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ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) & 2015/830

GASOLINE BLENDSTOCK V2024A

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

EC No.289-220-8REACH Registration No	
1.2 Relevant identified uses of the substance or mixture and uses advised against	
Identified Use(s) No. Exposure Scenario Page:	-
1Distribution of Gasoline (0 – 1 % benzene content)12	i.
2 Formulation and (re)packing of gasoline (0 – 1 % benzene 15	į.
content) 3 Use of Gasoline (0 – 1 % benzene content) as a fuel - 18	-
Industrial	į
4 Use of Gasoline $(0 - 1 \%$ benzene content) as a fuel - 21	
Professional	ł
5 Use of Gasoline (0 – 1 % benzene content) as a fuel - 24 Consumer	-
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) xrea ch@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)

2.2

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

Label elements Product Description According to Regulation (EC) No. 1272/2008 (CLP) V4024-GASOLINE BLENDSTOCK-Gasoline

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	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. 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.
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.	%W/W
	Gasoline	86290-81-5	289-220-8	100

SECTION 4: FIRST AID MEASURES



4.1 Description of first aid measures Self-protection of the first aider

H2S Warning:

Inhalation

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.

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

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		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,
	Eye Contact	blistering) develops, get medical attention. 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
	Ingestion	medical advice/attention. 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: May cause drowsiness or dizziness. Headache, nausea and vomiting.
		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 special treatment needed	Treat symptomatically.
	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
		occurs spontaneously, keep head below hips to prevent aspiration into the lungs.

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 (sulfur oxides) or sulfuric acid
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. 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. All official European languages. Do not use sparking tools. Use non-sparking ventilation systems, approved explosion-proof equipment, and intrinsically safe electrical
	H2S Warning:	systems. Product may release Hydrogen Sulphide. Exposure controls - These controls

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	Small spillages: Large spillages:	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:	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.
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 packaging.

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		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.
	Storage temperature	Stable at ambient temperatures.
	Storage measures	Suitable containers: Stainless steel, Mild steel
		Do not store in: Synthetic materials
	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

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

- 8.1.2 Biological limit value
- 8.1.3 PNECs and DNELs

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

8.2.2

8.2.1 Appropriate engineering controls

protective equipment (PPE)

Individual protection measures, such as personal

Provide adequate ventilation, including appropriate local extraction if dusts, fumes or vapours are likely to be evolved. Store in a cool/low-temperature, well-ventilated (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.

Body protection: Wear anti-static clothing and shoes. small scale: Wear suitable coveralls to prevent exposure to the skin.

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large scale: Chemical protection suit.

Respiratory protection



8.2.3

Thermal hazards

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.

Environmental Exposure Controls

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES		
9.1	Information on basic physical and chemical properties	
	Appearance	Colourless liquid
	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	4 - 240 kPa @ 37.8°C
	Vapour density	> 2
	Relative density	0.62 – 0.88 g/cm³ @ 15 °C
	Solubility(ies)	Immiscible with water.
	Partition coefficient: n-octanol/water	Not applicable. Substance is complex UVCB.
	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.

10.1 10.2	Reactivity Chemical stability	Stable under normal conditions. Reacts with - Strong oxidising agents 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 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

SECTION 10: STABILITY AND REACTIVITY

11.1 Information on toxicological effects

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. LD50 > 5000 mg/kg bw/day (rat) (OECD 401)

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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.
		Not irritating to eyes (rabbit) (OECD 405)
Respiratory or skin sensitization		Based upon the available data, the classification criteria are not met.
		Sensitisation (guinea pig) - Negative (OECD 406)
Germ cell mutagenicity		Muta. 1B; May cause genetic defects. Harmonised Classification.
U ,		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
Reproductive toxicity		Repr. 2; Suspected of damaging fertility or the unborn child.
hoproductive texterty		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 expective		
STOT - single exposure		STOT SE 3; May cause drowsiness or dizziness. Weight of evidence approach
CTOT reported eveneouse		5 11
STOT - repeated exposure	Oralı	Based upon the available data, the classification criteria are not met.
	Orai.	No adverse effect observed (rat) (Halder CA, et al. (1985))
	Inhalation:	No adverse effect observed (rat) (OECD 453)
		Chronic - Systemic effects NOAEC 1402 mg/m ³
	Dermal:	No adverse effect observed. (mouse) (OECD TG 410)
Assignation becaud		Chronic - Systemic effects NOAEL 375 mg/kg bw/day
Aspiration hazard		Asp. Tox. 1; May be fatal if swallowed and enters airways. Harmonised
		Classification.
		Viscosity: 1 mm ² /s @ 20 °C
Other information		None.

