AIR CONDITIONING SERVICES (NZ) LTD

This manual belongs to

.....

Safety Data Sheets (SDS)

2020 Edition

AIR CONDITIONING SERVICES (NZ) LTD

Safety Data Sheets

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AIR CONDITIONING SERVICES (NZ) LTD

READING YOUR SAFETY DATA SHEET (SDS)

The Safety Data Sheet or SDS is written information that can help protect you from overexposure to chemicals you find on the job. The SDS is part of the ACS health and safety programme. Each chemical supplier or manufacturer can design its own SDS form and the sections may be in different order. But, the basic kinds of information on any SDS will be the same.

Chemical Name

Lists the identity of the substance (the name on the label), any trade names date the SDS was prepared., the name and address of the manufacturer, and usually a phone number for emergencies and more information

Hazardous Ingredients/Chemical Identity

Includes names of substances in the chemical that might be dangerous, and safe exposure limits such as Permissible Exposure Limit or PEL (set be OSHA) or the Threshold Limit Value or TLV. Also lists common names for the chemical

Physical Characteristics

Describes many physical qualities of the chemical, and lets you know what's usual or safe. For example, how the chemical looks and smells; boiling and melting temperatures (important in case a chemical might become a gas you could breathe); evaporation rate (known as percent volatile); how easily the chemical dissolves; and how heavy it is (this tells you if it will sink, float or dissolve in water)

Fire and Explosion Data

Tells you at what temperature a liquid gives of enough flammable vapour to ignite (flash point). Lets you know if the chemical is flammable (catches fire below 100 degrees F) or combustible (catches fire above 100 degrees F). Also lists extinguishing media – what will put out the fire safety, such as water, dry chemical, carbon dioxide and halon.

Reactivity

Describes what happens if this chemical comes in contact with air, water, or other chemicals. Describes conditions (like heat) or materials (like water) that can cause the chemical to react violently due to the instability or incompatibility to common substances or circumstances. “Incompatibility” refers to materials that may cause the chemical to burn, explode, or release dangerous gases when mixed. “Instability” refers to the environmental conditions such as heat or direct sunlight that may cause a dangerous reaction.

Health Hazards

Lists ways the chemical might enter your body, like splashing on your skin or being inhaled as vapour as well as possible symptoms of overexposure such as a skin rash, burn, headache, or dizziness. Lets you know if overexposure might make existing medical conditions worse, and describes first aid and emergency procedures.

Usage, Handling and Storage

Describes how to clean up an accidental spill, leak or release, including special procedures. Tells you how to handle, store and dispose of chemicals safely. Remember, if there is an accident, notify your supervisor immediately, and take care of it yourself only if you are trained to do so and are wearing the proper personal protection equipment (see page 4) for more information on PPE use.

Special Protection and Precautions
Explains the kind of hand, body, eye and respiratory protection (Personal Protective Equipment) to use when working with the chemical (see more PPE information and usage on page 5). Special procedures, extra health or safety information, signs that should be posted, and other information not covered in other sections of the SDS.

Required Information on a SDS

a) The Chemical Name
b) Any Common Names
c) The CAS Number of the "Hazardous Substance"
d) The Potential for Explosion
e) The Potential for Reactivity
f) Acute and Chronic Health Effects
g) Potential Routes of Exposure
h) Symptoms of Overexposure
i) Proper Precautions
J) Handling Practices
k) Necessary Personal Protective Equipment
l) Other Safety Precautions in the Use of or Exposure to the "Hazardous Substance"
m) Emergency Procedures for Spills
n) Emergency Procedures for Fire
o) Disposal Procedures
p) First Aid Procedures Risks Posed by the "Hazardous Substance"
q) A Description in Lay Terms of the Specific Potential Health Hazard
r) The month and Year the Information was completed
s) Name and Address of the Manufacturers Responsible for Preparing the information

PPE for All Sites and Tasks

Hard Hat with Chin Strap

Hard hat will be worn at all times, Chin strap will be worn when working at any height or when hard hat poses risk of falling off. You must put this on immediately after stepping out of your vehicle – If your job does not enable you to continue carrying out your task with your hard hat on then you must contact your ACS representative prior to removing for authorisation. There is a 3 year expiry from date of issue on standard hard hats and must not be defective in anyway.

Safety Footwear

Will be worn at all times, You must put this on immediately after stepping out of your vehicle – Your safety footwear must not have any signs of metal showing, have plenty of tread and must be clean at all times.

Hi-Viz Work Wear

Will be worn at all times, You must put this on immediately after stepping out of your vehicle – Your hi-viz vest / work wear must be rated for night and day use, fully zipped / buttoned up and clean.

Respiratory

Canister type respirator shall be worn in situations where hazardous substances or dangerous goods are being used or handled. To avoid any confusion as to the type of equipment required refer to the SDS and SWMS documents

Full Body Cover

Will be worn at all times, You must put this on immediately after stepping out of your vehicle – DO NOT roll up sleeves, Must be clean and in good condition with no tears or rips present. Fire resistant overalls with hi-viz are the best protection on site.

Eye Protection

Will be worn at all times, You must put this on immediately after stepping out of your vehicle – The compliance rating is AS/NZS 1337.1 with side protection. You can use either tinted, clear or low visibility eye protection but don't forget this is also task dependant.

Gloves

Will be worn at all times, You must put these on immediately after stepping out of your vehicle – Minimum rating will be 4543 on all ACS work conducted, You may require a different glove type or rating to carry out your task safely, Gloves can only be removed if it makes you task too difficult to do i.e.; completing paper work or dexterity type tasks.

PPE Selection for handling gases

PPE Selection for handling gases

SAFETY DATA SHEET

ABS-Antibacterial Sanitising Interleaved Hand Paper Towel

SECTION 1: IDENTIFICATION

Product name: **ABS-Antibacterial Sanitising Interleaved Hand Paper Towel**

Product codes: AG-HAND-24

Uses: To dry, clean and sanitise hands after washing.

Company: Australia:
Aeris Environmental Ltd; 5/26-34 Dunning Ave, Rosebery, NSW 2018, Australia
USA:
Aeris Environmental, LLC; 70 FoxFarm Road, Phillipsburg, New Jersey 08865, USA
Europe:
Aeris Cleantech Europe Ltd; 11, St. Francis, Triq Ta'Gawdieri, San Gwann, SGN1740, Malta

Emergency: **New Zealand National Poisons Centre 0800 764 766**

SECTION 2: HAZARDS IDENTIFICATION

According to GHS classification and labelling of chemicals:

- Not classified

Label elements:

Hazard Pictogram:
None

Signal word:
None

Hazard statements:
None

Precautionary statements:
None

SECTION 3: COMPOSITION AND INFORMATION ON INGREDIENTS

Chemical nature: Solid

Ingredients	CAS Number	% w/w
Chlorhexidine gluconate	18472-51-0	<1%
Paper	NA	Up to 100%

SECTION 4: FIRST AID

Eye contact:	Not anticipated to happen, however if incident occurs rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. If eye irritation persists get medical advice/attention.
Skin or clothing contact:	Not anticipated to occur, however if irritation occurs seek medicalattention.
Ingestion:	Not anticipated to occur, however if it happens, rinse mouth with water. If swallowed do NOT induce vomiting. Give water to drink. Seek medical attention if symptoms develop.
Inhalation:	Not applicable

Medical attention and special treatment: Treat symptomatically.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing media

Use water spray, foam, dry chemical, carbon dioxide to extinguish.

Special hazards arising from the substance or mixture:

Hazardous decomposition products may be released during prolonged heating: smoke, carbon monoxide and carbon dioxide.

Advice for firefighters:

Exercise caution when fighting any chemical fire.

Protective equipment for firefighters:

Use self- contained breathing apparatus. Do not enter fire area without proper protective equipment, including respiratory protection. Wear a self-contained breathing apparatus.

Other information:

Hazardous decomposition products may be released during prolonged heating at temperatures exceeding 100°C - smokes, carbon monoxide and dioxide.

SECTION 6: SPILLAGE, ACCIDENTAL RELEASE MEASURES

None required

SECTION 7: HANDLING AND STORAGE

None required.

SECTION 8: EXPOSURE CONTROL AND PERSONAL PROTECTION

Exposure Limits (Safe work Australia): None

Personal protective equipment:

None required

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Form/Colour/Odour:	Solid, white paper.
Solubility:	Some components are soluble, paper is not soluble.
Specific Gravity (20°C):	NA
Rel Vapour Density (air=1):	NA
Boiling Point (°C):	NA
Vapour Pressure (20°C):	NA
Flash Point, closed cup (°C):	NA
pH of paper extract in water:	7
Viscosity (20°C, Ford cup #1):	NA

SECTION 10: STABILITY AND REACTIVITY

Chemical stability:	Stable under normal conditions of use.
Conditions to avoid:	Excessive heat and direct sun light.
Incompatible materials:	Strong oxidising agents.
Hazardous decomposition products:	Carbon monoxide and carbon dioxide.
Hazardous reactions:	None assigned.

SECTION 11: TOXICOLOGICAL INFORMATION

Classified according to GHS classification:
Not classified

None of the ingredients are in the IARC list of carcinogens.

SECTION 12: ECOLOGICAL INFORMATION

None of the ingredients are classified as PBT or vPvB. All the ingredients are biodegradable.

SECTION 13: DISPOSAL CONSIDERATIONS

Do not contaminate water, food or feed.

SECTION 14: TRANSPORT INFORMATION

Road and Rail Transport

NOT CLASSIFIED as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail.

Marine Transport

NOT CLASSIFIED as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea.

Air Transport

NOT CLASSIFIED as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.

SECTION 15: REGULATORY INFORMATION

Country/Region Inventory Status

All components of this material are listed on the AICS, NZIoC, TSCS, DSL, REACH, CSCL.

SECTION 16: OTHER INFORMATION

Abbreviation/definitions:
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
AICS: Australian Inventory of Chemical Substances
NZIoC: New Zealand Inventory of Chemicals
TSCA: Toxic Substance Control Act (USA)
DSL: Domestic substances list (Canada)
REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals (EU)
CSCL: Chemical Substance Control Law (Japan)

Date of SDS preparation: 05/12/ 2018

"The information on this data sheet represents our current data and best opinion as to the proper use in handling of this product under normal conditions. Any use of the product which is not in conformance with this data sheet, which involves using the product, or otherwise that in accordance with instructions of use on product packaging is the responsibility of the user. If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact the Aeris Environmental Ltd, on +61 2 83441315

END

Aeris Environmental

SAFETY DATA SHEET
AERIS ACTIVE

SECTION 1: IDENTIFICATION

PRODUCT NAME:	**AERIS ACTIVE**
Uses:	Hard Surface Disinfectant Cleaner
Company:	Aeris Environmental Ltd, Level 1, Unit 5 / 26-34 Dunning Ave, Rosebery, NSW 2018 AUSTRALIA Phone: +61 2 8344 1315 Fax: +61 2 96970944 Aeris Environmental 11, St. Francis, Triq Ta'Gawdieri San Gwann, SGN1740 Malta
Emergency:	**New Zealand National Poisons Centre 0800 764 766**

SECTION 2: HAZARDS IDENTIFICATION

According to Dangerous goods Regulation (IATA and ADG classification):
Not classified

According to GHS classification and labelling of chemicals:
- Eye irritation category 2
- Skin irritation category 2
- Aquatic life category 3

Label elements:
Hazard Pictogram:

Signal word:
WARNING

Hazard statements:
H315: Causes skin irritation
H319: Causes serious eye irritation

Precautionary statements:
- P210: Keep away from sparks, open flames and other ignition sources. No smoking.
- P260: Do not breathe mist/vapours/spray.

- P264: Wash hands thoroughly after handling.
- P280: Wear protective gloves/protective clothing/eye protection
- P301+330+331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- P303+361+353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P363: Wash contaminated clothing before reuse.
- P304+340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- P310: Immediately call a POISON CENTER/doctor.
- P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
- P405: Store locked up.
- P501: Dispose of contents/container in accordance with local/regional/national/international regulation.

SECTION 3: COMPOSITION AND INFORMATION ON INGREDIENTS

Ingredients	CAS Number	% w/w	GHS hazard classification
Ethanol	64-17-5	5 – 20	Flam. Liq. 2;
Benzalkonium chloride	68424-85-1	0.5 – 2	Flam. Liq. 3; acute oral 4; skin 1B; eye damage 1
Hydrogen peroxide	7722-84-1	6.0	Oxidizing liquids, Category 1; Acute toxicity, Category 4; Skin corrosion, Category 1A; Serious eye damage, Category 1; Specific target organ toxicity – single exposure, Category 3; (Respiratory system)
Ingredients determined not to be hazardous	NA	up to 40	
Water	7732-18-5	qs100	

SECTION 4: FIRST AID

Eye contact:	Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. If eye irritation persists get medical advice/attention.
Skin or clothing contact:	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
Ingestion:	Immediately rinse mouth with water. If swallowed do NOT induce vomiting. Give water to drink. Seek medical attention if symptoms develop.
Inhalation:	IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Medical attention and special treatment: Treat symptomatically.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing media

Use water spray, alcohol resistant foam, dry chemical, carbon dioxide to extinguish.

Special hazards arising from the substance or mixture:

Hazardous decomposition products may be released during prolonged heating: smoke, carbon monoxide and carbon dioxide.

Advice for firefighters:

Exercise caution when fighting any chemical fire.

Protective equipment for firefighters:

Use self- contained breathing apparatus. Do not enter fire area without proper protective equipment, including respiratory protection. Wear a self-contained breathing apparatus.

Other information:

Hazardous decomposition products may be released during prolonged heating at temperatures exceeding 100°C - smokes, carbon monoxide and dioxide.

SECTION 6: SPILLAGE, ACCIDENTAL RELEASE MEASURES

Wear personnel protective equipment in section 8. Stop and contain the spill for salvage or absorb in inert absorbent materials. Do not let spill flow into the drainage.

SECTION 7: HANDLING AND STORAGE

- P210: Keep away from sparks, open flames and other ignition sources. No smoking.
- P260: Do not breathe mist/vapours/spray.
- P264: Wash hands thoroughly after handling.
- P280: Wear protective gloves/protective clothing/eye protection
- P405: Store locked up

SECTION 8: EXPOSURE CONTROL AND PERSONAL PROTECTION

Exposure Limits (Safe work Australia):

Name	Cas No	TWA (ppm)	TWA (mg/m3)	STEL (ppm) (mg/m3)	STEL
Ethyl alcohol	64-17-5	1000	1880	-	-

Personal protective equipment:

P280: Wear protective gloves/protective clothing/eye protection

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Form/Colour/Odour:	Clear to slightly hazy liquid
Solubility:	Soluble in water.
Specific Gravity (20°C):	0.92 – 1.10

Rel Vapour Density (air=1):	N Av
Boiling Point (°C):	95 – 100˚C
Vapour Pressure (20°C):	N Av
Flash Point, closed cup (°C):	39°C
Sustained combustibility test:	Does not sustain combustion
pH:	4 - 7

N Av = Not available

SECTION 10: STABILITY AND REACTIVITY

Chemical stability:	Stable under normal conditions of use.
Conditions to avoid:	Excessive heat.
Incompatible materials:	Strong oxidising agents.
Hazardous decomposition products:	Carbon monoxide and carbon dioxide.
Hazardous reactions:	None assigned.

SECTION 11: TOXICOLOGICAL INFORMATION

Classified according to GHS classification:

H315:	Causes skin irritation
H319	Causes serious eye irritation

None of the ingredients are in the IARC list of carcinogens.

SECTION 12: ECOLOGICAL INFORMATION

The product ingredients are expected to be safe for the environment under normal use conditions. May be harmful to aquatic organisms. Avoid contaminating waterways.

