



SAFETY DATA SHEET

SAFETY DATA SHEET – UNLEADED GASOLINE WITH ETHANOL

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

1.1. Product identifier

Substance name: Unleaded Gasoline with Ethanol
Code: P66 815856
MARPOL Annex I Category Gasoline and Spirits
REACH Registration Number: 01-2119471335-39-0012

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

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

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

1.3 Details of the Supplier of the Safety Data Sheet

Supplier: Rix Petroleum Limited
Supplier address: Witham House
45 Spyvee Street
Hull
HU8 7JR
Telephone No: (Hull) 01482 224422
Email: sales@rix.co.uk

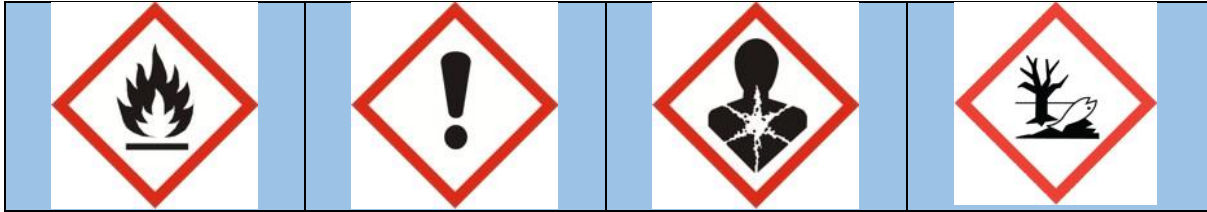
SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

CLP Classification (EC No 1272/2008)
H224 -- Flammable liquids -- Category 1
H304 -- Aspiration Hazard -- Category 1
H315 -- Skin corrosion/irritation -- Category 2
H336 -- Specific target organ toxicity (single exposure) -- Category 3
H340 -- Germ cell mutagenicity -- Category 1B
H350 -- Carcinogenicity -- Category 1B
H361d -- Reproductive toxicity -- Category 2
H361f -- Reproductive toxicity -- Category 2
H371 -- Specific target organ toxicity (single exposure) -- Category 2
H411 -- Hazardous to the aquatic environment, chronic toxicity -- Category 2

Document Number:	Issue Number:	Issue Date:	Page Number:
HSE029-SDS007	002	28/11/2018	Page 1 of 16

2.2. Label elements



DANGER

Extremely flammable liquid and vapour

Harmful if swallowed

May be fatal if swallowed and enters airways

Causes skin irritation

May cause drowsiness or dizziness

May cause genetic defects

May cause cancer

Suspected of damaging the unborn child

Suspected of damaging fertility

May cause damage to organs

Toxic to aquatic life with long lasting effects

P201 - Obtain special instructions before use

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking

P273 - Avoid release to the environment

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician

P331 - Do NOT induce vomiting

P403 + P233 - Store in a well-ventilated place. Keep container tightly closed

2.3. Other hazards

Electrostatic charge may be generated during pumping and other operations.

Does not meet the criteria for persistent, bioaccumulative and toxic (PBT) or very persistent, very bioaccumulative (vPvB) substances.

Document Number:	Issue Number:	Issue Date:	Page Number:
HSE029-SDS007	002	28/11/2018	Page 2 of 16



SAFETY DATA SHEET

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixtures

Chemical Name	CASRN	EINECS	REACH Registration No	Concentration	Classification ²
Gasoline	86290-81-5	289-220-8	01-2119471335-39	>60	H224,H304,H315,H336 H340,H350,H361d, H361f, H411
Petroleum naphtha fraction, co-processed (catalytic cracking) with Renewable hydrocarbons of plant and/or animal origin	NONE		01-2120737196-51	0-30	H225,H304,H315,H336,H340,H350,H361d,H361f, H411
Toluene	108-88-3	203-625-9	Not applicable	4-23	H225,H361d,H304,H373 H315,H336
Ethyl alcohol	64-17-5	200-578-6	01-2119457610-43	<5	H225
Methyl alcohol	67-56-1	200-659-6	01-2119433307-44	<3	H225,H331,H311,H301, H370
Hexane	110-54-3	203-777-6	Not applicable	<2	H225,H361f,H304,H373, H315,H336,H411
Benzene	71-43-2	200-753-7	Not applicable	<1	H225,H350,H340,H372, H304,H319,H315

¹ All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

² Regulation EC 1272/2008.