SECT	TION 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	Other adverse effects	None known.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

11.2

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

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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

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	1	1
14.5	Environmental hazards	MILEUGEVAARLIJK / ENVIRONMENTALLY DANGEREUX POUR L'ENVIRONNEMENT	HAZARDOUS / UMWELTGEFÄHRDEND /
14.6	Special precautions for user	Vapour may create explosive atmosphere. The confined spaces.	e vapour is heavier than air; beware of pits and
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 to Chapter 7 'Handling and Storage' for special or needs to comply with, in connection with tran	
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 FU regulations

15.1.1	Eo 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

Sections indicated with the following have been revised Header and Section 1.3

Updated version and date. New SDS Regulation 2015/830 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.

This Safety Data Sheet was prepared in accordance with EC Regulation (EC) 1907/2006 (REACH), 1272/2008 (CLP) & 2015/830.

Literature References:

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

LEGEND

LTELLong Term Exposure LimitSTELShort Term Exposure LimitDNELDerived No Effect LevelPNECPredicted No Effect ConcentrationPBTPBT: Persistent, Bioaccumulative and Toxic

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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

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 Number EC Number

86290-81-5 289-220-8

Summary of Parameters

Physical Parameters					
Vapour press	Vapour pressure (Pa)		4 – 240 @ 37.8 °C (Value used for exposure assessment = 340)		
Partition Coef	fficient (log K _{ow})		2.00 - 20.43		
Aqueous solu	ubility (mg L ⁻¹)		1.6E+03 - 5.1E-18 (Value used for exposure assessment = 2.0E+02)		
Molecular we	ight		Not applicable		
Biodegradabi	lity		Not defined		
Human healt	Human health Parameter (DNELs)				
	Short term	Inhalation (mg/m ³)	1100		
Worker	Short term	Dermal (mg/kg bw/day)	Not applicable		
WOIKEI	Long Torm	Inhalation (mg/m ³)	3.2 (= 1 ppm)*		
	Long Term	Dermal (mg/kg bw/day)	0.234*		
	Inhalation (mg/m ³) 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	Environmental Parameter (PNECs)				

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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Exposure Scenario 4	Use of Gasoline (0 – 1 % benzene content) as a fuel - Professional	21
Exposure Scenario 5	Use of Gasoline $(0 - 1 \%$ benzene content) as a fuel - Consumer	24

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 with 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 facilitie 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 outdoor use of substances in closed systems
Consumer	· · · · · · · · · · · · · · · · · · ·
PC13	Fuels
	(Automotive refueling)
	(Scooter refueling)
	(Garden equipment refueling)
	(Garden equipment use)

Revision: 4.1 Date: 10.06.2019

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) & 2015/830



Exposure Scenario 1 – Distribution 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			
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 ERC6c ERC6d ERC7			
Specific Environmental Release Categories SPERC	ESVOC SpERC 1.1b v.1			

2.0 Operational conditions and risk management m	easures		
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 management			
Potential exposure area	Not defined		
Frequency and duration of use			
Exposure duration per day	Covers daily exposures up to 8 ho	ours (unless stated differently).	
Frequency of use (days per year)	300		
Other operational conditions affecting worker expo			
Area of use	PROC3, PROC2 (Storage)	Outdoor	
Area or use	All other PROC's	Not defined (default = Indoor)	
Characteristics of the surroundings	Not defined		
General measures applicable to all activities			
	ne is implemented. Assumes activiti	es are at ambient temperature (unless stated differently).	
prevent/minimise exposures and to report any skin prof General measures (carcinogens) Consider technical advances and process upgrades (in as closed systems, dedicated facilities and suitable ge containment. Clean/flush equipment, where possible, persons; provide specific activity training to operators t respiratory protection when its use is identified for certa systems of work or equivalent arrangements are in pla need for risk based health surveillance.	olems that may develop. Including automation) for the elimina eneral/local exhaust ventilation. Dra prior to maintenance Where there o minimise exposures; wear suitable ain contributing scenario; clear up s	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 e gloves and coveralls to prevent skin contamination; wear pills immediately and dispose of waste safely. Ensure safe pect, test and maintain all control measures. Consider the	
Technical conditions of use			
PROC1, PROC2, PROC3	Handle substance within a closed		
PROC8b (Bulk)	Ensure material transfers are under containment or extract ventilation. (Efficiency of at least 90 %)		
PROC15 Use fume cupboard. (Efficiency of at least 90 %)			
Organisational measures			
PROC3 (Sampling)	Sample via a closed loop or other 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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ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) & 2015/830