SECTION 13: DISPOSAL CONSIDERATIONS

Do not contaminate water, food or feed. Dispose of the package in a sanitary landfill, or by incineration, if allowed by State and local authorities. If burned, stay out of smoke.

SECTION 14: TRANSPORT INFORMATION

Road and Rail Transport

Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail.

Marine Transport

Not classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea.

Air Transport

Not classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.

SECTION 15: REGULATORY INFORMATION

Country/Region Inventory Status

All components of this material are listed on the AICS, NZIoC, TSCS, DSL, REACH, CSCL.

SECTION 16: OTHER INFORMATION

Date of SDS revision: 08/01/2020

"The information on this data sheet represents our current data and best opinion as to the proper use in handling of this product under normal conditions. Any use of the product which is not in conformance with this data sheet, which involves using the product, or otherwise that in accordance with instructions of use on product packaging is the responsibility of the user. If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact Aeris Environmental Ltd

END

Aeris Environmental

SAFETY DATA SHEET
AERISGUARD SURFACE TREATMENT AEROSOL

SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product form : Liquid Mixture in aerosol can
Trade name : AERISGUARD SURFACE TREATMENT AEROSOL
Product code : AG-ST-A

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

1. Relevant identified uses
For treatment of HVAC and cool room surfaces

2. Uses advised against
No additional information available

1.3 Details of the supplier of the Safety Data Sheet

Supplier:
Aeris Environmental Ltd,
5/26-34 Dunning Ave,
Rosebery, NSW 2018,
Australia

Aeris Environmental, LLC
70 FoxFarm Road
Phillipsburg,
New Jersey 08865
USA

1.4 Emergency telephone number

For emergency event of spillage, inhalation or ingestion of products, please contact the emergency hotline:
Australia: +61 2 83441315

New Zealand National Poisons Centre 0800 764 766

SECTION 2: HAZARDS IDENTIFICATION

1. Classification of the substance or mixture

1. According to GHS classification:
Physical hazard:
Flammable Aerosol category 1.
Health Hazard:
Eye Damage category 1

2.2 **Label elements**

Labelling according to GHS
Hazard pictograms:

Signal word: DANGER
Hazard statements:
H222 Extremely flammable aerosol
H229 Pressurised container: May burst if heated
H318 Causes serious eye damage

Precautionary statements (GHS):
Prevention:
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P211: Do not spray on an open flame or other ignition source.
P251: Do not pierce or burn, even after use. [As modified by IV ATP]
P264: Wash hands thoroughly after handling.
P273: Avoid release to the environment.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
Response:
P302+352: IF ON SKIN: Wash with plenty of water/… [As modified by IV ATP]
P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
P332+313: If skin irritation occurs: Get medical advice/attention.
P337+313: If eye irritation persists get medical advice/attention.
P362: Take off contaminated clothing. [As modified by IV ATP]
Storage:
P410: Protect from sunlight.
P412: Do not expose to temperatures exceeding 50°C/122°F.
Disposal:
P501: Dispose of contents/container in accordance with local/regional/national/international regulation.

2.3 **Other hazards**

Inhaled: Irritating to respiratory tract and mucous membranes. Inhalation of alcohol vapour may result in headache, nausea and vomiting. High concentrations may cause central nervous system symptoms similar to "swallowed".

Swallowed: Unlikely under normal occupational exposures. But swallowing ethanol may cause harmful central nervous system effects. Effects may Include excitation, euphoria, headache, Dizziness, drowsiness, blurred vision, fatigue, Tremors, convulsions, loss of consciousness, Coma, respiratory

arrest and death. Severe Acute intoxication may cause hypoglycaemia, Hypothermia, and extensor rigidity. Other Effects may include decreased blood pressure Vomiting blood and blood changes. Aspiration Into the lungs may cause pneumonitis.

Chronic Chronic intoxication of alcohol by swallowing or repeated inhalation may cause degenerative changes in the liver, kidneys, hair, and gastrointestinal tract and heart muscle.

Special Toxic Effects due to alcohol:
Persons with pre-existing liver impairment, skin and respiratory disorders may be at an increased risk from Exposure. Ethanol may also cause adverse reproductive effects. Concurrent absorption of ethanol and some drugs may cause adverse health effects. Ingestion of beverages containing ethanol by pregnant women is associated with "fetal alcohol syndrome" in their babies. The International Agency for Research of Cancer (IARC) has evaluated Alcohol drinking as "Group 1 – carcinogenic to humans"

SECTION 3: COMPOSITION AND INFORMATION ON INGREDIENTS

Mixtures

NAME	Product identifier	%	Classification according to GHS
Benzalkonium chloride	CAS no. 68424-85-1	0.1 - 3	Acute tox 4 H302 Skin Corr. 1B H314 Eye Dam. 1 H318 Aquatic Acute 1 H400,
Ethanol	CAS no. 64-17-5	40 - 80	Flam. Liquid 2 H225: Highly flammable liquid and vapour. Eye Irrit. 2 H319: Causes serious eye irritation SCL >= 50.0)
Butane	CAS no. 106-97-8	10 – 30	H220: Extremely flammable gas.H280: Contains gas under pressure; may explode if heated.
Propane	CAS no. 74-98-6	10 - 30	H220: Extremely flammable gas.H280: Contains gas under pressure; may explode if heated.
Ingredients determined not to be hazardous	NA	To 100 %	-

SECTION 4: FIRST AID

4.1 Description of first aid measures

Eye:	Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. If eye irritation persists get medical advice/attention.
Skin:	Take off contaminated clothing. Wash skin with plenty of water. If skin irritation occurs: Get medical advice/attention.
Inhaled:	Remove to fresh air, rest patient and seek Medical attention. Give artificial respiration if breathing stops.
Swallowed:	Give plenty of water to drink. Do NOT induce vomiting. Seek medical attention if symptom persists.

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

Eye irritation and skin irritation.

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

Advice to Doctor: Treat symptomatically.

SECTION 5: FIRE-FIGHTING MEASURES

1. Extinguishing media

Use water fog, dry chemical, carbon dioxide or foam. In the absence of water fog, a fine spray can be used.

2. Special hazards arising from the substance or mixture

Contents under pressure. Keep away from ignition sources and open flames. Exposure of containers to extreme heat and flames can cause them to rupture often with violent force. Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back. Combustion will produce oxides of carbon and hydrocarbons.

3. Advice for firefighters

Firefighters should always wear positive pressure self-contained breathing apparatus and full protective clothing. Cool fire-exposed containers with water. Use shielding to protect against bursting containers.

SECTION 6: SPILLAGE, ACCIDENTAL RELEASE MEASURES

1. Personal precautions, protective equipment and emergency procedures

Wear protective gloves and eye/face protection. For further information refer to Section 8 "Exposure controls/personal protection". Eliminate all sources of ignition. Ventilate area. Evacuate unnecessary personnel.

2. Methods and material for containment and cleaning up

Leaking cans should be placed in a plastic bag or an open pail until the pressure has dissipated. Spray water to the spilled liquid, contain with an inert absorbent and place in a container for disposal. Clean spill area thoroughly with water. Report large spills to authorities as required.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Precautions for safe handling:
DO NOT SMOKE. EXTREMELY FLAMMABLE AEROSOL. Pressurised dispenser. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. Do not spray on a naked flame or other ignition source. Do not pierce or burn even after use.

Hygiene measures:
Take care for general good hygiene and housekeeping. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product.

2. Conditions for safe storage, including any incompatibilities
Protect from sunlight and do not expose to temperatures exceeding 50°C. Keep away from heat, hot surfaces, sparks, open flames and other ignition source.

3. Specific end use(s)
Use only as directed. Intentional misuse by deliberately concentrating and inhaling contents can be harmful or fatal.

SECTION 8: EXPOSURE CONTROL AND PERSONAL PROTECTION

1. Control parameters
These are guides only and do not represent `no-effect' levels, which guarantee protection to every worker.

Worksafe Australia has established exposure standards for the following ingredients:

Standard Name	CAS No	TWA (ppm)	TWA (mg/m3)
Ethyl alcohol	64-17-5	1000	1880

2. Exposure controls
These measures are recommended on the basis of common application methods and may not be appropriate to all potential applications of the product. The user is responsible for carrying out a full risk assessment for their specific processes and systems of work.
Personal protective equipment:
Eye protection: Wear eye protection such as safety goggles.
Hand protection: Wear chemical resistant gloves.
Body protection: As necessary to prevent contact.
Respiratory protection: You must wear the prescribed solvent respirator. Use in a well ventilated area. Avoid breathing vapour or spray.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

The following is the properties of the liquid without the propellant:

Appearance:	A clear alcoholic liquid
Boiling Point:	78 – 84°C
Specific gravity:	0.80 - 0.84 @ 20°C
Solubility in water:	Forms a polymer film.
Reactivity in water/air:	Not reactive

Incompatibility (materials to avoid)	Strong oxidizers
pH Level:	5.0-8.0

SECTION 10: STABILITY AND REACTIVITY

This material is stable under normal conditions of use.

1. Reactivity

Not reactive

2. Chemical stability

The mixture is stable at normal ambient temperature (5 – 40°C).

3. Possibility of hazardous reactions

No known hazardous reactions.

4. Conditions to avoid

Storing at temp above 40 °C.

5. Incompatible materials

Incompatible with oxidising agents and acids.

6. Hazardous decomposition products

Does not decompose when used as intended.

SECTION 11: TOXICOLOGICAL INFORMATION

Not available, the following is the toxicological information of the active ingredient in its pure form:

Benzalkonium chloride:
Acute:
Oral LD50(rat): 600 mg/kg
Dermal LD50(rabbit): 3000 mg/kg; >5mL/kg
Inhalation LC50 (rat, 1hr): 21.5 mg/L
Eye irritation (rabbit): Severe irritant/corrosive
Skin irritation (rabbit): Severe irritant/corrosive

Subacute:
Dermal toxicity (rabbit – 20 days – at dilution concentration, 800 ppm active solution): Exposure animals were topically applied at either 1, 2 or 4 mL/kg, daily for a period of 20 days. At exposure doses used, the only material related effects observed were mild transitory erythema.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity study of this preparation is not available, the following is the ecological toxicity of the active ingredients; Benzalkonium chloride (pure form): very toxic to aquatic life. Ingredients contained in this preparation comply with the biodegradability criteria of Regulation (EC) No 648/2004 on detergents. None of the ingredients are classified as bioaccumulative. This mixture does not contain any substances that are assessed as PBT or vPvB.

SECTION 13: DISPOSAL CONSIDERATIONS

Do not pierce or burn can even after use. Do not contaminate water, food or feed. Completely empty the can following the instruction for use on the label. Dispose of the package in a sanitary landfill, or by incineration, if allowed by State and local authorities. If burned, stay out of smoke.

SECTION 14: TRANSPORT INFORMATION

Class-2.1 Aerosol, Flammable. Transport according to local/international dangerous goods regulations.

UN No.:	**1950**
HazChem:	**2(Y)E**
Packing group:	**II**
Subsidiary risk	None

SECTION 15: REGULATORY INFORMATION

All the ingredients are listed in the AICS (Australian Inventory of Chemical Substances).

SECTION 16: OTHER INFORMATION

H220: Extremely flammable gas.
H225: Highly flammable liquid and vapour.
H280: Contains gas under pressure; may explode if heated.
H302: Harmful if swallowed
H314: Causes severe skin burns and eye damage
H318: Causes serious eye damage
H319: Causes serious eye irritation
SCL: Specific Concentration Limit
H400: Very toxic to aquatic life

The opinions expressed herein are those of qualified experts. We believe that the information contained herein is current as of the date of this SDS. Since the use of this information and these opinions and the conditions of use of the product are not within the control of Aeris Environmental Ltd it is the users' obligation to assure safe use of the product.

Date SDS revision: 19/03/2018

-END-

SAFETY DATA SHEET
AERISHIELD FOAM

SECTION 1: IDENTIFICATION

Product name:	**AeriShield Foam**
Product code:	AG-AS-A
Uses:	Natural Mould and Odour suppressor for cleaning & remediation of drains.
Company Name:	Aeris Environmental Ltd, Level 1, Unit 5 / 26-34 Dunning Ave, Rosebery, NSW 2018 AUSTRALIA Phone: +61 2 8344 1315 Fax: +61 2 96970944
Emergency Contact Number:	Phone: AU +61 2 8344 1315

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
Classification according to GHS:
Flammable Aerosol category 1.
Eye irritation category 2.

2.2 Label elements.

Signal word: DANGER
Hazard statements:
H222 Extremely flammable aerosol
H229 Pressurised container: May burst if heated

Precautionary statements (GHS):
Prevention:
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P211: Do not spray on an open flame or other ignition source.
P251: Do not pierce or burn, even after use.
P264: Wash hands thoroughly after handling.
P273: Avoid release to the environment.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
Response:
P302+352: IF ON SKIN: Wash with plenty of water
P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
P332+313: If skin irritation occurs: Get medical advice/attention.
P337+313: If eye irritation persists get medical advice/attention.
P362: Take off contaminated clothing.

Storage:
P410: Protect from sunlight.
P412: Do not expose to temperatures exceeding 50°C/122°F.
Disposal:
P501: Dispose of contents/container in accordance with local/regional/national/international regulation.

SECTION 3: COMPOSITION AND INFORMATION ON INGREDIENTS

The following is the ingredients without the propellant:

Material	CAS number	Level	GHS /CLP (EC) No. 1272/2008 Classification
Non-pathogenic bacterial cultures	9014-01-1	proprietary	Not classified at this concentration
Polyvinyl Alcohol	9002-89-5	Proprietary	Not classified
Ethanol	57-55-6	5 -10	Not classified at this concentration
Alkoxylated detergent	68131-39-5	0.1-5	Not classified at this concentration
Water	7732-18-5	To 100%	-

SECTION 4: FIRST AID

Eye contact: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. If eye irritation persists, get medical advice/attention.

Swallowed: Immediately rinse mouth and drink plenty of water. Seek medical attention if symptoms persist.

Skin contact: Remove contaminated clothing. Rinse skin with plenty of water. Wash contaminated clothing before reuse. If skin irritation or rash occurs, get medical advice/attention.

Inhalation: Unlikely to happen since the product is a foam. However inhalation of fine mist may cause allergic reaction. Remove from contaminated area. Move to fresh air, rest patient. If experiencing respiratory distress, contact a doctor/physician.

First Aid Facilities: Access to potable water. Wash bottles or eye wash stations or showers.

SECTION 5: FIRE FIGHTING MEASURES

1. Extinguishing media.

Use water fog, dry chemical, carbon dioxide or foam. In the absence of water fog, a fine spray can be used.

2. Special hazards arising from the substance or mixture.

Contents under pressure. Keep away from ignition sources and open flames. Exposure of containers to extreme heat and flames can cause them to rupture often with violent force. Vapours are heavier than air and may travel along surfaces to remote ignition sources and flash back. Combustion will produce oxides of carbon and hydrocarbons.

5.3.
Firefighters should always wear positive pressure self-contained breathing apparatus and full protective clothing. Cool fire-exposed containers with water. Use shielding to protect against bursting containers.

SECTION 6: SPILLAGE ACCIDENTAL RELEASE MEASURES

1. Personal precautions, protective equipment and emergency procedures
   Eliminate all sources of ignition. Ventilate area. Evacuate unnecessary personnel.

2. Methods and material for containment and cleaning up
   Leaking cans should be placed in a plastic bag or an open pail until the pressure has dissipated. Spray water to the spilled liquid, and place in a container for disposal. Clean spill area thoroughly with water. Report large spills to authorities as required.

