. Arithmetic scaling may be possible if the batch contains < 1 % benzene ECETOC TRA Consumer

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Exposure assessment	Environment	The Hydrocarbon Block Method has been used to calculate environmental
instrument/tool/method	Environment	exposure with the Petrorisk model.