PROC2 Wear suitable gloves tested to EN374. (Efficience least 80 %) Hand and/or Skin protection Wear chemically resistant gloves (tested to EN374)	Risk management measures related to human hear				
Hand and/or Skin protection IPROC2 least 80 %) PROC8a (Maintenance) Wear chemically resistant gloves (tested to ENS combination with 'basic' employee training. (Efficient of export of the required of environmental exposure Wear suitable coveralis to prevent exposure 22 Control of environmental exposure 0.5 special measures are required. Wear suitable coveralis to prevent exposure to the skin. Clear transfer lines prior to de-coupling. Avoid dip sampling. 22 Control of environmental exposure 0.1 Regional use tornage used in region: Fraction of EU tonnage used in region: 0.1 Regional use tornage (tons/year): Fraction of EQ tonnage used locally: tons/year 2.0E-03 Annual site tornage (tons/year): Furvionment factors not influenced by risk management Furvionment factors not influenced by risk management Flow rate of receiving surface water (m³/d): 1.0E-03 Local marine water dilution factor: 100 Operational conditions and measures to reduce or limit discharges, air emissions and release to soil Treat air emission to soil com process (initial release prior to RMM): 1.0E-05 Release fraction to air from process (initial release prior to RMM): 1.0E-06 Release fraction to soil from process (initial release prior to RMM): 1.0E-05 Treat air e	Respiratory protection	No special measures	are required		
PROC8a (Maintenance) combination with 'basic' employee training. (Efficiency of (%)) Eye Protection No special measures are required. Other operational conditions affecting worker exposure Wear suitable coveralls to prevent exposure to the skin. Clear transfer lines prior to de-coupling. Avoid dip sampling. 22. Control of environmental exposure 0.1 Regional use tonnage used in region: 0.1 Regional use tonnage (tons/year): 1.11E+07 Fraction of Edutonage used in region: 22.0E-03 Annual site tonnage (tons/year): 21.202 Average daily use (kg/day) 70.675 Environment factors not influenced by risk management Elow rate or receiving surface water (m ³ d): Icoal meanine water dilution factor: 10 Operational conditions 20E-03 Release fraction to air from process (initial release prior to RMM): 1.0E-03 Release relation 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 air from process (initial release prior to RMM): 1.0E-05 Release fraction to suit from process (initial release prior to RMM): 1.0E-05 Rel		PROC2		,	
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Common practices vary across sites thus conservative process release estimates used. If discharging to domestic sewage treatment plant, wastewater treatment required. Organisational measures to prevent/limit release from site Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed. Conditions and measures related to municipal sewage treatment plant Size of municipal sewage system/treatment plant (m³/d) 2000 Degradation effectiveness (%) 96.1 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.					
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Organisational measures to prevent/limit release from site Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed. Conditions and measures related to municipal sewage treatment plant Size of municipal sewage system/treatment plant (m³/d) 2000 Degradation effectiveness (%) 96.1 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.		e process release estim	ates used. If	discharging to domestic sewage treatment plant, no onsite	
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 of municipal sewage system/treatment plant (m³/d) 2000 Degradation effectiveness (%) 96.1 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.		rom site			
Conditions and measures related to municipal sewage treatment plant Size of municipal sewage system/treatment plant (m³/d) 2000 Degradation effectiveness (%) 96.1 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.			contained or u	reclaimed	
Size of municipal sewage system/treatment plant (m³/d) 2000 Degradation effectiveness (%) 96.1 Conditions and measures related to external treatment of waste for disposal External treatment and disposal of waste should comply with applicable local and/or national regulations.	Conditions and measures related to municipal sew	age treatment plant			
Degradation effectiveness (%) 96.1 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.		<u> </u>	2000		
Conditions and measures related to external treatment of waste for disposal External treatment and disposal of waste should comply with applicable local and/or national regulations.		/			
External treatment and disposal of waste should comply with applicable local and/or national regulations.		nent of waste for disp			
				nal regulations	
			and/or riduor		
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 2.58E+06	Maximum allowable site tonnage (MSafe) based on rel		2.58E+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	0.57	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

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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 c	Evaluation guidance to downstream user						
	Where other Risk Mana	Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that					
	risks are managed to at	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						
For scaling see	Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-						
Ŭ	for-industries-libraries.h	for-industries-libraries.html).					
	Exposure calculated for	osure calculated for benzene and assumes that the substance contains 1 % benzene. Arithmetic scaling					
	may be possible if the b	batch contains < 1 % benzene					
	Worker	ECETOC TRA					
Exposure assessment instrument/tool/method	Environment	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.					