SECTION 7: HANDLING AND STORAGE

1.Precautions for safe handling
Precautions for safe handling:
DO NOT SMOKE. EXTREMELY FLAMMABLE AEROSOL. Pressurised dispenser. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. Do not spray on a naked flame or other ignition source. Do not pierce or burn even after use.

Hygiene measures:
Take care for general good hygiene and housekeeping. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product.

2. Conditions for safe storage, including any incompatibilities
Protect from sunlight and do not expose to temperatures exceeding 50°C. Keep away from heat, hot surfaces, sparks, open flames and other ignition source.

3. Specific end use(s)
Use only as directed. Intentional misuse by deliberately concentrating and inhaling contents can be harmful or fatal.

SECTION 8: EXPOSURE CONTROL AND PERSONAL PROTECTION

1. Control parameters
These are guides only and do not represent `no-effect' levels, which guarantee protection to every worker.

Worksafe Australia has established exposure standards for the following ingredients:

Standard Name	CAS No	TWA (ppm)	TWA (mg/m3)
Ethyl alcohol	64-17-5	1000	1880

2. Exposure controls
These measures are recommended on the basis of common application methods and may not be appropriate to all potential applications of the product. The user is responsible for carrying out a full risk assessment for their specific processes and systems of work.
Personal protective equipment:
Eye protection: Wear eye protection such as safety goggles.
Hand protection: Wear chemical resistant gloves.
Body protection: As necessary to prevent contact.

Avoid contact with eyes. Minimise contact with skin. Wear appropriate protective equipment such as safety goggles and gloves. Wash hands after handling.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

The following is the property of the liquid without the hydrocarbon propellant:

Appearance:	A clear to slightly hazy liquid
Boiling point:	>100°C
Vapour pressure:	Not available
Density @ 20°C	0.98 – 1.05 g/mL
Solubility in water:	Soluble
Reactivity in water/air:	Not reactive
Incompatibility (materials to avoid):	None
pH:	6 - 8
Flash point:	Non-flammable according to DG regulations

SECTION 10: STABILITY AND REACTIVITY

This material is stable under normal conditions of use.

1.Reactivity

Not reactive

2. Chemical stability

The mixture is stable at normal ambient temperature (5 – 50°C).

3.Possibility of hazardous reactions

No known hazardous reactions.

4. Conditions to avoid

Storing at temp above 50 °C. Ignition source, open flame. No Smoking.

5. Incompatible materials

Incompatible with oxidising agents and acids.

6.Hazardous decomposition products Does not decompose when used as intended.

SECTION 11: TOXICOLOGICAL INFORMATION

Toxicology of the solution without the propellant have not been performed as a whole. According to GHS classification the liquid without the propellant is not classified as hazardous.

Acute toxicity: Not expected to be toxic by ingestion.
Chronic oral: Not expected to have chronic toxicity. None of the ingredients are classified as Carcinogenic, teratogenic or mutagenic.
Dermal/Skin: May cause slight irritation.
Eye: May causes eye irritation.
Respiratory: May cause slight irritation.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity study of this preparation is not available; however, all the ingredients in this product are readily biodegradable. None of the ingredients are in the persistent and bioaccumulative list.

SECTION 13: DISPOSAL CONSIDERATIONS

Do not pierce or burn can even after use. Do not contaminate water, food or feed. Completely empty the can following the instruction for use on the label. Dispose of the package in a sanitary landfill, or by incineration, if allowed by State and local authorities. If burned, stay out of smoke.

SECTION 14: TRANSPORT INFORMATION

Classified as Dangerous goods Class-2.1 Aerosol, Flammable.

Transport according to local/international dangerous goods regulations.

PROPER SHIPPING NAME:	**AEROSOL, FLAMMABLE**
UN No.:	**1950**
HazChem:	**2(Y)E**
Packing group:	**II**
Subsidiary risk	None

SECTION 15: REGULATORY INFORMATION

All the ingredients are listed in the AICS (Australian Inventory of Chemical Substances), TSCA (Toxic Substance Control Act), and EINECS (European Inventory of Existing Commercial Substances) or exempted.

SECTION 16: OTHER INFORMATION

"The opinions expressed herein are those of qualified experts. We believe that the information contained herein is current as of the date of this SDS. Since the use of this information and these opinions and the conditions of use of the product are not within the control of Aeris Environmental it is the user's obligation to assure safe use of the product."

Date of SDS REVISION: 2/8/2019

–END–

SAFETY DATA SHEET
AERISHIELD INDOOR

SECTION 1: IDENTIFICATION

Product name:	**AeriShield Indoor**
Product code:	AG-AS-750
Uses:	For indoor treatment and prevention of mould and mildew on soft furnishings including carpet and fabrics. Odour suppressor.
Company Name:	Aeris Environmental Ltd, Level 1, Unit 5 / 26-34 Dunning Ave, Rosebery, NSW 2018 AUSTRALIA Phone: +61 2 8344 1315 Fax: +61 2 96970944
Emergency Contact number:	Phone: +61 2 8344 1315

SECTION 2: HAZARDS IDENTIFICATION

1. Classification of the substance or mixture.

2. Classification according to NOHSC, Directive 67/548/EEC
Not classified.

3. Classification according to GHS.
Not classified.

2.2 Label elements.
Precautionary statements:
P261 Avoid breathing mist / vapours / spray
P264 Wash hands thoroughly after handling
P284 In case of inadequate ventilation, wear respiratory protection.
P280 Wear protective gloves / eye protection

Human Health Hazards:
Inhalation of enzyme aerosols or dust may induce sensitisation and may cause allergic type reactions in sensitised individual
Prolonged skin contact may cause irritation.
Direct contact with eyes may cause irritation and may be harmful if swallowed.

SECTION 3: COMPOSITION AND INFORMATION ON INGREDIENTS

Material	CAS number	Level	GHS /CLP (EC) No. 1272/2008 Classification
Non-pathogenic bacterial cultures	9014-01-1	Proprietary	Not classified at this concentration
Polyvinyl Alcohol	9002-89-5	Proprietary	Not classified
Ethanol	57-55-6	5 -10	Not classified at this concentration
Alkoxylated detergent	68131-39-5	0.1-5	Not classified at this concentration
Water	7732-18-5	To 100%	-

SECTION 4: FIRST AID

Eye contact: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. If eye irritation persists, get medical advice/attention.

Swallowed: Immediately rinse mouth and drink plenty of water. Seek medical attention if symptoms persist.

Skin contact: Remove contaminated clothing. Rinse skin with plenty of water. Wash contaminated clothing before reuse. If skin irritation or rash occurs, get medical advice/attention.

Inhalation: P304+P340, P34May cause allergic reaction. Remove from contaminated area. Move to fresh air, rest patient. If experiencing respiratory distress, contact a doctor/physician.

First Aid Facilities: Access to potable water. Wash bottles or eye wash stations or showers.

SECTION 5: FIRE FIGHTING MEASURES

Non-flammable. Will not promote combustion.

SECTION 6: SPILLAGE ACCIDENTAL RELEASE MEASURES

Avoid entering waterways. If possible, contain the spill. Place inert absorbent such as vermiculite, sand or dirt onto material. Mop up the remaining material. No not use cleaning methods that generate dust or aerosols.

SECTION 7: HANDLING AND STORAGE

Store upright in a cool, dry area, out of direct sunlight. Keep containers closed when not in use. Store in original container.

SECTION 8: EXPOSURE CONTROL AND PERSONAL PROTECTION

Control Parameter Exposure Limits (according to Safe Work Australia)

Avoid contact with eyes. Minimise contact with skin. Wear appropriate protective equipment such as safety goggles and gloves. Wash hands after handling.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	A clear to slightly hazy liquid
Boiling point:	>100°C
Vapour pressure:	Not available
Density @ 20oC	0.98 – 1.05 g/mL
Solubility in water:	Soluble
Reactivity in water/air:	Not reactive
Incompatibility (materials to avoid):	None
pH:	6 - 8
Flash point:	Non-flammable according to DG regulations

SECTION 10: STABILITY AND REACTIVITY

This material is stable under normal conditions of use and non-reactive. Avoid dust formation or generation of aerosols.

SECTION 11: TOXICOLOGICAL INFORMATION

Toxicology of these solutions have not been performed as a whole. According to NOHSC these solutions are not classified as hazardous.

Acute toxicity: Not expected to be toxic by ingestion
Chronic oral: Not expected to have chronic toxicity.
Dermal/Skin: May cause slight irritation
Eye: May cause slight irritation
Respiratory: May cause slight irritation

None of the ingredients are listed in the international list of known carcinogens, mutagens, and development toxins.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity study of this preparation is not available; however, all the ingredients in this product are readily biodegradable.

SECTION 13: DISPOSAL CONSIDERATIONS

Dispose of contents/container in accordance with local/regional regulation. Dispose of via sewerage only ensuring the concentrated formulation does not enter waterways.

SECTION 14: TRANSPORT INFORMATION

The product is not classified as dangerous goods.

SECTION 15: REGULATORY INFORMATION

All the ingredients are listed in the AICS (Australian Inventory of Chemical Substances), TSCA (Toxic Substance Control Act), and EINECS (European Inventory of Existing Commercial Substances) or exempted.

SECTION 16: OTHER INFORMATION

"The opinions expressed herein are those of qualified experts. We believe that the information contained herein is current as of the date of this SDS. Since the use of this information and these opinions and the conditions of use of the product are not within the control of Aeris Environmental it is the user's obligation to assure safe use of the product."

Date of SDS REVISION: 02/08/2019

–END–

SAFETY DATA SHEET
AERISHIELD

SECTION 1: IDENTIFICATION

Product name:	**AeriShield**
Product code:	AG-AS-1 AG- AS-5 AG- AS- 20
Uses:	Odour suppressor.
Company Name:	Aeris Environmental Ltd, Level 1, Unit 5 / 26-34 Dunning Ave, Rosebery, NSW 2018 AUSTRALIA Phone: +61 2 8344 1315 Fax: +61 2 96970944 Aeris Environmental, LLC 70 FoxFarm Road Phillipsburg, New Jersey 08865 USA
Emergency Contact number:	Phone: AU +61 2 8344 1315 USA: 1-908 878 7985 **New Zealand National Poisons Centre 0800 764 766**

SECTION 2: HAZARDS IDENTIFICATION

1. Classification of the substance or mixture
2. Classification according to NOHSC, Directive 67/548/EEC
   Not classified.

2.2 Label elements

3. Classification according to GHS:
   Not classified.

Precautionary statements:
P261 Avoid breathing mist / vapours / spray
P264 Wash hands thoroughly after handling
P284 In case of inadequate ventilation, wear respiratory protection.
P280 Wear protective gloves / eye protection

Human Health Hazards:
Inhalation of enzyme aerosols or dust may induce sensitisation and may cause allergic type reactions in sensitised individual
Prolonged skin contact may cause irritation.
Direct contact with eyes may cause irritation and may be harmful if swallowed.

SECTION 3: COMPOSITION AND INFORMATION ON INGREDIENTS

Material	CAS number	Level	GHS /CLP (EC) No. 1272/2008 Classification
Non-pathogenic bacterial culture	9014-01-1	proprietary	Not classified at this concentration
Polyvinyl Alcohol	9002-89-5	Proprietary	Not classified
Ethanol	57-55-6	5 -10	Not classified at this concentration
Alkoxylated detergent	68131-39-5	0.1-5	Not classified at this concentration
Water	7732-18-5	To 100%	-

SECTION 4: FIRST AID

Eye contact: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. If eye irritation persists, get medical advice/attention.

Swallowed: Immediately rinse mouth and drink plenty of water. Seek medical attention if symptoms persist.

Skin contact: Remove contaminated clothing. Rinse skin with plenty of water. Wash contaminated clothing before reuse. If skin irritation or rash occurs, get medical advice/attention.

Inhalation: P304+P340, P34May cause allergic reaction. Remove from contaminated area. Move to fresh air, rest patient. If experiencing respiratory distress, contact a doctor/physician.

First Aid Facilities: Access to potable water. Wash bottles or eye wash stations or showers.

SECTION 5: FIRE FIGHTING MEASURES

Non-flammable. Will not promote combustion.

SECTION 6: SPILLAGE ACCIDENTAL RELEASE MEASURES

Avoid entering waterways. If possible, contain the spill. Place inert absorbent such as vermiculite, sand or dirt onto material. Mop up the remaining material. No not use cleaning methods that generate dust or aerosols.

SECTION 7: HANDLING AND STORAGE

Store upright in a cool, dry area, out of direct sunlight. Keep containers closed when not in use. Store in original container.

SECTION 8: EXPOSURE CONTROL AND PERSONAL PROTECTION

Control Parameter Exposure Limits (according to Safe Work Australia)

Avoid contact with eyes. Minimise contact with skin. Wear appropriate protective equipment such as safety goggles and gloves. Wash hands after handling.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	A clear to slightly hazy liquid
Boiling point:	>100°C
Vapour pressure:	Not available
Density @ 20oC	0.98 – 1.05 g/mL
Solubility in water:	Soluble
Reactivity in water/air:	Not reactive
Incompatibility (materials to avoid):	None
pH:	6 - 8
Flash point:	Nonflammable according to DG regulations

SECTION 10: STABILITY AND REACTIVITY

This material is stable under normal conditions of use and non-reactive. Avoid dust formation or generation of aerosols.

SECTION 11: TOXICOLOGICAL INFORMATION

Toxicology of these solutions have not been performed as a whole. According to NOHSC these solutions are not classified as hazardous.

Acute toxicity: Not expected to be toxic by ingestion
Chronic oral: Not expected to have chronic toxicity.
Dermal/Skin: May cause slight irritation
Eye: May cause slight irritation
Respiratory: May cause slight irritation

None of the ingredients are listed in the international list of known carcinogens, mutagens, and development toxins.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity study of this preparation is not available; however, all the ingredients in this product are readily biodegradable.

SECTION 13: DISPOSAL CONSIDERATIONS

Dispose of contents/container in accordance with local/regional regulation. Dispose of via sewerage only ensuring the concentrated formulation does not enter waterways.

SECTION 14: TRANSPORT INFORMATION

The product is not classified as dangerous goods.

SECTION 15: REGULATORY INFORMATION

All the ingredients are listed in the AICS (Australian Inventory of Chemical Substances), TSCA (Toxic Substance Control Act), and EINECS (European Inventory of Existing Commercial Substances) or exempted.

SECTION 16: OTHER INFORMATION

"The opinions expressed herein are those of qualified experts. We believe that the information contained herein is current as of the date of this SDS. Since the use of this information and these opinions and the conditions of use of the product are not within the control of Aeris Environmental it is the user's obligation to assure safe use of the product."

Date of SDS REVISION: 1/07/2019

–END–

SAFETY DATA SHEET
Heavy Duty CLEANER

SECTION1: Identification of Product and Supplier

Product Identifier

Product form : Aqueous liquid
Trade name : Heavy Duty CLEANER
Product codes : AG-HD-5
AG-HD-20
AG-HD-200

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

Relevant identified uses
Surface Cleaner and Degreaser
Uses advised against
No additional information available

Details of the supplier of the Safety Data Sheet

Supplier: Australia: Aeris Environmental Ltd; 5/26-34 Dunning Ave, Rosebery, NSW 2018, Australia
USA: Aeris Environmental, LLC; 70 FoxFarm Road, Phillipsburg, New Jersey 08865, USA
Europe: Aeris Cleantech Europe Ltd; 11, St. Francis, Triq Ta'Gawdieri, San Gwann, SGN1740, Malta

Emergency telephone number

Australia: +61 2 83441315
Europe: +356 9940 3485
The USA: 1-908 878 7985
New Zealand National Poisons Centre 0800 764 766

SECTION 2: Hazards Identification

Hazardous according to GHS classification:
Eye damage category 1, Skin irritation category 2

Label elements:

Pictogram:

Signal word:
Danger

Hazard Statements
H315 Causes skin irritation
H318 Causes serious eye damage

Precautionary statement:

General

P101 If medical advice is needed, have product container or label at hand.
P102 Keep out of reach of children.
P103 Read label before use.