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

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

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

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

Document Number:	Issue Number:	Issue Date:	Page Number:
HSE029-SDS007	002	28/11/2018	Page 3 of 16



SAFETY DATA SHEET

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

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

Effects of overexposure may include irritation of the digestive tract, irritation of the respiratory tract, ringing in the ears, nausea, vomiting, stupor, irregular heartbeats (arrhythmias), tremor, visual disturbances (including blindness), signs of nervous system depression (e.g., headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue), unconsciousness, convulsions, coma and death. Prolonged or repeated contact may dry skin and cause irritation

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

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

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

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

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

5.2. Special hazards arising from the substance or mixture

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

Document Number:	Issue Number:	Issue Date:	Page Number:
HSE029-SDS007	002	28/11/2018	Page 4 of 16



SAFETY DATA SHEET

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

5.3. Special protective actions for fire fighters

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

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

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

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

6.2. Environmental precautions

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

6.3. Methods and material for containment and cleaning up

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

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

Document Number:	Issue Number:	Issue Date:	Page Number:
HSE029-SDS007	002	28/11/2018	Page 5 of 16



SAFETY DATA SHEET

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

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

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

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

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

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

7.2. Conditions for safe storage, including any incompatibilities

Portable Containers: Static electricity may ignite gasoline vapours when filling portable containers. To avoid static build-up do not use a nozzle lock open device. Use only approved containers for the storage of gasoline. Place the container on the ground before filling. Keep the nozzle in contact with the container during filling. Do not fill any portable container in or on a vehicle or marine craft. Keep container(s) tightly closed and properly labelled. Use and store this material in cool, dry, well-ventilated areas away from heat, direct sunlight, hot metal surfaces, and all sources of ignition. Store only in approved containers. Post area "No Smoking or Open Flame." Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage.

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

Document Number:	Issue Number:	Issue Date:	Page Number:
HSE029-SDS007	002	28/11/2018	Page 6 of 16



SAFETY DATA SHEET

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

7.3. Specific end use(s)

Refer to supplemental exposure scenarios if attached.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Chemical Name	Occupational Exposure Limits		
	ACGIH	United Kingdom	Phillips 66
Gasoline	TWA-8hr: 300 ppm STEL: 500 ppm	---	TWA-8hr: 0.5 ppm STEL: 2.5 ppm Skin (with > 0.1% Benzene)
Petroleum naphtha fraction, co-processed (catalytic cracking) with renewable hydrocarbons of plant and/or animal origin	---	---	TWA-8hr: 450 mg/m3 STEL: 1100 mg/m3 Skin
Toluene	TWA-8hr: 20 ppm	TWA-8hr: 50 ppm TWA-8hr: 191 mg/m3 STEL: 100 ppm STEL: 384 mg/m3 Skin	TWA-8hr: 20 ppm
Ethyl alcohol	STEL: 1000 ppm	TWA-8hr: 1000 ppm TWA-8hr: 1920 mg/m3	
Methyl alcohol	TWA-8hr: 200 ppm STEL: 250 ppm Skin	TWA-8hr: 200 ppm TWA-8hr: 266 mg/m3 STEL: 250 ppm STEL: 333 mg/m3 Skin	TWA-8hr: 200 ppm STEL: 250 ppm Skin
Hexane	TWA-8hr: 50 ppm Skin	TWA-8hr: 20 ppm TWA-8hr: 72 mg/m3	TWA-8hr: 50 ppm Skin
Benzene	TWA-8hr: 0.5 ppm STEL: 2.5 ppm Skin	TWA-8hr: 1 ppm TWA-8hr: 3.25 mg/m3 Carcinogen Skin	TWA-8hr: 0.5 ppm STEL: 2.5 ppm Skin Carcinogen

STEL = Short Term Exposure Limit (15 minutes); TWA = Time Weighted Average (8 hours); --- = No Occupational Exposure Limit

Document Number:	Issue Number:	Issue Date:	Page Number:
HSE029-SDS007	002	28/11/2018	Page 7 of 16