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GASOLINE BLENDSTOCK V2024A

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	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 mana	Human factors not influenced by risk management						
Potential exposure area	tial exposure area Not defined						
Frequency and duration of use							
Exposure duration per day	Covers daily exposures u	p to 8 hours (unless stated differently).					
Frequency of use (days per year)	300						
Other operational conditions affecting work	ker exposure						
Area of use	PROC3	Outdoor					
Area of use	All other PROC's	Not defined (default = Indoor)					
Characteristics of the surroundings	Not defined	Not defined					
O a manual management of the state of the st							

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 substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.

General measures (carcinogens)

Consider technical advances and process upgrades (including automation) for the elimination of releases. minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenario; clear up spills immediately and dispose of waste 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 conditions of use

reclinical conditions of use				
PROC1, PROC2, PROC2 (Storage), PROC3	Handle substance within a clos	Handle substance within a closed system.		
PROC3 (Sampling)	Sample via a closed loop or other system to avoid exposure. (Efficiency of at least 95 %)			
PROC8b (Bulk), PROC8b (Drum/batch transfers)	Ensure material transfers are u 97 %)	Ensure material transfers are under containment or extract ventilation. (Efficiency of at least 97 %)		
PROC15	Use fume cupboard. (Efficiency	y of at least 90 %)		
Organisational measures				
PROC8a (Maintenance)	downs in sealed storage pendi	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 90 %)		
Risk management measures related to human he	ealth			
Respiratory protection	No special measures are requi	red.		
	PROC2, PROC2 (Storage)	Wear suitable gloves tested to EN374. (Efficiency of at least 80 %)		
Hand and/or Skin protection	PROC8a (Maintenance)	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency of at least 90 %)		

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Eye Protection No special measur	es are required.
Other operational conditions affecting worker exposure	
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	
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 management	
Flow rate of receiving surface water (m ³ /d):	Not defined (default = 18,000)
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Operational conditions	
Emission days (days/year):	300
Release fraction to air from process (initial release prior to RMM):	2.5E-02
Release fraction to wastewater from process (initial release prior to RMM):	6.4E-04
Release fraction to soil from process (initial release prior to RMM):	1.0E-04
Technical onsite conditions and measures to reduce or limit discharge	
Treat air emission to provide a typical removal efficiency of (%):	0
If there is no discharge to domestic sewage treatment plant, Treat onsite	
wastewater (prior to receiving water discharge) to provide the required	95.7
removal efficiency of (%):	
If discharging to domestic sewage treatment plant, provide the required	0
onsite wastewater removal efficiency of >= (%)	0
Treat soil emission to provide a typical removal efficiency of (%):	0
Common practices vary across sites thus conservative process release est	imates used. If discharging to domestic sewage treatment plant, no onsite
wastewater treatment required.	
Organisational measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. Sludge should be incinerated Conditions and measures related to municipal sewage treatment plant	
	2000
Size of municipal sewage system/treatment plant (m ³ /d) Degradation effectiveness (%)	96.1
5	
Conditions and measures related to external treatment of waste for dis	
External treatment and disposal of waste should comply with applicable loca	ai ano/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):	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	Der	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
PROC8b (Drum/batch transfers)	0.05	0.05	0.07	0.30	0.35
PROC15	0.05	0.05	0.00	0.01	0.06

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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)	1.31E+00 mg/L	1.32E-01 mg/L	1.32E-02 mg/L	1.67E-03 mg/kg ww	9.00E-01 mg/kg ww	9.00E-02 mg/kg ww
Risk characterisation ratio (RCR)	1.49E-01	6.83E-01	6.83E-02	4.99E-03	9.09E-01	9.09E-02

Human exposure prediction:

Route of Exposure	Exposure (µg/kg⁻¹ day⁻¹)	Risk characterisation ratio (RCR)	
Oral	7.79	7.79E-02	
Inhalation	165	1.78E-01	