Prevention

P264 Wash skin thoroughly after handling.
P280 Wear protective gloves and eye/ face protection.

Response

P302 + P352 IF ON SKIN: Wash with plenty of water.
P332 + P313 If skin irritation occurs: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor.
P321 Specific treatment (see supplemental first aid instructions on this label).

Other hazards

None known

SECTION 3: Composition/Information on Ingredients

Mixtures

Ingredients:	Cas No.	Proportion
2-(2-butoxyethoxy)ethanol;		
Diethylene glycol monobutyl ether	112-34-5	<10%
Ethanol, 2,2',2"-nitrilotris-; Triethanolamine	102-71-6	< 10 %
Carbonic acid, dipotassium salt;		
Potassium carbonate	584-08-7	< 10 %
Alcohols, C12-14, ethoxylated	68439-50-9	< 5 %
Dodecyldimethylamine oxide; Lauramine oxide	1643-20-5	<3%
Water	7732-18-5	To 100%

SECTION 4: First Aid Measures:

For advice, contact a Poisons Information Centre on 131 126 or a medical practitioner.
New Zealand National Poisons Centre 0800 764 766

Eyes: Hold eyelids apart and flush cautiously with running water. Continue flushing until advised to stop by the Poisons information centre or for at least 15 minutes. Seek medical advice if symptoms persist.

Swallowed: Do NOT induce vomiting. Give a glass of water to drink. Seek medical advice if symptoms persist.

Skin: If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.

Inhaled: If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.

Most important symptoms and effects, both acute and delayed

Causes skin irritation. Causes serious eye damage

Indication of any immediate medical attention and special treatment needed
Treat symptomatically.

Section 5: Fire Fighting Measures

Extinguishing media
Not combustible. If material is involved in a fire use: fine water spray, normal foam, dry agent (carbon dioxide, dry chemical powder).

Special hazards arising from the substance or mixture
Not combustible. Decomposes on heating emitting toxic fumes.

Advice for firefighters
Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to products of decomposition. Keep containers cool with water spray.

Hazchem Code
None allocated

SECTION 6: Accidental Release Measures

Personal precautions, protective equipment and emergency procedures
Wear protective equipment to prevent skin and eye contact and breathing in vapours. Shut off all possible sources of ignition. Work up wind or increase ventilation. Clear area of all unprotected personnel. Contact local emergency services where appropriate.

Environmental precautions
Avoid contaminating waterways. If contamination of sewers or waterways has occurred advise local emergency services.

Methods and material for containment and cleaning up
Contain using sand or soil. Prevent run off into drains or waterways. Use absorbent (soil, sand or other inert material). Collect and seal in properly labelled containers or drums for disposal.

SECTION 7: Handling And Storage

Precautions for safe handling
Keep out of reach of children. Avoid skin and eye contact and breathing in vapour. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.

Conditions for safe storage, including any incompatibilities
Store in a cool, dry, well ventilated place out of direct sunlight. Store away from sources of heat or ignition. Store away from foodstuffs. Store away from incompatible materials described in Section 10. Keep container standing upright. Keep containers closed when not in use. Check regularly for leaks.

Specific end uses
See Section 1.

SECTION 8: Exposure Controls / Personal Protection

Control parameters
No exposure standard assigned for this specific material by the Safe Work Australia.

Ingredient	TWA ppm	TWA (mg/m3)	STEL ppm	STEL (mg/m3)
Ethanol, 2,2',2"-nitrilotris-; Triethanolamine		5		

As published by Safe Work Australia.

Time weighted average exposure standard (TWA) means the average airborne concentration of a substance over an eight-hour working day, for a five-day working week.

Peak limitation means a maximum or peak airborne concentration of a substance determined over the shortest analytically practicable period of time which does not exceed 15 minutes.

Short term exposure limit (STEL) means the average airborne concentration of a substance calculated over a 15 minute period. The STEL should not be exceeded at any time during a normal eight hour working day.

These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

Exposure controls
Appropriate engineering controls
Ensure ventilation is adequate and that air concentrations of components are controlled below workplace exposure standards. Avoid generating and inhaling mists. If inhalation risk exists use with local exhaust ventilation or while wearing suitable mist respirator. Keep containers closed when not in use.

Individual protection measures, such as personal protective equipment
The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

Eye/face protection
Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. Refer to Australian/New Zealand Standard AS/NZS 1337:1992 for guidance on selection and use of protective eyewear.

Skin protection
Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Refer to Australian/New Zealand Standard AS/NZS 2161.1: 2000 for guidance on selection and use of protective gloves. Personal protective equipment for the body, appropriate footwear and any

additional skin protection should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection
Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Refer to Australian/New Zealand Standard AS/NZS 1715 and AS/NZS 1716 for guidance on selection and use of respiratory devices.

General safety and hygiene measures
Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Environmental exposure controls
Not available

SECTION 9: Physical and Chemical Properties

Appearance:	Clear green liquid
Odour:	Lemon fragrance.
pH:	11 – 11.5
Melting point/freezing point	Not available
Initial boiling point and boiling range	Not available
Flash point	Not available
Evaporation rate	Not available
Flammability (solid, gas)	Not available
Upper/lower flammability or explosive limits	Not available
Vapour pressure	Not available
Vapour density	Not available
Relative density	1.07
Solubility	Soluble in water
Partition coefficient: n-octanol/water	Not available
Auto-ignition temperature	Not available
Decomposition temperature	Not available
Viscosity	Not data available
Explosive properties	Not applicable
Oxidising properties	Not applicable

Other information
No additional information

SECTION 10: Stability and Reactivity

Reactivity
No hazardous reactions under normal storage and use conditions.

Chemical stability

Stable under normal storage and use conditions.

Possibility of hazardous reactions
No hazardous reactions known under normal storage and use conditions.

Conditions to avoid
Avoid contact with foodstuffs. Avoid exposure to heat, sources of ignition, and open flame. Avoid contact with other chemicals.

Incompatible materials
Incompatible with acids and oxidizing agents.

Hazardous decomposition products
None known under normal storage and use conditions.

SECTION 11: Toxicological Information

Information on toxicological effects

Acute toxicity: No data available for the mixture

The following is the toxicity data on the ingredients:

Ingredient	Oral Toxicity (LD50)	Dermal Toxicity (LD50)	Inhalation Toxicity (LD50)
2-(2-butoxyethoxy)ethanol; Diethylene glycol monobutyl ether	3,305 mg/kg (rat)	2,764 mg/kg (rabbit)	
Ethanol, 2,2',2"-nitrilotris-; Triethanolamine	2200 mg/kg (rat)		
Carbonic acid, dipotassium salt; Potassium carbonate	1870 mg/kg (rat)		
Alcohols, C12-14, ethoxylated	1564 mg/kg (rat)	>3000 mg/kg (rabbit)	>1600 mg/kg (rat)
Dodecyldimethylamine oxide; Lauramine oxide	2700 mg/kg (rat)		

Skin corrosion/irritation:	Causes skin irritation.
Serious eye damage/irritation:	Causes serious eye damage
Respiratory or skin sensitisation:	No data available
Germ cell mutagenicity:	No data available
Carcinogenicity:	No data available
Reproductive toxicity:	No data available
Summary of evaluation of the CMR properties:	No data available
Specific Target Organ Toxicity (STOT)-single exposure:	No data available
Specific Target Organ Toxicity (STOT)-repeated exposure:	No data available
Aspiration hazard:	No data available

Information on likely routes of exposure
Inhalation:
Breathing in mists may produce respiratory irritation.

Skin contact:
Contact with the skin may result in irritation. Will have a degreasing action on the skin. Repeated or prolonged skin contact may lead
to irritant contact dermatitis.

Eye contact:
A severe eye irritant. Corrosive to eyes. Contact can cause corneal burns. Contamination of eyes can result in permanent injury.

Ingestion:
Swallowing can result in nausea, vomiting, diarrhoea, abdominal pain.

Symptoms related to the physical, chemical and toxicological characteristics
May cause redness and tearing of the eyes. May cause burns to eyes. May cause redness to skin.

Delayed and immediate effects as well as chronic effects from short and long term exposure
No information available.

Numerical measures of toxicity
Acute oral toxicity estimate (ATE) > 2000 mg/kg
Acute dermal toxicity estimate (ATE) > 2000 mg/kg

Interactive effects
No information available.

SECTION 12: Ecological Information

Toxicity
Avoid contaminating waterways.

Persistence and degradability
No data available.

Bioaccumulative potential
No data available

Mobility in soil
No data available

Other adverse effects
No data available

SECTION 13: Disposal Considerations

Waste treatment methods
Waste must be disposed of in accordance with federal, state and local environmental control regulations. The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport Information

Not classified as a Dangerous Good by the criteria of the Australian Code for the Transport of Dangerous Goods by Road and Rail.

UN Number
Not applicable

UN Proper shipping name
Not applicable

Transport hazard class(es):
Not applicable

Packing group
Not applicable

Environmental hazards:
Not applicable

Special precautions for user
Not applicable

Transport in bulk according to Annex II of MARPOL and the IBC Code
Not applicable.

Other relevant information:

Hazchem Code
None allocated

SECTION 15: Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture
Classification
Globally Harmonised System of Classification and Labelling of Chemicals (GHS) as published by Safework Australia.

Poison schedule
A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of
Medicines and Poisons (SUSMP).

Inventory listing(s)
AICS (Australian Inventory of Chemical Substances): All components are listed on AICS, or are exempt

Chemical safety assessment
No chemical safety assessment has been carried out for this substance / mixture by the supplier

SECTION 16: Other Information

Date of preparation Jan 2017

Abbreviations and Acronyms

ADG - Australian Code for the Transport of Dangerous Goods by Road and Rail (7th edition)
AICS - Australian Inventory of Chemical Substances
ATE - Acute Toxicity Estimate
CAS - Chemical Abstracts Service Registry Number
GHS - Globally Harmonized System of Classification and Labelling of Chemicals
IBC - Intermediate Bulk Container
IATA – International Air Transport Association
ICAO – Technical Instructions for the Safe Transport of Dangerous Goods by Air
IMDG – International Maritime Dangerous Goods
IMO – International Maritime Organisation
LC50 - Lethal Concentration, 50% / Median Lethal Concentration
MARPOL 73/78 - International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978.
("Marpol" = marine pollution)
LD50 - Lethal Dose, 50% / Median Lethal dose
PBT - Persistent, Bioaccumulative and Toxic
STOT-RE - Specific target organ toxicity (repeated exposure)
STOT-SE - Specific target organ toxicity (single exposure)
SUSMP - Standard for the Uniform Scheduling of Medicines & Poisons
UN - United Nations
vPvB - very Persistent and very Bioaccumulative

Date SDS revision: 03 September 2019

The opinions expressed herein are those of qualified experts. We believe that the information contained herein is current as of the date of this SDS. Since the use of this information and these opinions and the conditions of use of the product are not within the control of Aeris Environmental Ltd it is the users' obligation to assure safe use of the product.

-END-

SAFETY DATA SHEET
SURFACE CLEANER CONCENTRATE

SECTION 1: IDENTIFICATION

Product name:	**SURFACE CLEANER CONCENTRATE**
Product code:	AG-SCS-5C
Uses:	For cleaning of HVAC surfaces
Company Name:	Aeris Environmental Ltd, 5/26-34 Dunning Ave, Rosebery, NSW 2018, Australia
Emergency contact number	In Australia 02 83441315, from overseas +612 83441315
	New Zealand National Poisons Centre 0800 764 766

SECTION 3: HAZARDS IDENTIFICATION

(According to GHS Classification and Labelling of chemicals)
Eye irritation Category 2A

Pictogram

Signal word:
Warning

Hazard statement:
H319 – Causes serious eye irritation

Precautionary statements
Prevention

P264	Wash hands thoroughly after handling.
P280	Wear eye protection.

Response

P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313	If eye irritation persists: Get medical advice/attention.

SECTION 2: COMPOSITION AND INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS NO.	PROPORTION (%w/w)
Benzalkonium Chloride	[68424-85-1]	1 - 7.0% w/w
Dipropylene glycol mono methyl ether	[34590-94-8]	1 - 8.0% w/w
Sodium borate decahydrate	[1303-43-4]	1- 8.0% w/w
Edetate sodium	[64-02-8]	0.1- 3.0% w/w
Sodium nitrite	[7632-00-0]	0.05 - 1.0% w/w
Water	[7732-18-5]	To 100% w/w

SECTION 4: FIRST AID

Skin contact: Remove contaminated clothing. Rinse skin with plenty of water.

Eye contact:	Immediately wash thoroughly with plenty of water for 15 minutes, and seek immediate medical advice.
Ingestion:	Immediately rinse mouth and drink plenty of water. Do not induce vomiting. Seek medical advice if necessary.
Inhalation:	Remove from contaminated area. Move to fresh air, rest patient. If required, seek medical advice.

SECTION 5: FIRE FIGHTING MEASURES

Non-flammable. Will not support combustion.

SECTION 6: SPILLAGE ACCIDENTAL RELEASE MEASURES

Slippery when spilled.
If possible contain the spill. Place inert absorbent such as vermiculite, sand or dirt onto material. Mop up the remaining material. If large quantities of this material enter the waterways, contact the Environmental Protection Authority, or your local Waste Management Authority.

SECTION 7: HANDLING AND STORAGE

Store upright in a cool, dry area, out of direct sunlight. Keep containers closed when not in use.

SECTION 8: EXPOSURE CONTROL AND PERSONAL PROTECTION

Avoid contact with eyes. Minimise contact with skin. Wear appropriate protective equipment such as safety goggles and gloves. Wash hands after handling.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	A clear, colourless aqueous liquid
Boiling point:	100°C
Specific gravity:	0.98 – 1.05@ 25°C
Solubility in water:	Readily soluble
Reactivity in water:	Not reactive
pH Level:	8.5 – 11

SECTION 10: STABILITY AND REACTIVITY

This material is stable under normal conditions of use and non-reactive.

SECTION 11: TOXICOLOGICAL INFORMATION

The product is considered NON hazardous according to Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)]
None of the ingredients are listed in the international list of known carcinogens, mutagens, and development toxins.

The following is the oral toxicity data of the active ingredient:

Benzalkonium chloride	LD_{50} 400 mg/kg

<u>Acute toxicity</u>

Oral LD50 rat:	Data not available
Dermal LD50 rabbit	Data not available
Inhalation LC50 rat	Data not available

<u>Skin irritation</u>

Acute dermal irritation (rabbit):	Data not available

Serious eye irritation
Primary eye irritation (rabbit): Data not available

Skin sensitisation
Skin sensitization (Buehler, Guinea Pig): Data not available

Germ cell mutagenicity,
None of the ingredients are listed in the international list of known mutagen.

Carcinogenicity,
None of the ingredients are listed in the international list of known carcinogens.

Reproductive toxicity
None of the ingredients are listed in the international list of known development toxins.

Specific Target Organ Toxicity (STOT) – single exposure
No data available

Specific Target Organ Toxicity (STOT) – repeated exposure
Data not available

Aspiration hazard.
Data not available

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity study of this preparation is not available; the following is the ecological toxicity of the active ingredient:
Benzalkonium chloride is very toxic to fish.