SAFETY DATA SHEET

Biological Limit Values			
Chemical Name	ACGIH	European Union	United Kingdom
Toluene	Toluene in blood: 0.02 mg/L, prior to last shift of workweek () Toluene in urine: 0.03 mg/L, end of shift () o-Cresol with hydrolysis in urine: 0.3 mg/g creatinine, end of shift (background)	---	---
Methyl alcohol	Methanol in urine: 15 mg/L, end of shift (background, nonspecific)	---	---
Hexane	2,5-Hexanedione without hydrolysis in urine: 0.4 mg/L, end of shift at end of workweek ()	---	---
Benzene	S-Phenylmercapturic acid in urine: 25 µg/g creatinine, end of shift (background) t,t Muconic acid in urine: 500 µg/g creatinine, end of shift (background)	---	---

Relevant DNEL and PNEC:

Worker Derived No-Effect Level (DNEL)

Inhalation: 3.2 mg/m³ (DMEL, as benzene)

Dermal: 234 mg/kgbw/day (DMEL, as benzene)

Consumer Derived No-Effect Level (DNEL)

Inhalation: Not applicable

Dermal: Not applicable

Ingestion: Not applicable

Environmental Predicted No-Effect

Concentration (PNEC): No information available

8.2. Exposure controls

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

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

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

Respiratory Protection: Where there is potential for airborne exposure above the exposure limit an approved air purifying respirator equipped with Type A, organic gases and vapour filters (as specified by the manufacturer) may be used. A respiratory protection programme that follows recommendations for the selection, use, care and maintenance of respiratory protective devices in EN 529:2005 should be followed whenever workplace conditions warrant a respirator's use. Air purifying respirators provide limited protection and cannot be used in atmospheres that exceed the maximum use concentration (as directed by regulation or the manufacturer's instructions), in oxygen deficient (less than 19.5 percent oxygen) situations, or under conditions that are immediately dangerous to life and health.

Document Number:	Issue Number:	Issue Date:	Page Number:
HSE029-SDS007	002	28/11/2018	Page 8 of 16



SAFETY DATA SHEET

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

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

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

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES - TYPICAL

9.1. Information on basic physical and chemical properties

Data represent typical values and are not intended to be specifications. N/A = Not Applicable; N/D = Not Determined

Appearance: Clear, pale yellow (may be dyed various colours); Clear and bright

Physical Form: Liquid

Odour: Gasoline

Odour Threshold: N/D

pH N/A

Melting/Freezing Point: N/D

Initial Boiling Point/Range: 22 - 210 °C

Flash Point: -40 °C; (ASTM D56)

Evaporation Rate (nBuAc=1): 10-11

Flammability (solid, gas): N/A

Upper Explosive Limits (vol % in air): 7.6

Lower Explosive Limits (vol % in air): 1.3

Vapour Pressure: 45-100 kPa @20°C

Relative Vapour Density (air=1): >1

Relative Density (water=1): 720.0-775.0 kg/m³ @15°C

Solubility (ies): Solubility in water: 0.01g/L

Partition Coefficient (n-octanol/water) (Kow): N/D

Auto-ignition Temperature: 450 °C

Decomposition Temperature: N/D

Viscosity: 0.5-1.5 mm²/s @ 20°C

Explosive Properties: N/D

Oxidising Properties: N/D

9.2. Other information

Pour Point: N/D

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity: Not chemically reactive.

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

Document Number:	Issue Number:	Issue Date:	Page Number:
HSE029-SDS007	002	28/11/2018	Page 9 of 16



SAFETY DATA SHEET

10.3. Possibility of hazardous reactions: Hazardous reactions not anticipated.

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

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

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

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Substance / Mixture

Acute Toxicity	Hazard	Additional Information	LC50/LD50 Data
Inhalation	Expected to have a low degree of toxicity by inhalation		>5.2 mg/L (vapour, estimated)
Dermal	Unlikely to be harmful		> 2 g/kg (estimated)
Oral	May be harmful if swallowed		3.3 g/kg (estimated)

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

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

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

Serious Eye Damage/Irritation: Causes mild eye irritation.

Skin Sensitisation: Not expected to be a skin sensitizer.

Respiratory Sensitisation: No information available on the mixture, however none of the components have been classified for respiratory sensitisation (or are below the concentration threshold for classification).