4.0 Evaluation guidance to c	lownstream user	
For scaling see	risks are managed to at le Available hazard data do Further details on scaling for-industries-libraries.htm Exposure calculated for b	not support the need for a DNEL to be established for other health effects. and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach- nl). penzene and assumes that the substance contains 1 % benzene. Arithmetic scaling ch 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) PROC8b (refuelling) PROC8b (refuelling) PROC8b (refuelling) PROC8b (refuelling) PROC8b (refuelling) PROC8b (refuelling) PROC8b (refuelling)
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 m	easures		
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%	₀ (≤ 1 % benzene content)	
Human factors not influenced by risk management			
Potential exposure area	Not defined		
Frequency and duration of use			
Exposure duration per day	Covers daily exposures up to 8 ho	urs (unless stated differently).	
Frequency of use (days per year)	300		
Other operational conditions affecting worker expo	osure		
A	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 activiti	es are at ambient temperature (unless stated differently).	
General measures (skin irritants)			
Avoid direct skin contact with product. Identify potentia	I areas for indirect skin contact. Wea	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 pro	blems that may develop.		
General measures (carcinogens)			
Consider technical advances and process upgrades (i	ncluding automation) for the elimina	tion of releases. minimise exposure using measures such	
		n down systems and clear transfer lines prior to breaking	
		e is potential for exposure: restrict access to authorised	
		gloves and coveralls to prevent skin contamination; wear	
		pills immediately and dispose of waste safely. Ensure safe	
	•		
	ace to manage risks. Regularly insp	pect, test and maintain all control measures. Consider the	
need for risk based health surveillance.			
Technical conditions of use			
PROC1, PROC2, PROC2 (Storage), PROC3,	Handle substance within a closed	system.	
PROC16, PROC16 (Additive)			
PROC8b (Bulk), PROC8b (Drum/batch transfers),		er containment or extract ventilation. (Efficiency of at least	
PROC8b (refuelling), PROC8b (refuelling aircraft)	90 %)		
Organisational measures			
	Drain down and flush system prior	to equipment break-in or maintenance. Retain drain	
PROC8a (Maintenance)	Ba (Maintenance) downs in sealed storage pending disposal or for subsequent recycle. Clear spills		
immediately. (Efficiency of at least 86 %)			
Risk management measures related to human heal	th		
Respiratory protection	No special measures are required		
		Wear suitable gloves tested to EN374. (Efficiency of at	
	PROC2	least 80 %)	
Hand and/or Skin protection	PROC8a (Maintenance)	Wear chemically resistant gloves (tested to EN374) in	
		combination with 'basic' employee training. (Efficiency of	