SECTION 13: DISPOSAL CONSIDERATIONS

Do not contaminate water, food or feed. Completely empty the package. Triple rinse with water. Dispose of package in a sanitary landfill, or by incineration, if allowed by State and local authorities. If burned, stay out of smoke.

SECTION 14: TRANSPORT INFORMATION

The product is not classified as dangerous goods.

SECTION 15: REGULATORY INFORMATION

All the ingredients are listed in the AICS (Australian Inventory of Chemical Substances), TSCA (Toxic Substance Control Act), and EINECS (European Inventory of Existing Commercial Substances) or exempted.

SECTION 16: OTHER INFORMATION

The opinions expressed herein are those of qualified experts. We believe that the information contained herein is current as of the date of this MSDS. Since the use of this information and these opinions and the conditions of use of the product are not within the control of Aeris Technologies Ltd it is the user's obligation to assure safe use of the product.

Date SDS Revision: 21 Mar 2018

END of SDS

SAFETY DATA SHEET
Surface Cleaner

SECTION 1: Identification

1.1. Product Identifier

Product form : Liquid Mixture
Trade name : Surface Cleaner
Product code : AG-SCS-5R
AG-SCS-1R

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

1. Relevant identified uses
General purpose HVAC & Cool room Surface Cleaner

2. Uses advised against
Not to be used by untrained personnel.

1.3 Details of the supplier of the Safety Data Sheet

Supplier:
Aeris Environmental Ltd, Level 1, Unit 5 / 26-34 Dunning Ave, Rosebery, NSW 2018
AUSTRALIA
Phone: +61 2 8344 1315 Fax: +61 2 96970944

Aeris Environmental, LLC
70 FoxFarm Road
Phillipsburg,
New Jersey 08865
USA

1.4 Emergency telephone number

In Australia 02 83441315, from outside Australia +612 83441315

USA: 1-908 878 7985

SECTION 2: Hazard identification

1. Classification of the substance or mixture

1. Classification according to GHS
Not Classified

2. Classification according to DSD-DPD:
Not classified.

3. Additional information:
For full text of R, P, S -phrases and Hazard-statements: see SECTION 16

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 [CLP]
Hazard pictograms: None
Signal word: None
Hazard statement:
Toxic to aquatic life

Precautionary statements:

P264:	Wash hands thoroughly after handling.
P280:	Wear protective gloves, eye protection
P305+P351+P338:	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313	If eye irritation persists: Get medical advice/attention.

2.3 Other hazards

Toxic to aquatic life

SECTION 3: Composition/information on ingredients

3.1 Substance:

Not applicable

3.2. Mixture

NAME	Product identifier	%	Classification according GHS/CLP	Classification according DSD/DPD
Alkyl (C12-16) dimethylbenzyl ammonium chloride	CAS no. 68424-85-1	<1%	Acute tox. 4 H302 Skin Corr. 1B H314 Eye Dam. 1 H318 Aquatic Acute 1 H400	Xn; R22 Harmful if swallowed, C; R34 Causes burns, N; R50 Dangerous for the environment; Very toxic to aquatic organisms.
Alkyl-Ethoxylated (Surfactant)	CAS no. 68439-50-9	0.1-5%	Aquatic Acute 1 H400: Very toxic to aquatic life. M=1 Aquatic Chronic 3 H412: Harmful to aquatic life with long lasting effects.	N; R50 Dangerous for the environment; Very toxic to aquatic organisms.
Ingredients determined not to be hazardous including water	NA	To 100%	-	-

SECTION 4: First aid

4.1 Description of first aid measures

First - aid measures general:

First - aid measures after inhalation:	Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
First-aid measures after skin contact:	Remove patient to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. Get medical attention.
First-aid measures after eye contact:	Remove contaminated clothing, wash skin with water and seek medical attention if symptoms persists. Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing, if eye irritation persists get medical advice/attention.
First-aid measures after ingestion:	Do not induce vomiting. If conscious, give water to rinse mouth and one or two glasses of water to drink. Contact a doctor or a Poisons Information Centre.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms/injuries:	None known
Symptoms/injuries after inhalation:	None known
Symptoms/injuries after skin contact:	None known
Symptoms/injuries after eye contact:	None known
Symptoms/injuries after ingestion:	May cause abdominal discomfort

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products may be released during prolonged heating: smoke, carbon monoxide and carbon dioxide.

5.3. Advice for firefighters:

Exercise caution when fighting any chemical fire.
Protective equipment for firefighters:
Use self- contained breathing apparatus. Do not enter fire area without proper protective equipment, including respiratory protection. Wear a self-contained breathing apparatus.

Other information:
Hazardous decomposition products may be released during prolonged heating at temperatures exceeding 100°C - smokes, carbon monoxide and dioxide.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures:
- Wear protective gloves, eye protection.
- Collect spillage.
- Avoid release to the environment.

1. For non-emergency personnel

Evacuate unnecessary personnel.

2. For emergency responders

Protective equipment:
Wear protective gloves/protective clothing/eye protection/face protection.

Emergency procedures:
Stop leak.

6.2. Environmental precautions

Avoid release to the environment. Collect major spillage. Wash off minor spill with copious amounts of water.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up:
If possible contain major spill. Soak up major spills with inert solids, such as vermiculites, clay or diatomaceous earth. Avoid high pressure rinsing. Comply with applicable local, national and international regulation. Collect spillage.

Residue and minor spill may be washed down with water to a sanitary sewer with copious amounts of water.

6.4. Reference to other sections
Section 8. Exposure controls and personal protection

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Precautions for safe handling:

P280:	Wear protective gloves, eye protection.
P264:	Wash hands thoroughly after handling.

2. Conditions for safe storage, including any incompatibilities
Store below 30°C. Store upright in original containers. Keep containers closed when not in use.

3. Specific end use(s)
Read the Standard Operating Procedure and this SDS before using the product.

SECTION 8: Exposure control and personal protection

1. Control parameters
No exposure limit is set for any of the ingredients.

2. Exposure controls

These measures are recommended on the basis of common application methods and may not be appropriate to all potential applications of the product. The user is responsible for carrying out a full risk assessment for their specific processes and systems of work.
Avoid contact with eyes. Minimise contact with skin. Wash hands after handling.
Eye protection: Wear eye protection to EN 166.
Body protection: Wear normal clothing.
Respiratory protection: Avoid breathing spray.
Other protection: Wear PVC or Neoprene gloves.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance:	A clear colourless liquid
pH as supplied (typical):	4.0 – 8.0
Boiling point:	>100°C
Melting point:	Not applicable
Flash point:	>93°C (Pensky-Martens closed cup)
Evaporation rate:	No data
Flammability:	Non-flammable
Upper/lower flammability or explosive limits:	No data
Auto-ignition temperature:	No data
Explosive properties:	Not explosive
Oxidising properties:	Not oxidising

Vapour pressure:	No data
Vapour density:	No data
Specific gravity at 20 °C:	0.94 – 1.04 (Water 1)
Solubility:	Readily Soluble
Partition coefficient n-octanol/water:	Not applicable
Viscosity:	No data

9.2. Other information
No additional information available.

SECTION 10: Stability and reactivity

1. Reactivity
Stable under normal working/storage condition.

2. Chemical stability
Stable under normal working/storage condition.

3. Possibility of hazardous reactions
Stable under normal working/storage condition.

4. Conditions to avoid
Storing at temp above 30°C, or under the sun.

5. Incompatible materials
None known

6. Hazardous decomposition products
Carbon oxides.

SECTION 11: Toxicological information

Eye contact:
Not classified
Based on available data, the classification criteria are not met

Skin contact:
Not classified
Based on available data, the classification criteria are not met

Inhalation:
Not classified
Based on available data, the classification criteria are not met

Ingestion:
Not classified
Based on available data, the classification criteria are not met

Respiratory/skin sensitisation:
Not classified
Based on available data, the classification criteria are not met

Germ cell mutagenicity:
Not classified
Based on available data, the classification criteria are not met

Carcinogenicity:
Not classified
Based on available data, the classification criteria are not met

Reproductive toxicity:

Not classified
Based on available data, the classification criteria are not met

Specific target organ toxicity (single exposure):
Not classified
Based on available data, the classification criteria are not met

Aspiration hazard:
Not classified
Based on available data, the classification criteria are not met.

Potential Adverse human health effects and symptoms:
Not classified
Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

1. Toxicity
The acute toxicity of this preparation has been assessed to be toxic to aquatic life.

2. Persistence and degradability
Ingredients contained in this preparation are readily biodegradable.

3. Bioaccumulative potential
Not classified as bioaccumulative.

4. Mobility in soil
Unknown

5. Results of PBT and vPvB assessment
This mixture does not contain any substances that are assessed as PBT (Persistent Bioaccumulative and Toxic) or vPvB (very Persistent very Bioaccumulative).

6. Other adverse effects
No other adverse effects are anticipated.

SECTION 13: Disposal considerations

Avoid release to the environment. Do not contaminate water, food or feed. Completely empty the package. Triple rinse with water. Dispose of package in a sanitary landfill, or by incineration, if allowed by State and local authorities. If burned, stay out of smoke.

SECTION 14: Transport information

1.	Transport Classification:	Not classified as Dangerous goods
2.	UN Number and shipping name:	Not classified
3.	Transport Class:	Not classified
4.	Packing Group:	Not classified
5.	Environmental hazards:	Not classified
6.	Special precautions for user	
1.	Overland Transport category (ADR):	Not classified
2.	Air transport IATA Class:	Not classified

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
This mixture is regulated by Biocidal Product Regulation EU528/2012.

SECTION 16: Other information

Abbreviations:

HVAC	Heating Ventilation and Air Conditioning
GHS	Global Harmonized System
DSD/DPD	Dangerous Substance Directive/Dangerous Product Directive
CLP	Classification Labelling and Packaging
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
IATA	International Air Transport Association

References: ECHA information on chemicals

This mixture is classified according to GHS classification.

List of hazard statements and risk phrases:

H302	Harmful if swallowed
H314	Causes severe skin burns and eye damage
H318:	Causes serious eye damage
H400:	Very toxic to aquatic life
H412	Harmful to aquatic life with long lasting effects

Date of SDS revision: 9th July 2018

END of SDS

SAFETY DATA SHEET

91 Octane Petrol (Regular)

Section 1. Identification

Product name	91 Octane Petrol (Regular)
Product code	0000003084
SDS no.	0000003084
Historic SDS no.	ACQHF
Use of the substance/mixture	Use only as a motor fuel for spark ignition engines. NOT for aviation use. Should NOT be used as a solvent nor cleaning agent.
Product type	Liquid.
Supplier	BP Oil New Zealand Limited Ground floor and 1st floor Watercare House 73 Remuera Road Newmarket Auckland New Zealand Phone 09 969 9300
Emergency telephone number	Tel: 0800 805 111
New Zealand National Poisons Centre	0800 764 766
OTHER PRODUCT INFORMATION	Technical Helpline 09 623 9451

Section 2. Hazards identification

HSNO Classification

3.1 - FLAMMABLE LIQUIDS - Category A
6.3 - SKIN IRRITATION - Category B
6.7 - CARCINOGENICITY - Category B
6.1 - ACUTE TOXICITY (aspiration) (oral) - Category E
9.1 - AQUATIC ECOTOXICITY - Category B

This material is classified as hazardous according to criteria in the Hazardous Substances (Minimum Degrees of Hazard) Regulations 2001 and has been classified according to the Hazardous Substances (Classifications) Regulations 2001.

This material is classified as DANGEROUS GOODS according to criteria in New Zealand Standard 5433:2012 Transport of Dangerous Goods on Land.

Routes of entry

Dermal contact. Eye contact. Inhalation. Ingestion.

GHS label elements

Signal word

Danger

Hazard statements

Extremely flammable liquid and vapour.
Causes mild skin irritation.
Suspected of causing cancer.
May be fatal if swallowed and enters airways.
Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves. Wear eye or face protection. Keep away from ignition sources such as heat/sparks/open flame. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Avoid release to the environment. Keep out of reach of children. If medical advice is needed: Have product container or label at hand.

Section 2. Hazards identification

Response Collect spillage. Immediately call a POISON CENTER or doctor/physician. IF SWALLOWED: Do NOT induce vomiting. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water [or shower]. IF exposed or concerned: Get medical advice/attention.

Storage Store locked up. Store in a well-ventilated place. Keep cool.

Disposal Dispose of contents and container in accordance with all local, regional, national and international regulations.

Symbol

Other hazards which do not result in classification Contains Benzene. Prolonged or repeated exposure to benzene can cause anaemia and other blood diseases, including leukaemia.

Section 3. Composition/information on ingredients

Substance/mixture Mixture

Methyl tert-butyl ether: <0.2%

Ingredient name	%	CAS number
Gasoline	> 90	86290-81-5
Benzene	< 1	71-43-2
diisopropyl ether	< 1	108-20-3
Ethanol	< 1	64-17-5

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Inhalation If inhaled, remove to fresh air. Get medical attention.

Ingestion Do not induce vomiting. Get medical attention immediately. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Aspiration hazard if swallowed. Can enter lungs and cause damage.

Skin contact In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if symptoms occur.

Eye contact In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Check for and remove any contact lenses. Eyelids should be held away from the eyeball to ensure thorough rinsing. Get medical attention if symptoms occur.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician Treatment should in general be symptomatic and directed to relieving any effects. Product can be aspirated on swallowing or following regurgitation of stomach contents, and can cause severe and potentially fatal chemical pneumonitis, which will require urgent treatment. Because of the risk of aspiration, induction of vomiting and gastric lavage should be avoided. Gastric lavage should be undertaken only after endotracheal intubation. Monitor for cardiac dysrhythmias.

Protection of first-aiders No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Section 5. Firefighting measures

Extinguishing media

Suitable

In case of fire, use water fog, foam, dry chemical or carbon dioxide extinguisher or spray.

Not suitable

The use of a water jet may cause the fire to spread by splashing the burning product. Do not use water jet.

Specific hazards arising from the chemical

Extremely flammable liquid and vapour. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapour/gas is heavier than air and will spread along the ground. Vapours may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain. Liquid will float and may reignite on surface of water.

Hazardous combustion products

Combustion products may include the following:
carbon oxides (CO, CO_2) (carbon monoxide, carbon dioxide)

Hazchem code

3YE

Special precautions for fire-fighters

No action shall be taken involving any personal risk or without suitable training. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Immediately contact emergency personnel. No action shall be taken involving any personal risk or without suitable training. Eliminate all ignition sources. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Floors may be slippery; use care to avoid falling. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Put on appropriate personal protective equipment (see Section 8).

For emergency responders

Entry into a confined space or poorly ventilated area contaminated with vapour, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work. Wear self-contained breathing apparatus. Wear a suitable chemical protective suit. Chemical resistant boots. See also the information in "For non-emergency personnel".

Environmental precautions

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage. In case of small spillages in closed waters (i.e. ports), contain product with floating barriers or other equipment. Collect spilled product by absorbing with specific floating absorbents. If possible, large spillages in open waters should be contained with floating barriers or other mechanical means. If this is not possible, control the spreading of the spillage, and collect the product by skimming or other suitable mechanical means. The use of dispersants should be advised by an expert, and, if required, approved by local authorities. Collect recovered product and other contaminated materials in suitable tanks or containers for recycle, recovery or safe disposal.