Specific Target Organ Toxicity (Single Exposure): May cause damage to organs May cause drowsiness and dizziness. Based on component information

Specific Target Organ Toxicity (Repeated Exposure): Not expected to cause organ effects from repeated exposure.

Carcinogenicity: May cause cancer. Based on component information.

Germ Cell Mutagenicity: May cause genetic defects. Based on component information.

Reproductive Toxicity: Suspected of damaging the unborn child. Suspected of damaging fertility. Based on component information.

Document Number:	Issue Number:	Issue Date:	Page Number:
HSE029-SDS007	002	28/11/2018	Page 10 of 16



SAFETY DATA SHEET

11.2 Information on Hazardous Components

Gasoline

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

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

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

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

Petroleum naphtha fraction, co-processed (catalytic cracking) with renewable hydrocarbons of plant and/or animal origin

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

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

Document Number:	Issue Number:	Issue Date:	Page Number:
HSE029-SDS007	002	28/11/2018	Page 11 of 16



SAFETY DATA SHEET

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

Toluene

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

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

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

Ethyl alcohol

Carcinogenicity: Ingestion of alcoholic beverages has been classified by IARC as "carcinogenic to humans" (Group 1). Occupational exposures to ethanol and exposures other than by ingestion (i.e., dermal and inhalation) have not been associated with cancer in humans.

Target Organ(s): Chronic alcoholism has been associated with damage to the liver in humans (e.g., cirrhosis of the liver). Excessive consumption of alcoholic beverages has also been associated with adverse effects on the central nervous system, digestive system and cardiovascular system.

Reproductive Toxicity: Adverse reproductive effects are not anticipated from workplace inhalation exposure. Excessive consumption of alcoholic beverages during pregnancy has been associated with effects on the developing foetus referred to collectively as the fetal alcohol syndrome. The effects most frequently manifested include psychomotor dysfunction, growth retardation and a characteristic cluster of facial anomalies. It also affects the reproductive system including reduced sperm count and motility and loss of libido in men, abnormal menstrual function, and decreased plasma estradiol and progesterone levels in women.

Methyl alcohol

Target Organ(s): Ingestion of methanol can produce visual disturbances characterized by dilated, unreactive pupils, dim vision, and ocular lesions which may result in blindness. Pancreatitis, as defined by elevated serum amylase, occurs commonly and hemorrhagic pancreatitis has also been reported. Effects on the liver, kidney and heart have been reported but are not commonly associated with overexposure to methanol.

Document Number:	Issue Number:	Issue Date:	Page Number:
HSE029-SDS007	002	28/11/2018	Page 12 of 16



SAFETY DATA SHEET

Hexane

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

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

Benzene

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

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

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

Germ Cell Mutagenicity: Benzene exposure has resulted in chromosomal aberrations in human lymphocytes and animal bone marrow cells. Exposure has also been associated with chromosomal aberrations in sperm cells in human and animal studies.

SECTION12: ECOLOGICAL INFORMATION

12.1. Toxicity

Acute aquatic toxicity studies on samples of gasoline and naphtha streams show acute toxicity values greater than 1 mg/L and mostly in the range 1-100 mg/L. These tests were carried out on water accommodated fractions, in closed systems to prevent evaporative loss. Results are consistent with the predicted aquatic toxicity of these substances based on their hydrocarbon composition. These substances should be regarded as toxic to aquatic organisms, with the potential to cause long term adverse effects in the aquatic environment.

12.2. Persistence and degradability

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

Persistence per IOPC Fund definition: Non-Persistent

Document Number:	Issue Number:	Issue Date:	Page Number:
HSE029-SDS007	002	28/11/2018	Page 13 of 16



SAFETY DATA SHEET

12.3. Bioaccumulative potential

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

12.4. Mobility in soil

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

12.5. Results of PBT and vPvB assessment

Not a PBT or vPvB substance.

12.6. Other adverse effects

None anticipated.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

European Waste Code: 13 07 02* petrol

This material, if discarded as produced, would be considered as hazardous waste pursuant to Directive 2008/98/EC on hazardous waste, and subject to the provisions of that Directive unless Article 1(5) of that Directive applies.