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Eye Protection No special measures are required. Other operational conditions affecting worker exposure Wear suitable coverails to prevent exposure to the skin. Clear transfer lines prior 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): 9.38E+05 Fraction of Regional tonnage used locally: (tons/year) 1 Annual site tonnage (tons/year): 9.38E+05 Environment factors not influenced by risk management 10 Flow rate of receiving surface water (mi/d): Not defined (default = 18,000) Local reshwater dilution factor: 10 Coperational conditions 300 Release fraction to wait from process (initial release prior to RMM): 0.0 Release fraction to waiter set or educe or limit discharge, air emissions and releases to soll Treat are emission to provide a typical removal efficiency of (%): If there is no discharge to domesic servage treatment plant, Treat onsite 9.1 removal efficiency of (%): 0 If there is no discharge to provide the required 0 rest are emission to provide a typical removal efficiency of (%): 0 If there is no discharge				at least 90 %)	
War suitable coveralls to prevent exposure to the skin. Clear transfer lines prior 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): 9.38E+05 Fraction of Regional tonnage used locally: (tons/year) 1 Annual site tonnage (tons/year): 9.38E+05 Average daily uses (kg/day): 3.13E+06 Environment factors not influenced by risk management Not defined (default = 18,000) Flow rate of receiving surface water (m ³ /d): Not defined (default = 18,000) Local treshwater dilution factor: 10 Coperational conditions 9.30E Emission days (days/year): 300 Release fraction to ait from process (initial release prior to RMM): 0.0 Operational suft conditions and measures to reduce or limit discharges, air emissions and releases to soil 11 Technical on soil from process (initial release prior to RMM): 0 0 Teat air emission to provide a typical removal efficiency of (%): 95.0 11 If there is no discharge to domestic sewage treatment plant, Treat onsite wastewater treatment gene) to provide the required onsite wastewater removal efficiency of (%): 0 <t< td=""><td>Eye Protection</td><td colspan="2">No special measures are required.</td></t<>	Eye Protection	No special measures are required.			
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 Annual site tonnage (tons/year): 9.38E+05 Average daily use (kg/day): 3.13E+06 Environment factors not influenced by risk management 10 Flow rate of receiving surface water (m²/d): Not defined (default = 18,000) Local marine water dilution factor: 10 Local marine water dilution factor: 100 Operational conditions 5.00E-02 Release fraction to air from process (initial release prior to RMM): 5.00E-02 Release fraction to solf from process (initial release prior to RMM): 0 Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil 95.0 Treat air emission to provide a typical removal efficiency of (%): 95.0 If there is no discharge to domestic sewage treatment plant, Treat onsite wastewater removal efficiency of (%): 0 Common practices vary across sites thus conservative process release estimates used. If discharging to domestic sewage treatment plant, ere onsite wastewate	Other operational conditions affecting worker expo	sure			
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 management Not defined (default = 18,000) Local freshwater dilution factor: 10 Local reshwater dilution factor: 100 Operational conditions Emission days (days/year): Belease fraction to asit from process (initial release prior to RMM): 5.00E-02 Release fraction to soil from process (initial release prior to RMM): 10E-05 Release fraction to soil from process (initial release prior to RMM): 10 Treat are mission to provide a typical removal efficiency of (%): 95.0 If there is no discharge to domestic sewage treatment plant, Treat onsite 91.1 wastewater (prior to receiving water discharge) to provide the required 91.1 removal efficiency of (%): 0 Common practices vary across sites thus conservative process release estimates used. If discharging to domestic sewage treatment plant, provide the required Organisational measures to prevent/limit release from site 91.	Wear suitable coveralls to prevent exposure to the skin	. Clear transfer lines pr	rior to de-coup	oling. Avoid dip sampling.	
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 management 10 Flow rate of receiving surface water (m ^V d): Not defined (default = 18,000) Local freshwater dilution factor: 10 Operational conditions 100 Emission days (days/year): 300 Release fraction to air from process (initial release prior to RMM): 5.00E-02 Release fraction to air from process (initial release prior to RMM): 0 Technical onsitie conditions and measures to reduce or limit discharges, air emissions and releases to soil 10 Treat air emission to provide a typical removal efficiency of (%): 95.0 If there is no discharge to domestic sewage treatment plant, Treat onsite wastewater (prior to receiving water discharge) to provide the required orsite wastewater removal efficiency of (%): 0 Treat air emission to provide a typical removal efficiency of (%): 0 0 Treat soil emission to provide a typical removal efficiency of (%): 0 0 Common practices vary across site	2.2 Control of environmental exposure				
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 management Not defined (default = 18,000) Flow rate of receiving surface water (m ³ /d): 10 Local freshwater dilution factor: 10 Operational conditions 100 Perational conditions 300 Emission days (days/year): 300 Release fraction to wastewater from process (initial release prior to RMM): 0.5.00E-02 Release fraction to soil from process (initial release prior to RMM): 0 Teat air emission to provide a typical removal efficiency of (%): 95.0 If there is no discharge to domestic sewage treatment plant, Treat onsite 91.1 wastewater (prior to receiving water discharge) to provide the required 0 Ormato and measures to provent plant, provide the required 0 Ormato and measures to provent/limit release from site 0 Ormato and tickers of (%): 0 If discharging to domestic sewage treatment plant, provide the required 0 Ormato and measures related to municipal sewa					
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 management 3.13E+06 Flow rate of receiving surface water (m?/d): Not defined (default = 18,000) Local freshwater dilution factor: 10 Local arine water dilution factor: 100 Operational conditions 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 solit from process (initial release prior to RMM): 0 Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Teat ari emission to provide a typical removal efficiency of (%): If there is no discharge to domestic sewage treatment plant, Treat onsite wastewater (prior to receiving water discharge) to provide the required onsite wastewater removal efficiency of (%): 0 Common practices vary across sites thus conservative process release estimates used. If discharging to domestic sewage treatment plant, provide the required 0 Organisational measures to prevent/limit release from site 0 0 Common practices vary across sites thus conservative process rel	Fraction of EU tonnage used in region:		0.1		
Annual site tonnage (tons/year): 9.38E+05 Average daily use (kg/day): 3.13E+06 Environment factors not influenced by risk management 10 Flow rate of receiving surface water (m ^{3/} d): Not defined (default = 18,000) Local freshwater dilution factor: 10 Operational conditions 100 Emission days (days/year): 300 Release fraction to air from process (initial release prior to RMM): 5,00E-02 Release fraction to soil from process (initial release prior to RMM): 1.0E-05 Release fraction to soil from process (initial release prior to RMM): 0 Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil 10 Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil 10 If there is no discharge to domestic sewage treatment plant, Treat onsite 95.0 If discharging to domestic sewage treatment plant, provide the required 91.1 removal efficiency of (%): 9 If discharging to domestic sewage treatment plant, provide the required 0 onsite wastewater removal efficiency of (%): 0 Common practices vary across sites thus conservative process release estimates used. If discharging to domestic sewage			9.38E+05		
Average daily use (kg/day): 3.13E+06 Environment factors not influenced by risk management intervent	Fraction of Regional tonnage used locally: (tons/year)		1		
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Maximum allowable site tonnage (MSafe) based on release following total			and/or nationa	al regulations.	
wastewater treatment removal (kg/u):	Maximum allowable site tonnage (MSafe) based on rel wastewater treatment removal (kg/d):	ease following 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)

	Inha	lation	Dei	rmal	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 (Drum/batch transfers)	0.15	0.15	0.07	0.30	0.45
PROC8b (refuelling)	0.15	0.15	0.07	0.30	0.45