Methods and material for containment and cleaning up

Small spill

Eliminate all ignition sources. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. The method and equipment used must be in conformance with appropriate regulations and industry practice on explosive atmospheres. Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

Large spill

Eliminate all ignition sources. Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Dike spill area and do not allow product to reach sewage system and surface or ground water. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Use spark-proof tools and explosion-proof equipment. Contaminated absorbent material may pose the same hazard as the spilt product. The method and equipment used must be in conformance with appropriate regulations and industry practice on explosive atmospheres. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Precautions for safe handling

Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not swallow. Never siphon by mouth. Avoid exposure - obtain special instructions before use. Avoid breathing vapour or mist. Use only with adequate ventilation. Avoid release to the environment. Do not enter storage areas and confined spaces unless adequately ventilated. Wear appropriate respirator when ventilation is inadequate. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. Wash thoroughly after handling. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Remove contaminated clothing and protective equipment before entering eating areas. Workers should wash hands and face before eating, drinking and smoking. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not reuse container. Aspiration hazard if swallowed. Can enter lungs and cause damage. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Separate from oxidising materials. Keep container tightly closed and sealed until ready for use. Store and use only in equipment/containers designed for use with this product. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Light hydrocarbon vapours can build up in the headspace of tanks. These can cause flammability/explosion hazards even at temperatures below the normal flash point (note: flash point must not be regarded as a reliable indicator of the potential flammability of vapour in tank headspaces). Tank headspaces should always be regarded as potentially flammable and care should be taken to avoid static electrical discharge and all ignition sources during filling, ullaging and sampling from storage tanks. Do not enter storage tanks. If entry to vessels is necessary, follow permit to work procedures. Entry to any tanks or other confined space requires a full risk assessment and appropriate control measures to be put in place in conformance with appropriate regulations and industry practice on confined space entry. When the product is pumped (e.g. during filling, discharge or ullaging) and when sampling, there is a risk of static discharge. Ensure equipment used is properly earthed or bonded to the tank structure. Electrical equipment should not be used unless it is intrinsically safe (i.e. will not produce sparks). Explosive air/vapour mixtures may form at ambient temperature. If product comes into contact with hot surfaces, or leaks occur from pressurised fuel pipes, the vapour or mists generated will create a flammability or explosion hazard. Product contaminated rags, paper or material used to absorb spillages, represent a fire hazard, and should not be allowed to accumulate. Dispose of safely immediately after use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Gasoline	**ACGIH TLV (United States).** TWA: 300 ppm 8 hours. Issued/Revised: 5/1996 TWA: 890 mg/m³ 8 hours. Issued/Revised: 5/1996 STEL: 500 ppm 15 minutes. Issued/Revised: 5/1996 STEL: 1480 mg/m³ 15 minutes. Issued/Revised: 5/1996
Benzene	**NZ HSWA 2015 (New Zealand). Absorbed through skin.** WES-STEL: 2.5 ppm 15 minutes. Issued/Revised: 9/2010 WES-TWA: 1 ppm 8 hours. Issued/Revised: 9/2010
diisopropyl ether	**NZ HSWA 2015 (New Zealand).** WES-STEL: 1300 mg/m³ 15 minutes. Issued/Revised: 1/1994 WES-STEL: 310 ppm 15 minutes. Issued/Revised: 1/1994 WES-TWA: 1040 mg/m³ 8 hours. Issued/Revised: 1/1994 WES-TWA: 250 ppm 8 hours. Issued/Revised: 1/1994
Ethanol	**NZ HSWA 2015 (New Zealand).** WES-TWA: 1880 mg/m³ 8 hours. Issued/Revised: 1/1994 WES-TWA: 1000 ppm 8 hours. Issued/Revised: 1/1994

Recommended monitoring procedures

If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Appropriate engineering controls

Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits. All activities involving chemicals should be assessed for their risks to health, to ensure exposures are adequately controlled. Personal protective equipment should only be considered after other forms of control measures (e.g. engineering controls) have been suitably evaluated. Personal protective equipment should conform to appropriate standards, be suitable for use, be kept in good condition and properly maintained.

Your supplier of personal protective equipment should be consulted for advice on selection and appropriate standards. For further information contact your national organisation for standards. The final choice of protective equipment will depend upon a risk assessment. It is important to ensure that all items of personal protective equipment are compatible.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Section 8. Exposure controls/personal protection

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye protection

Chemical splash goggles.

Hand protection

Wear chemical resistant gloves.

Do not re-use gloves. Protective gloves must give suitable protection against mechanical risks (i.e. abrasion, blade cut and puncture). Protective gloves will deteriorate over time due to physical and chemical damage. Inspect and replace gloves on a regular basis. The frequency of replacement will depend upon the circumstances of use.

Recommended: Nitrile gloves. The presence of aromatic hydrocarbons in the product will significantly shorten the length of time that nitrile gloves will provide protection. Do not re-use nitrile gloves if exposed to aromatic hydrocarbons. Gloves made from fluoroelastomer resistant to hydrocarbons and a wide range of chemicals.
Wear a chemically resistant multi-layer laminate inner glove inside an outer nitrile glove. The purpose of the outer glove is to protect the inner glove from cuts and mechanical damage.

Skin protection

Use of protective clothing is good industrial practice. Cotton or polyester/cotton overalls will only provide protection against light superficial contamination that will not soak through to the skin. Overalls should be laundered on a regular basis. When the risk of skin exposure is high (e.g. when cleaning up spillages or if there is a risk of splashing) then chemical resistant aprons and/or impervious chemical suits and boots will be required. Wear suitable protective clothing. Footwear highly resistant to chemicals. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For greatest effectiveness against static electricity, overalls, boots and gloves should all be anti-static. When there is a risk of ignition wear inherently fire resistant protective clothes and gloves. Work clothing / overalls should be laundered on a regular basis. Laundering of contaminated work clothing should only be done by professional cleaners who have been told about the hazards of the contamination. Always keep contaminated work clothing away from uncontaminated work clothing and uncontaminated personal clothes. When the risk of skin exposure is high (from experience this could apply to the following tasks: cleaning work, maintenance and service, filling and transfer, taking samples and cleaning up spillages) then a chemical protective suit and boots will be required. Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection

In case of insufficient ventilation, wear suitable respiratory equipment. If there is a requirement for the use of a respiratory protective device, but the use of breathing apparatus (independent of ambient atmosphere) is not required, then a suitable filtering device must be worn. The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. The correct choice of respiratory protection depends upon the chemicals being handled, the conditions of work and use, and the condition of the respiratory equipment. Safety procedures should be developed for each intended application. Respiratory protection equipment should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions. Respiratory protection should conform to AS/NZS 1715 and AS/NZS 1716.

Section 9. Physical and chemical properties

Appearance

Physical state	Liquid.
Colour	Red. Orange. or Bronze
Odour	Petrol [Strong]
Odour threshold	0.025 ppm (Based on Petrol)
pH	Not applicable. Based on Solubility in Water (insoluble in water.)
Melting point	<-60°C (<-76°F) (Based on Petrol)
Boiling point	30 to 210°C (86 to 410°F)
Drop Point	Not available.
Flash point	Closed cup: <-40°C (<-40°F)
Auto-ignition temperature	>350°C (>662°F)
Flammability (solid, gas)	Not applicable. Based on physical state.
Lower and upper explosive (flammable) limits	Lower: 1.4% Upper: 7.6%
Vapour pressure	27.1 to 45.1 kPa (203.04 to 338.4 mm Hg) [20°C (68°F)]
Vapour density	>1 [Air = 1]
Density	740 kg/m³ (0.74 g/cm³)
Solubility	insoluble in water.
Partition coefficient: n-octanol/water	2 to 7 (Based on Gasoline)
Decomposition temperature	Not observed to decompose by final boiling point: >210°C (>410°F)
Viscosity	Kinematic: 0.4 to 0.55 mm²/s (0.4 to 0.55 cSt) at 40°C
Explosive properties	Based on Low boiling point naphtha - Not considered explosive based on structural and oxygen balance considerations. Vapours may form explosive mixtures with air.
Oxidising properties	Based on Low boiling point naphtha - Not considered oxidizing based on structural considerations.

Section 10. Stability and reactivity

Chemical stability	The product is stable.
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous polymerisation will not occur.
Conditions to avoid	Avoid all possible sources of ignition (spark or flame). Avoid excessive heat.
Incompatible materials	Reactive or incompatible with the following materials: oxidising materials
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on likely routes of exposure

Inhalation	Vapours may cause drowsiness and dizziness.
Ingestion	Irritating to mouth, throat and stomach. Aspiration hazard if swallowed -- harmful or fatal if liquid is aspirated into lungs.
Skin contact	Causes mild skin irritation.
Eye contact	No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation	Adverse symptoms may include the following: nausea or vomiting headache drowsiness/fatigue dizziness/vertigo

Section 11. Toxicological information

Ingestion Adverse symptoms may include the following:
nausea or vomiting

Skin contact Adverse symptoms may include the following:
irritation
redness

Eye contact Adverse symptoms may include the following:
pain or irritation
watering
redness

Acute toxicity

Product/ingredient name	Test	Species	Result	Exposure	Remarks
Gasoline	LC50 Inhalation Vapour	Rat	>7630 mg/m³ Nominal	4 hours	Based on Gasoline
	LC50 Inhalation Vapour	Rat	>5610 mg/m³ analytical	4 hours	Based on Gasoline
	LD50 Dermal	Rabbit	>2000 mg/kg	-	Based on Gasoline
	LD50 Oral	Rat	>5000 mg/kg	-	Based on Gasoline
diisopropyl ether	LC50 Inhalation Vapour	Rat	40.5 mg/m³	1 hours	-
	LD50 Dermal	Rabbit	2000 mg/kg	-	-
	LD50 Oral	Rat	8470 mg/kg	-	-
Ethanol	LC50 Inhalation Vapour	Rat	124.7 mg/l	4 hours	Based on Ethanol
	LC50 Inhalation Vapour	Rat	116.9 mg/l	4 hours	Based on Ethanol
	LC50 Inhalation Vapour	Rat	133.8 mg/l	4 hours	Based on Ethanol
	LD50 Oral	Rat	10470 mg/kg	-	Based on Ethanol

Conclusion/Summary Not available.

Irritation/Corrosion

Product/ingredient name	Species	Result	Score	Exposure	Observation	Conc.	Remarks
Gasoline	Rabbit	Skin - Irritant	-	-	-	-	Based on Gasoline
	Rabbit	Eyes - Non-irritating to the eyes.	-	-	-	-	Based on Gasoline
Ethanol	Rabbit	Skin - Non-irritant to skin.	-	-	-	-	Based on Ethanol
	Rabbit	Eyes - Cornea opacity	-	-	-	-	Based on Ethanol
	Rabbit	Eyes - Iris lesion	-	-	-	-	Based on Ethanol

	Rabbit	Eyes - Irritant	-	-	-	-	Based on Ethanol

Sensitisation

Product/ingredient name	Route of exposure	Species	Result	Remarks
Gasoline	skin	Guinea pig	Not sensitising	Based on Gasoline

Potential chronic health effects

General No known significant effects or critical hazards.

Inhalation May be harmful by inhalation after often repeated exposure. Vapour, mist or fume may irritate the nose, mouth and respiratory tract. Solvent "sniffing" (abuse) or intentional overexposure to vapours can produce serious central nervous system effects, including unconsciousness, and possibly death.

Ingestion Not applicable.

Skin contact Not applicable.

Eye contact Not applicable.

Carcinogenicity Suspected of causing cancer. Risk of cancer depends on duration and level of exposure. May cause cancer Exposure to benzene may result in effects to the hematopoietic system causing blood disorders including anaemia and leukaemia. Benzene is classified by EEC as a category 1 carcinogen - substances known to be carcinogenic to man.
IARC assessment: benzene - carcinogenic to humans (Group 1)

Mutagenicity No known significant effects or critical hazards.

Teratogenicity No known significant effects or critical hazards.

Developmental effects No known significant effects or critical hazards.

Fertility effects No known significant effects or critical hazards.

Carcinogenicity

Product/ingredient name	Test		Species	Result		Exposure
Gasoline	Rat	Inhalation	113 weeks	Negative - Inhalation - Unspecified	-	Based on Gasoline
	Mouse	Dermal	102 weeks	Negative - Dermal - Unspecified	-	Based on Gasoline
Ethanol	Mouse	Oral	105 weeks	Positive - Oral - Unspecified	-	Based on Ethanol
	Rat	Oral	104 weeks	Negative - Oral - Unspecified	-	Based on Ethanol

Conclusion/Summary Benzene: May cause cancer

Mutagenicity

Product/ingredient name	Test	Experiment	Result	Remarks
Gasoline	Equivalent to OECD 476	Experiment: In vitro Subject: Mammal - species unspecified	Negative	Based on Gasoline
	Equivalent to OECD 471	Experiment: In vitro Subject: Non-mammalian species	Negative	Based on Gasoline
	EPA OPPTS	Experiment: In vivo	Negative	Based on Gasoline

	870.5395	Subject: Unspecified Cell: Germ		vapour condensate
	Equivalent to OECD 475	Experiment: In vivo Subject: Unspecified Cell: Germ	Negative	Based on Gasoline
Ethanol	Equivalent to OECD 476	Experiment: In vitro Subject: Mammal - species unspecified	Negative	Based on Ethanol
	Equivalent to OECD 473	Experiment: In vitro Subject: Non-mammalian species	Negative	Based on Ethanol
	Equivalent to OECD 478	Experiment: In vivo Subject: Unspecified Cell: Germ	Negative	Based on Ethanol

Conclusion/Summary Benzene: May cause genetic defects.

Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility	Developmental toxin	Species	Result	Exposure
Gasoline	-	Negative	-	Rat	Inhalation	2 generation
	-	-	Negative	Rat	Inhalation	14 days
Ethanol	-	Positive	-	Rat	Oral	2 generation
	-	-	Negative	Rat	Inhalation	18 days

Conclusion/Summary Development: Not classified. Based on available data, the classification criteria are not met.
Fertility: Not classified. Based on available data, the classification criteria are not met.
Effects on or via lactation: Not classified. Based on available data, the classification criteria are not met.

Aspiration hazard

Name
91 Octane Petrol (Regular) Gasoline

Other adverse symptoms Excess exposure to vapors may produce headaches, dizziness, nausea, drowsiness, irritation of eyes, nose and throat and central nervous system depression. Aspiration of this material into the lungs can cause chemical pneumonia and can be fatal. Aspiration into the lungs can occur while vomiting after ingestion of this product. Inhalation of unleaded gasoline vapors did not produce birth defects in laboratory animals. Ingestion of this material can cause gastrointestinal irritation and diarrhea.

In a long-term inhalation study of whole unleaded gasoline vapors, exposure-related kidney damage and kidney tumors were observed in male rats. Similar kidney effects were not seen in female rats or in mice. At the highest exposure level (2056 ppm), female mice had an increased incidence of liver tumors. Results from subsequent scientific studies have shown that a broad variety of chemicals cause these kidney effects only in the male rat. Further studies have discovered the means by which the physiology of the male rat uniquely predispose it to these effects.

Section 11. Toxicological information

Consequently, the Risk Assessment Forum of the Environmental Protection Agency has recognized that these responses are not predictive of a human health hazard. The liver tumors that were increased in the high-dose female mice are likewise of questionable significance because of their high spontaneous occurrence even without chemical exposure and because the rate of their occurrence is accelerated by a broad spectrum of chemicals not commonly considered to be carcinogens (e.g., phenobarbital).
Thus, the significance of the mouse liver tumor response in terms of human health is questionable.

Gasoline is a complex mixture of hydrocarbons and contains benzene (typically no more than 2 volume%), toluene, and xylene. Chronic exposure to high levels of benzene has been shown to cause cancer (leukemia) in humans and other adverse blood effects (anemia). Benzene is considered a human carcinogen by IARC, NTP and OSHA. Over exposure to xylene and toluene can cause irritation to the upper respiratory tract, headache and narcosis. Some liver damage and lung inflammation were seen in chronic studies on xylene in guinea pigs but not in rats.