This code has been assigned based upon the most common uses for this material and may not reflect contaminants resulting from actual use. Waste generators/producers are responsible for assessing the actual process used when generating the waste and its contaminants in order to assign the proper waste disposal code.

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

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

Document Number:	Issue Number:	Issue Date:	Page Number:
HSE029-SDS007	002	28/11/2018	Page 14 of 16



SAFETY DATA SHEET

SECTION 14: TRANSPORT INFORMATION

- 14.1. UN number:** UN1203
- 14.2. UN proper shipping name:** GASOLINE or MOTOR SPIRIT or PETROL
- 14.3. Transport hazard class(es):** 3
- 14.4. Packing group:** II
- 14.5. Environmental hazards:** Marine pollutant - Environmentally Hazardous
- 14.6. Special precautions for user:** If transported in bulk by marine vessel in international waters, product is being carried under the scope of MARPOL Annex I.
- 14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:** Not applicable

SECTION 15: REGULATORY INFORMATION

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

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

Export Rating: NLR (No Licence Required)

15.2. Chemical safety assessment

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

SECTION 16: OTHER INFORMATION

List of Relevant Hazard Statements:

H224 - Extremely flammable liquid and vapour
H225 - Highly flammable liquid and vapour
H301 - Toxic if swallowed
H304 - May be fatal if swallowed and enters airways
H311 - Toxic in contact with skin
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H331 - Toxic if inhaled
H336 - May cause drowsiness or dizziness

Document Number:	Issue Number:	Issue Date:	Page Number:
HSE029-SDS007	002	28/11/2018	Page 15 of 16



SAFETY DATA SHEET

H340 - May cause genetic defects
H350 - May cause cancer
H361d - Suspected of damaging the unborn child
H361f - Suspected of damaging fertility
H370 - Causes damage to organs
H372 - Causes damage to organs through prolonged or repeated exposure
H373 - May cause damage to organs through prolonged or repeated exposure
H411 - Toxic to aquatic life with long lasting effects

Regulatory Basis of Classification

CLP Classification (EC No 1272/2008) Regulatory Basis

H224: Flammable liquids -- Category 1 Based on component information.
H304: Aspiration Hazard -- Category 1 Based on component information.
H315: Skin corrosion/irritation -- Category 2 Based on component information.
H336: Specific target organ toxicity (single exposure) -- Category 3 Based on component information.
H340: Germ cell mutagenicity -- Category 1B Based on component information.
H350: Carcinogenicity -- Category 1B Based on component information.
H361d: Reproductive toxicity -- Category 2 Based on component information.
H361f: Reproductive toxicity -- Category 2 Based on component information.
H371: Specific target organ toxicity (single exposure) -- Category 2 Based on component information.
H411: Hazardous to the aquatic environment, chronic toxicity -- Category 2 Based on component information.

Guide to Abbreviations:

ACGIH = American Conference of Governmental Industrial Hygienists; ADR = Agreement on Dangerous Goods by Road; BMGV = Biological Monitoring Guidance Value; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA = [US] Environmental Protection Agency; Germany-TRGS = Technical Rules for Dangerous Substances; IARC = International Agency for Research on Cancer; ICAO/IATA = International Civil Aviation Organisation / International Air Transport Association; INSHT = National Institute for Health and Safety at Work; IMDG = International Maritime Dangerous Goods; Ireland-HSA = Ireland's National Health and Safety Authority; LEL = Lower Explosive Limit; MARPOL = Marine Pollution; N/A = Not Applicable; N/D = Not Determined; NTP = [US] National Toxicology Programme; PBT = Persistent, Bioaccumulative and Toxic; RID = Regulations Concerning the International Transport of Dangerous Goods by Rail; STEL = Short Term Exposure Limit; TLV = Threshold Limit Value; TRGS 903 = Technical rules for hazardous substances; TWA = Time Weighted Average; UEL = Upper Explosive Limit; UK-EH40 = United Kingdom EH40/2005 OEL; vPvB = very Persistent, very Bioaccumulative

Disclaimer of Expressed and implied Warranties:

The information presented in this Material Safety Data Sheet is based on data believed to be accurate as of the date this Material Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.

Document Number:	Issue Number:	Issue Date:	Page Number:
HSE029-SDS007	002	28/11/2018	Page 16 of 16