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PROC8b (refuelling aircraft)	0.15	0.15	0.07	0.30	0.45
PROC16	0.25	0.25	0.03	0.15	0.40
PROC16 (Additive)	0.25	0.25	0.03	0.15	0.40

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)	6.39E-01 mg/L	6.40E-02 mg/L	6.40E-02 mg/L	5.07E-03 mg/kg ww	4.37E-01 mg/kg ww	4.37E-02 mg/kg ww
Risk characterisation ratio (RCR)	7.24E-02	3.32E-01	3.32E-02	1.52E-02	4.41E-01	4.41E-02

Human exposure prediction:

Route of Exposure	Exposure (µg/kg ⁻¹ day ⁻¹)	Risk characterisation ratio (RCR)
Oral	3.90	3.90E-02
Inhalation	511	5.51E-01

4.0 Evaluation guidance to downstream user					
For scaling see	risks are managed to a Available hazard data o	 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- 			
	Exposure calculated for	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 4 – Use of Gasoline (0 – 1 % benzene content) as a fuel - Professional

1.0 Contributing Scenarios	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) PROC3 (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				

2.0 Operational conditions and risk management measures				
2.1 Control of worker exposure				
Liquid with high volatility.				
Covers concentrations up to 100%	% (≤ 1 % benzene content)			
Not defined				
Covers daily exposures up to 8 ho	ours (unless stated differently).			
300				
sure				
PROC3	Outdoor			
All other PROC's	Not defined (default = Indoor)			
Not defined				
·				
ne is implemented. Assumes activiti	es are at ambient temperature (unless stated differently).			
Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance				
likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to				
prevent/minimise exposures and to report any skin problems that may develop.				
General measures (carcinogens)				
Consider technical advances and process upgrades (including automation) for the elimination of releases. minimise exposure using measures such				
	Liquid with high volatility. Covers concentrations up to 100% Not defined Covers daily exposures up to 8 ho 300 Desure PROC3 All other PROC's Not defined ne is implemented. Assumes activiti a areas for indirect skin contact. We y occur. Wash off any skin contant blems that may develop.			

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 scenario; clear up spills immediately and dispose of waste 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 conditions of use

PROC1, PROC2, PROC2 (Storage), PROC3, PROC16	Handle substance within a closed system.		
PROC2 (Storage)	Provide a good standard of general ventilation. Natural ventilation is from doors, window etc. Controlled ventilation means air is supplied or removed by a powered fan. (Efficience 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			
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 hea	Ith		
Respiratory protection	No special measures are required.		
Hand and/or Skin protection	PROC2	Wear suitable gloves tested to EN374. (Efficiency of at	

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			least 80 %)	
			Wear chemically resistant gloves (tested to EN374) in	
	PROC8a (Maintenance	e)	combination with 'basic' employee training. (Efficiency of	
			at least 98 %)	
Eye Protection	No special measures a	are required	· · ·	
Other operational conditions affecting worker expo	sure			
Wear suitable coveralls to prevent exposure to the skin	. Clear transfer lines prio	or to de-cou	oling. 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+05		
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 manage	ement			
Flow rate of receiving surface water (m ³ /d):		Not define	d (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 release prio	r to RMM):	1.0E-02		
Release fraction to wastewater from process (initial rele		1.0E-05		
Release fraction to soil from process (initial release price		1.0E-05		
Technical onsite conditions and measures to reduc			ns and releases to soil	
Treat air emission to provide a typical removal efficience		0		
If there is no discharge to domestic sewage treatment				
wastewater (prior to receiving water discharge) to provi	ide the required	Om		
removal efficiency of (%):				
If discharging to domestic sewage treatment plant, prov	vide the required	0		
onsite wastewater removal efficiency of $>=$ (%)				
Treat soil emission to provide a typical removal efficien		0		
	process release estimat	es used. If	discharging to domestic sewage treatment plant, no onsite	
wastewater treatment required.	ana aita			
Organisational measures to prevent/limit release fr Do not apply industrial sludge to natural soils. Sludge s		ntainad ar r	aclaimad	
Conditions and measures related to municipal sew		maineu of fe		
Size of municipal sewage system/treatment plant (m ³ /d		2000		
Degradation effectiveness (%)	'/	96.1		
Conditions and measures related to external treatm	ant of wasta for dispa			
External treatment and disposal of waste should compl			al regulations	
		iu/or nation	ລາ ເຮັບແລແບເເວ.	
	11 1110030103			
Substance release quantities after risk managemen Maximum allowable site tonnage (MSafe) based on rel		6.06E+04		