Solvent "sniffing" (abuse) or intentional overexposure to vapors can produce serious central nervous system effects, including unconsciousness, and possibly death.

Gasoline as a mixture is classified as a 2B (possible human) carcinogen by IARC.

Gasoline engine exhaust is classified as possibly carcinogenic to humans by IARC (2B). This classification is based primarily on animal and in vitro studies of gasoline engine exhaust condensates/extracts. Studies of the gaseous exhaust stream in animals did not provided sufficient evidence for classification as a carcinogen.

Section 12. Ecological information

Ecotoxicity

Water polluting material. May be harmful to the environment if released in large quantities. This material is toxic to aquatic life with long lasting effects.

Aquatic and terrestrial toxicity

Product/ingredient name	Species	Result/Test	Exposure	Effects	Remarks
Gasoline	Micro-organism	Acute EC50 15.41 mg/l Nominal Fresh water	40 hours	growth inhibition	-
	Algae	Acute EL50 3.1 mg/l Nominal Fresh water	72 hours	(growth rate)	Based on Gasoline
	Algae	Acute EL50 3.7 mg/l Nominal Fresh water	96 hours	(growth rate)	Based on Gasoline
	Daphnia	Acute EL50 4.5 mg/l Nominal Fresh water	48 hours	Mobility	Based on straight-run light gasoline
	Fish	Acute LL50 10 mg/l Nominal Fresh water	96 hours	Mortality	Based on Naphtha (petroleum), isomerisation
	Fish	Acute LL50 8.2 mg/l Nominal Fresh water	96 hours	Mortality	Based on Naphtha (petroleum), light alkylate
	Algae	Acute NOELR	72 hours	(growth rate)	Based on

		0.5 mg/l Nominal Fresh water			Gasoline
	Daphnia	Acute NOELR 0.5 mg/l Nominal Fresh water	48 hours	Mobility	Based on Straight run gas oil
	Daphnia	Chronic EL50 10 mg/l Nominal Fresh water	21 days	Reproduction	Based on Naphtha (petroleum), light alkylate
	Daphnia	Chronic EL50 >40 mg/l Nominal Fresh water	21 days	Mobility	Based on Naphtha (petroleum), light alkylate
	Fish	Chronic EL50 10 mg/l Nominal Fresh water	21 days	Reproduction	Based on: Naphtha (petroleum), light alkylate; read across between species
	Fish	Chronic LL50 5.2 mg/l Nominal Fresh water	14 days	Mortality	Based on Naphtha (petroleum), light catalytic reformed
	Daphnia	Chronic NOELR 2.6 mg/l Nominal Fresh water	21 days	Reproduction	Based on Naphtha (petroleum), light alkylate
	Daphnia	Chronic NOELR 16 mg/l Nominal Fresh water	21 days	Mobility	Based on Naphtha (petroleum), light alkylate
	Fish	Chronic NOELR 2.6 mg/l Nominal Fresh water	14 days	Mortality	Based on Naphtha (petroleum), light catalytic reformed
	Fish	Chronic NOELR 2.6 mg/l Nominal Fresh water	21 days	Reproduction	Based on: Naphtha (petroleum), light alkylate; read across between species
	soil, plants	Chronic PNEC >0.4 mg/kg	-	-	-
Ethanol	Algae	EC50 675 mg/l	4 days	-	Based on Ethanol
	Aquatic plants	EC50 4432 mg/l	7 days	-	Based on Ethanol
	Daphnia	Acute LC50 5012 mg/l	48 hours	-	Based on Ethanol
	Fish	Acute LC50 153 g/l	96 hours	-	Based on Ethanol

Section 12. Ecological information

Fish	Acute LC50 14.2 g/l	96 hours	-	Based on Ethanol
Daphnia	Chronic LC50 2 mg/l	10 days	-	Based on Ethanol
Daphnia	Chronic LC50 9.6 mg/l	9 days	-	Based on Ethanol

Conclusion/Summary

Persistence and degradability

Expected to be biodegradable. Toxic to aquatic life with long lasting effects.

Product/ingredient name	Test	Result	Remarks
Ethanol	EPA	95 % - Readily - 15 days	Based on Ethanol
	EPA	84 % - Readily - 20 days	Based on Ethanol
	EP	74 % - Readily - 5 days	Based on Ethanol
	A	74 % - Readily - 10 days	Based on Ethanol
	EP		
	A		

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Gasoline	-	-	Inherent
Ethanol	-	-	Readily

Bioaccumulative potential

This product is not expected to bioaccumulate through food chains in the environment.

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Gasoline	2 to 7	-	high
Benzene	2.13	11	low
diisopropyl ether	2.4	-	low
Ethanol	-0.35	-	low

Mobility in soil

Mobility Spillages may penetrate the soil causing ground water contamination.

Soil/water partition coefficient (K_{OC}) Not available.

Other adverse effects No known significant effects or critical hazards.

Other ecological information Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

Section 13. Disposal considerations

Disposal methods The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non- recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapour from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
New Zealand Class	UN1203	MOTOR SPIRIT or GASOLINE or PETROL. Marine pollutant	3	II		The marine pollutant mark is not required when transported by road or rail. **Hazchem code** 3YE
ADG Class	UN1203	MOTOR SPIRIT or GASOLINE or PETROL	3	II		**Hazchem code** 3YE **Initial emergency response guide** 14
IATA Class	UN1203	MOTOR SPIRIT or GASOLINE or PETROL	3	II		The environmentally hazardous substance mark may appear if required by other transportation regulations.
IMDG Class	UN1203	MOTOR SPIRIT or GASOLINE or PETROL. Marine pollutant	3	II		The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg. **Emergency schedules** F-E, S-E

PG* : Packing group

Section 15. Regulatory information

New Zealand Regulatory Information

HSNO Approval Number	HRC000003
HSNO Group Standard	Petrol (unleaded)
HSNO Classification	3.1 - FLAMMABLE LIQUIDS - Category A 6.3 - SKIN IRRITATION - Category B 6.7 - CARCINOGENICITY - Category B 6.1 - ACUTE TOXICITY (aspiration) (oral) - Category E 9.1 - AQUATIC ECOTOXICITY - Category B

Regulation according to other foreign laws

REACH Status	For the REACH status of this product please consult your company contact, as identified in Section 1.
United States inventory (TSCA 8b)	Not determined.
Australia inventory (AICS)	Contact local supplier or distributor.
Canada inventory status	Not determined.
China inventory (IECSC)	Not determined.
Japan inventory (ENCS)	Not determined.
Korea inventory (KECI)	At least one component is not listed.
Philippines inventory (PICCS)	Not determined.
Taiwan Chemical Substances Inventory (TCSI)	Not determined.

Section 16. Other information

History

Date of issue/Date of revision	15 May 2020
Date of previous issue	15 May 2020.
Version	2
Prepared by	Not available.
Key to abbreviations	Varies = may contain one or more of the following 64741-88-4, 64741-89-5, 64741-95-3, 64741-96-4, 64742-01-4, 64742-44-5, 64742-45-6, 64742-52-5, 64742-53-6, 64742-54-7, 64742-55-8, 64742-56-9, 64742-57-0, 64742-58-1, 64742-62-7, 64742-63-8, 64742-65-0, 64742-70-7, 72623-85-9, 72623-86-0, 72623-87-1

Notice to reader

Indicates information that has changed from previously issued version.

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from BP Group.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken. You can contact the BP Group to ensure that this document is the most current available. Alteration of this document is strictly prohibited.

SAFETY DATA SHEET

95 Octane Petrol (Premium)

Section 1. Identification

Product name	95 Octane Petrol (Premium)
Product code	0000003076
SDS no.	0000003076
Use of the substance/mixture	Use only as a motor fuel for spark ignition engines. NOT for aviation use. Should NOT be used as a solvent nor cleaning agent.
Product type	Liquid.
Supplier	BP Oil New Zealand Limited Ground floor and 1st floor Watercare House 73 Remuera Road Newmarket Auckland New Zealand Phone 09 969 9300
Emergency telephone number	Tel: 0800 805 111
New Zealand National Poisons Centre	0800 764 766
OTHER PRODUCT INFORMATION	Technical Helpline 09 623 9451

Section 2. Hazards identification

HSNO Classification

3.1 - FLAMMABLE LIQUIDS - Category A
6.3 - SKIN IRRITATION - Category B
6.7 - CARCINOGENICITY - Category B
6.1 - ACUTE TOXICITY (aspiration) (oral) - Category E
9.1 - AQUATIC ECOTOXICITY - Category B

This material is classified as hazardous according to criteria in the Hazardous Substances (Minimum Degrees of Hazard) Regulations 2001 and has been classified according to the Hazardous Substances (Classifications) Regulations 2001.

This material is classified as DANGEROUS GOODS according to criteria in New Zealand Standard 5433:2012 Transport of Dangerous Goods on Land.

Routes of entry Dermal contact. Eye contact. Inhalation. Ingestion.

GHS label elements

Signal word Danger

Hazard statements

Extremely flammable liquid and vapour.
Causes mild skin irritation.
Suspected of causing cancer.
May be fatal if swallowed and enters airways.
Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves. Wear eye or face protection. Keep away from ignition sources such as heat/sparks/open flame. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Avoid release to the environment. Keep out of reach of children. If medical advice is needed: Have product container or label at hand.

Section 2. Hazards identification

Response Collect spillage. Immediately call a POISON CENTER or doctor/physician. IF SWALLOWED: Do NOT induce vomiting. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. IF exposed or concerned: Get medical advice/attention.

Storage Store locked up. Store in a well-ventilated place. Keep cool.

Disposal Dispose of contents and container in accordance with all local, regional, national and international regulations.

Symbol

Other hazards which do not result in classification Not available.

Section 3. Composition/information on ingredients

Substance/mixture Mixture

Ingredient name	%	CAS number
Gasoline	< 90	86290-81-5
Benzene	< 1	71-43-2
diisopropyl ether	< 1	108-20-3
Ethanol	< 1	64-17-5
tert-butyl methyl ether(MTBE)	< 0.2	1634-04-4

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Inhalation If inhaled, remove to fresh air. Get medical attention.

Ingestion Do not induce vomiting. Get medical attention immediately. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Aspiration hazard if swallowed. Can enter lungs and cause damage.

Skin contact In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if symptoms occur.

Eye contact In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Check for and remove any contact lenses. Eyelids should be held away from the eyeball to ensure thorough rinsing. Get medical attention if symptoms occur.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician Treatment should in general be symptomatic and directed to relieving any effects. Product can be aspirated on swallowing or following regurgitation of stomach contents, and can cause severe and potentially fatal chemical pneumonitis, which will require urgent treatment. Because of the risk of aspiration, induction of vomiting and gastric lavage should be avoided. Gastric lavage should be undertaken only after endotracheal intubation. Monitor for cardiac dysrhythmias.

Protection of first-aiders No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Section 5. Firefighting measures

Extinguishing media

Suitable

In case of fire, use water fog, foam, dry chemical or carbon dioxide extinguisher or spray.

Not suitable

Do not use water jet.

Specific hazards arising from the chemical

Extremely flammable liquid and vapour. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain. Liquid will float and may reignite on surface of water.

Hazardous combustion products

Combustion products may include the following:
carbon oxides (CO, CO_2) (carbon monoxide, carbon dioxide)

Hazchem code

3YE

Special precautions for fire-fighters

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Immediately contact emergency personnel. No action shall be taken involving any personal risk or without suitable training. Eliminate all ignition sources. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Floors may be slippery; use care to avoid falling. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Put on appropriate personal protective equipment (see Section 8).

For emergency responders

Entry into a confined space or poorly ventilated area contaminated with vapour, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work. Wear self-contained breathing apparatus. Wear a suitable chemical protective suit. Chemical resistant boots. See also the information in "For non-emergency personnel".

Environmental precautions

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage. In case of small spillages in closed waters (i.e. ports), contain product with floating barriers or other equipment. Collect spilled product by absorbing with specific floating absorbents. If possible, large spillages in open waters should be contained with floating barriers or other mechanical means. If this is not possible, control the spreading of the spillage, and collect the product by skimming or other suitable mechanical means. The use of dispersants should be advised by an expert, and, if required, approved by local authorities. Collect recovered product and other contaminated materials in suitable tanks or containers for recycle, recovery or safe disposal.

Methods and material for containment and cleaning up

Small spill

Eliminate all ignition sources. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. The method and equipment used must be in conformance with appropriate regulations and industry practice on explosive atmospheres. Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

Large spill

Eliminate all ignition sources. Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Dike spill area and do not allow product to reach sewage system and surface or ground water. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Use spark-proof tools and explosion-proof equipment. Contaminated absorbent material may pose the same hazard as the spilt product. The method and equipment used must be in conformance with appropriate regulations and industry practice on explosive atmospheres. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Precautions for safe handling

Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not swallow. Never siphon by mouth. Avoid exposure - obtain special instructions before use. Avoid breathing vapour or mist. Use only with adequate ventilation. Avoid release to the environment. Do not enter storage areas and confined spaces unless adequately ventilated. Wear appropriate respirator when ventilation is inadequate. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. Wash thoroughly after handling. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Remove contaminated clothing and protective equipment before entering eating areas. Workers should wash hands and face before eating, drinking and smoking. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not reuse container. Aspiration hazard if swallowed. Can enter lungs and cause damage. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Separate from oxidising materials. Keep container tightly closed and sealed until ready for use. Store and use only in equipment/containers designed for use with this product. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Light hydrocarbon vapours can build up in the headspace of tanks. These can cause flammability/explosion hazards even at temperatures below the normal flash point (note: flash point must not be regarded as a reliable indicator of the potential flammability of vapour in tank headspaces). Tank headspaces should always be regarded as potentially flammable and care should be taken to avoid static electrical discharge and all ignition sources during filling, ullaging and sampling from storage tanks. Do not enter storage tanks. If entry to vessels is necessary, follow permit to work procedures. Entry to any tanks or other confined space requires a full risk assessment and appropriate control measures to be put in place in conformance with appropriate regulations and industry practice on confined space entry. When the product is pumped (e.g. during filling, discharge or ullaging) and when sampling, there is a risk of static discharge. Ensure equipment used is properly earthed or bonded to the tank structure. Electrical equipment should not be used unless it is intrinsically safe (i.e. will not produce sparks). Explosive air/vapour mixtures may form at ambient temperature. If product comes into contact with hot surfaces, or leaks occur from pressurised fuel pipes, the vapour or mists generated will create a flammability or explosion hazard. Product contaminated rags, paper or material used to absorb spillages, represent a fire hazard, and should not be allowed to accumulate. Dispose of safely immediately after use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Gasoline	**ACGIH TLV (United States).** TWA: 300 ppm 8 hours. Issued/Revised: 5/1996 TWA: 890 mg/m³ 8 hours. Issued/Revised: 5/1996 STEL: 500 ppm 15 minutes. Issued/Revised: 5/1996 STEL: 1480 mg/m³ 15 minutes. Issued/Revised: 5/1996
Benzene	**NZ OSH (New Zealand). Absorbed through skin.** WES-STEL: 2.5 ppm 15 minutes. Issued/Revised: 9/2010 WES-TWA: 1 ppm 8 hours. Issued/Revised: 9/2010
diisopropyl ether	**NZ OSH (New Zealand).** WES-STEL: 1300 mg/m³ 15 minutes. Issued/Revised: 1/1994 WES-STEL: 310 ppm 15 minutes. Issued/Revised: 1/1994 WES-TWA: 1040 mg/m³ 8 hours. Issued/Revised: 1/1994 WES-TWA: 250 ppm 8 hours. Issued/Revised: 1/1994
Ethanol	**NZ OSH (New Zealand).** WES-TWA: 1880 mg/m³ 8 hours. Issued/Revised: 1/1994 WES-TWA: 1000 ppm 8 hours. Issued/Revised: 1/1994

Recommended monitoring procedures

If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Appropriate engineering controls

Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits. All activities involving chemicals should be assessed for their risks to health, to ensure exposures are adequately controlled. Personal protective equipment should only be considered after other forms of control measures (e.g. engineering controls) have been suitably evaluated. Personal protective equipment should conform to appropriate standards, be suitable for use, be kept in good condition and properly maintained.