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)	0.85	0.85	0.03	0.12	0.97
PROC8b (Bulk)	0.25	0.25	0.07	0.30	0.55
PROC8b (Drum/batch	0.25	0.25	0.07	0.30	0.55

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transfers)					
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 a	downstream user	
For scaling see	risks are managed to Available hazard data Further details on sca for-industries-libraries Exposure calculated	for benzene and assumes that the substance contains 1 % benzene. Arithmetic scaling 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 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		

2.1 Control of worker exposure Product characteristics Physical form of product Liquid with high volatility. Concentration of substance in product Covers concentrations up to 100% (5 1% benzene contern) Human factors not influenced by risk management Scotter refueling: 210 cm² Scotter refueling 420 cm² Frequency and duration of use 420 cm² Exposure duration (hours/Event) PC13 Scotter refueling: 0.05 Garden equipment use: 0.03 Garden equipment refueling: 0.05 Garden equipment use: 0.05 Covers frequency up to: weekly use) Frequency of use (days per year) PC13 Scotter refueling 3750 Amounts used (g/Event) PC13 Scotter refueling 3750 Amounts used (g/Event) PC13 Scotter refueling 3750 Characteristics of the surroundings PC13 Scotter refueling 3750 Garden equipment refueling 3750 Garden equipment refueling 3750 Characteristics of the surroundings PC13 Scotter refueling Garden equipment use; Garden equipment use; Garden equipment use; Garden equipment use;	2.0 Operational conditions and risk management	t measures				
Physical form of product Liquid with high volatility. Concentration of substance in product Covers concentrations up to 100% (s 1 % benzene content) Human factors not influenced by risk management Automotive refueling; Scooter refueling 210 cm ² Potential exposure area (Skin Contact) PC13 Automotive refueling; Garden equipment use: Garden equipment refueling; Scooter refueling 0.05 Exposure duration (hours/Event) PC13 Automotive refueling; Scooter refueling; Covers frequency up to: Verafene equipment use 0.03 Frequency of use (days per year) PC13 Automotive refueling; Scooter refueling 0.05 Frequency of use (days per year) PC13 Automotive refueling; Scooter refueling 0.05 Amounts used (g/Event) PC13 Automotive refueling; Garden equipment use; Garden equipment use; Garden equipment refueling 26 Other operational conditions affecting worker exposure Automotive refueling; Scooter refueling; Garden equipment use; Garden equipment use; Garden equipment use; Garden equipment use; Garden equipment use 750 Characteristics of the surroundings PC13 Automotive refueling; Scooter refueling; Garden equipment use Outdoor Fisk Management Measures PC13 Garden eqquipment use Garden eqquipment use						
Concentration of substance in product Covers concentrations up to 100% (≤ 1 % benzene content) Human factors not influenced by risk management PC13 Automotive refueling; Sooder refueling; Garden equipment use; Carden equipment use; Covers frequency up to: weekly use) 0.05 Frequency of use (days per year) PC13 Automotive refueling; Scooter refueling; Covers frequency up to: weekly use) 0.03 Frequency of use (days per year) PC13 Automotive refueling; Covers frequency up to: weekly use) Scooter refueling; Covers frequency up to: weekly use) Scooter refueling; Covers frequency up to: weekly use) Scooter refueling; Covers frequency up to: once in two weekly. Scooter refueling; Covers frequency up to: once in two weekly. <t< th=""><th></th><th></th><th></th><th></th></t<>						
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Potential exposure area (Skin Contact) PC13 Scooter refueling	Human factors not influenced by risk managem	ent				
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Environment factors not influenced by risk management Flow rate of receiving surface water (m³/d): Not defined (default = 18,000) Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Operational conditions 100				4.08E+03		
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Flow rate of receiving surface water (m³/d): Not defined (default = 18,000) Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Operational conditions 100	Environment factors not influenced by risk man	agement	·			
Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Operational conditions 100	Flow rate of receiving surface water (m ³ /d):		Not defined (default = 18,00	0)		
Operational conditions	Local freshwater dilution factor:					
	Local marine water dilution factor:		100			
Emission days (days/year): 365			·			
	Emission days (days/year):		365			

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Release fraction to air from process (initial release prior to RMM):	1.0E-02
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 (m ³ /d)	2000
Degradation effectiveness (%)	96.1
Conditions and measures related to external treatment of waste for dispo	sal
External treatment and disposal of waste should comply with applicable local a	nd/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):	5.31E+05

ECETOC TRA (benzene content)

3. Exposure estimation and reference to its source

3.1 Human exposure prediction

Exposure assessment (method/calculation model)

Yearly Use (Chronic)

	Inha	lation	Der	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.

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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		
For scaling see	 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/reachfor-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 	

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ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) & 2015/830

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