Environmental exposure controls

Your supplier of personal protective equipment should be consulted for advice on selection and appropriate standards. For further information contact your national organisation for standards. The final choice of protective equipment will depend upon a risk assessment. It is important to ensure that all items of personal protective equipment are compatible.

Individual protection measures

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Section 8. Exposure controls/personal protection

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye protection

Chemical splash goggles.

Hand protection

Wear chemical resistant gloves.

Do not re-use gloves. Protective gloves must give suitable protection against mechanical risks (i.e. abrasion, blade cut and puncture). Protective gloves will deteriorate over time due to physical and chemical damage. Inspect and replace gloves on a regular basis. The frequency of replacement will depend upon the circumstances of use.

Recommended: Nitrile gloves. The presence of aromatic hydrocarbons in the product will significantly shorten the length of time that nitrile gloves will provide protection. Do not re-use nitrile gloves if exposed to aromatic hydrocarbons. Gloves made from fluoroelastomer resistant to hydrocarbons and a wide range of chemicals.
Wear a chemically resistant multi-layer laminate inner glove inside an outer nitrile glove. The purpose of the outer glove is to protect the inner glove from cuts and mechanical damage.

Skin protection

Use of protective clothing is good industrial practice. Cotton or polyester/cotton overalls will only provide protection against light superficial contamination that will not soak through to the skin. Overalls should be laundered on a regular basis. When the risk of skin exposure is high (e.g. when cleaning up spillages or if there is a risk of splashing) then chemical resistant aprons and/or impervious chemical suits and boots will be required. Wear suitable protective clothing. Footwear highly resistant to chemicals. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For greatest effectiveness against static electricity, overalls, boots and gloves should all be anti-static. When there is a risk of ignition wear inherently fire resistant protective clothes and gloves. Work clothing / overalls should be laundered on a regular basis. Laundering of contaminated work clothing should only be done by professional cleaners who have been told about the hazards of the contamination. Always keep contaminated work clothing away from uncontaminated work clothing and uncontaminated personal clothes. When the risk of skin exposure is high (from experience this could apply to the following tasks: cleaning work, maintenance and service, filling and transfer, taking samples and cleaning up spillages) then a chemical protective suit and boots will be required. Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection

In case of insufficient ventilation, wear suitable respiratory equipment. If there is a requirement for the use of a respiratory protective device, but the use of breathing apparatus (independent of ambient atmosphere) is not required, then a suitable filtering device must be worn. The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. The correct choice of respiratory protection depends upon the chemicals being handled, the conditions of work and use, and the condition of the respiratory equipment. Safety procedures should be developed for each intended application. Respiratory protection equipment should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions. Respiratory protection should conform to AS/NZS 1715 and AS/NZS 1716.

Section 9. Physical and chemical properties

Appearance

Physical state	Liquid.
Colour	Pale colour. Light Yellow. to Orange.
Odour	Gasoline [Strong]
pH	Not available.
Melting point	Not available.
Boiling point	30 to 210°C (86 to 410°F)
Drop Point	Not available.
Flash point	Closed cup: <-40°C (<-40°F)
Auto-ignition temperature	>350°C (>662°F)
Lower and upper explosive (flammable) limits	Lower: 1.4% Upper: 7.6%
Vapour pressure	27 to 45 kPa (202.52 to 337.53 mm Hg) [20°C (68°F)]
Vapour density	Not available.
Density	750 kg/m³ (0.75 g/cm³)
Solubility	insoluble in water.
Viscosity	Kinematic: 0.4 to 0.55 mm²/s (0.4 to 0.55 cSt) at 40°C

Section 10. Stability and reactivity

Chemical stability	The product is stable.
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous polymerisation will not occur.
Conditions to avoid	Avoid all possible sources of ignition (spark or flame). Avoid excessive heat.
Incompatible materials	Reactive or incompatible with the following materials: oxidising materials
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on likely routes of exposure

Inhalation	Vapours may cause drowsiness and dizziness.
Ingestion	Irritating to mouth, throat and stomach. Aspiration hazard if swallowed -- harmful or fatal if liquid is aspirated into lungs.
Skin contact	Causes mild skin irritation.
Eye contact	No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation	Adverse symptoms may include the following: nausea or vomiting headache drowsiness/fatigue dizziness/vertigo
Ingestion	Adverse symptoms may include the following: nausea or vomiting
Skin contact	Adverse symptoms may include the following: irritation redness
Eye contact	Adverse symptoms may include the following: pain or irritation watering redness

Acute toxicity

Section 11. Toxicological information

Product/ingredient name	Test	Species	Result	Exposure	Remarks
Gasoline	LC50 Inhalation Vapour	Rat	>7630 mg/m³ Nominal	4 hours	Based on Gasoline
	LC50 Inhalation Vapour	Rat	>5610 mg/m³ analytical	4 hours	Based on Gasoline
	LD50 Dermal	Rabbit	>2000 mg/kg	-	Based on Gasoline
	LD50 Oral	Rat	>5000 mg/kg	-	Based on Gasoline
Ethanol	LC50 Inhalation Vapour	Rat	124.7 mg/l	4 hours	Based on Ethanol
	LC50 Inhalation Vapour	Rat	116.9 mg/l	4 hours	Based on Ethanol
	LC50 Inhalation Vapour	Rat	133.8 mg/l	4 hours	Based on Ethanol
	LD50 Oral	Rat	10470 mg/kg	-	Based on Ethanol

Conclusion/Summary Not available.

Irritation/Corrosion

Product/ingredient name	Species	Result	Score	Exposure	Observation	Conc.	Remarks
Gasoline	Rabbit	Skin - Irritant	-	-	-	-	Based on Gasoline
	Rabbit	Eyes - Non-irritating to the eyes.	-	-	-	-	Based on Gasoline
Ethanol	Rabbit	Skin - Non-irritant to skin.	-	-	-	-	Based on Ethanol
	Rabbit	Eyes - Cornea opacity	-	-	-	-	Based on Ethanol
	Rabbit	Eyes - Iris lesion	-	-	-	-	Based on Ethanol
	Rabbit	Eyes - Irritant	-	-	-	-	Based on Ethanol

Sensitisation

Product/ingredient name	Route of exposure	Species	Result	Remarks
Gasoline	skin	Guinea pig	Not sensitising	Based on Gasoline

Potential chronic health effects

General No known significant effects or critical hazards.

Inhalation May be harmful by inhalation after often repeated exposure. Vapour, mist or fume may irritate the nose, mouth and respiratory tract. Solvent "sniffing" (abuse) or intentional overexposure to vapours can produce serious central nervous system effects, including unconsciousness, and possibly death.

Ingestion Not applicable.

Section 11. Toxicological information

Skin contact Not applicable.

Eye contact Not applicable.

Carcinogenicity Suspected of causing cancer. Risk of cancer depends on duration and level of exposure. May cause cancer Exposure to benzene may result in effects to the hematopoietic system causing blood disorders including anaemia and leukaemia. Benzene is classified by EEC as a category 1 carcinogen - substances known to be carcinogenic to man.
IARC assessment: benzene - carcinogenic to humans (Group 1)

Mutagenicity No known significant effects or critical hazards.

Teratogenicity No known significant effects or critical hazards.

Developmental effects No known significant effects or critical hazards.

Fertility effects No known significant effects or critical hazards.

Carcinogenicity

Product/ingredient name	Test		Species	Result		Exposure
Gasoline	Rat	Inhalation	113 weeks	Negative - Inhalation - Unspecified	-	Based on Gasoline
	Mouse	Dermal	102 weeks	Negative - Dermal - Unspecified	-	Based on Gasoline
Ethanol	Mouse	Oral	105 weeks	Positive - Oral - Unspecified	-	Based on Ethanol
	Rat	Oral	104 weeks	Negative - Oral - Unspecified	-	Based on Ethanol

Conclusion/Summary May cause cancer

Mutagenicity

Product/ingredient name	Test	Experiment	Result	Remarks
Gasoline	Equivalent to OECD 476	Experiment: In vitro Subject: Mammal - species unspecified	Negative	Based on Gasoline
	Equivalent to OECD 471	Experiment: In vitro Subject: Non-mammalian species	Negative	Based on Gasoline
	EPA OPPTS 870. 5395	Experiment: In vivo Subject: Unspecified Cell: Germ	Negative	Based on Gasoline vapour condensate
	Equivalent to OECD 475	Experiment: In vivo Subject: Unspecified Cell: Germ	Negative	Based on Gasoline
Ethanol	Equivalent to OECD 476	Experiment: In vitro Subject: Mammal - species unspecified	Negative	Based on Ethanol
	Equivalent to OECD 473	Experiment: In vitro Subject: Non-	Negative	Based on Ethanol

		mammalian species		
	Equivalent to OECD 478	Experiment: In vivo Subject: Unspecified Cell: Germ	Negative	Based on Ethanol

Reproductive toxicity

Product/ingredient name	Maternality toxicity	Fertility	Developmental toxin	Species	Result	Exposure
Gasoline	-	Negative	-	Rat	Inhalation	2 generation
	-	-	Negative	Rat	Inhalation	14 days
Ethanol	-	Positive	-	Rat	Oral	2 generation
	-	-	Negative	Rat	Inhalation	18 days

Conclusion/Summary

Development: Not classified. Based on available data, the classification criteria are not met.
Fertility: Not classified. Based on available data, the classification criteria are not met.
Effects on or via lactation: Not classified. Based on available data, the classification criteria are not met.

Aspiration hazard

Name
Gasoline

Other adverse symptoms

Excess exposure to vapors may produce headaches, dizziness, nausea, drowsiness, irritation of eyes, nose and throat and central nervous system depression. Aspiration of this material into the lungs can cause chemical pneumonia and can be fatal. Aspiration into the lungs can occur while vomiting after ingestion of this product. Inhalation of unleaded gasoline vapors did not produce birth defects in laboratory animals. Ingestion of this material can cause gastrointestinal irritation and diarrhea.

In a long-term inhalation study of whole unleaded gasoline vapors, exposure-related kidney damage and kidney tumors were observed in male rats. Similar kidney effects were not seen in female rats or in mice. At the highest exposure level (2056 ppm), female mice had an increased incidence of liver tumors. Results from subsequent scientific studies have shown that a broad variety of chemicals cause these kidney effects only in the male rat. Further studies have discovered the means by which the physiology of the male rat uniquely predispose it to these effects.
Consequently, the Risk Assessment Forum of the Environmental Protection Agency has recognized that these responses are not predictive of a human health hazard. The liver tumors that were increased in the high-dose female mice are likewise of questionable significance because of their high spontaneous occurrence even without chemical exposure and because the rate of their occurrence is accelerated by a broad spectrum of chemicals not commonly considered to be carcinogens (e.g., phenobarbital).
Thus, the significance of the mouse liver tumor response in terms of human health is questionable.

Gasoline is a complex mixture of hydrocarbons and contains benzene (typically no more than 2 volume%), toluene, and xylene. Chronic exposure to high levels of benzene has been shown to cause cancer (leukemia) in humans and other adverse blood effects (anemia). Benzene is considered a human carcinogen by IARC, NTP and OSHA. Over exposure to xylene and toluene can cause irritation to the upper respiratory tract, headache and narcosis. Some liver damage and lung inflammation were seen in chronic studies on xylene in guinea pigs but not in rats.

Section 11. Toxicological information

Solvent "sniffing" (abuse) or intentional overexposure to vapors can produce serious central nervous system effects, including unconsciousness, and possibly death.

Gasoline as a mixture is classified as a 2B (possible human) carcinogen by IARC.

Gasoline engine exhaust is classified as possibly carcinogenic to humans by IARC (2B). This classification is based primarily on animal and in vitro studies of gasoline engine exhaust condensates/extracts. Studies of the gaseous exhaust stream in animals did not provided sufficient evidence for classification as a carcinogen.

Section 12. Ecological information

Ecotoxicity

Inherently biodegradable. Water polluting material. May be harmful to the environment if released in large quantities. This material is toxic to aquatic life with long lasting effects.

Aquatic and terrestrial toxicity

Product/ingredient name	Species	Result/Test	Exposure	Effects	Remarks
Gasoline	Micro-organism	Acute EC50 15.41 mg/l Nominal Fresh water	40 hours	growth inhibition	-
	Algae	Acute EL50 3.1 mg/l Nominal Fresh water	72 hours	(growth rate)	Based on Gasoline
	Algae	Acute EL50 3.7 mg/l Nominal Fresh water	96 hours	(growth rate)	Based on Gasoline
	Daphnia	Acute EL50 4.5 mg/l Nominal Fresh water	48 hours	Mobility	Based on straight-run light gasoline
	Fish	Acute LL50 10 mg/l Nominal Fresh water	96 hours	Mortality	Based on Naphtha (petroleum), isomerisation
	Fish	Acute LL50 8.2 mg/l Nominal Fresh water	96 hours	Mortality	Based on Naphtha (petroleum), light alkylate
	Algae	Acute NOELR 0.5 mg/l Nominal Fresh water	72 hours	(growth rate)	Based on Gasoline
	Daphnia	Acute NOELR 0.5 mg/l Nominal Fresh water	48 hours	Mobility	Based on Straight run gas oil
	Daphnia	Chronic EL50 10 mg/l Nominal Fresh water	21 days	Reproduction	Based on Naphtha (petroleum), light alkylate
	Daphnia	Chronic EL50 >40 mg/l Nominal Fresh water	21 days	Mobility	Based on Naphtha (petroleum), light alkylate
	Fish	Chronic EL50 10 mg/l Nominal	21 days	Reproduction	Based on: Naphtha

		Fresh water			(petroleum), light alkylate; read across between species
	Fish	Chronic LL50 5. 2 mg/l Nominal Fresh water	14 days	Mortality	Based on Naphtha (petroleum), light catalytic reformed
	Daphnia	Chronic NOELR 2.6 mg/l Nominal Fresh water	21 days	Reproduction	Based on Naphtha (petroleum), light alkylate
	Daphnia	Chronic NOELR 16 mg/l Nominal Fresh water	21 days	Mobility	Based on Naphtha (petroleum), light alkylate
	Fish	Chronic NOELR 2.6 mg/l Nominal Fresh water	14 days	Mortality	Based on Naphtha (petroleum), light catalytic reformed
	Fish	Chronic NOELR 2.6 mg/l Nominal Fresh water	21 days	Reproduction	Based on: Naphtha (petroleum), light alkylate; read across between species
	soil, plants	Chronic PNEC >0.4 mg/kg	-	-	-
Ethanol	Algae	EC50 675 mg/l	4 days	-	Based on Ethanol
	Aquatic plants	EC50 4432 mg/l	7 days	-	Based on Ethanol
	Daphnia	Acute LC50 5012 mg/l	48 hours	-	Based on Ethanol
	Fish	Acute LC50 153 g/l	96 hours	-	Based on Ethanol
	Fish	Acute LC50 14.2 g/l	96 hours	-	Based on Ethanol
	Daphnia	Chronic LC50 2 mg/l	10 days	-	Based on Ethanol
	Daphnia	Chronic LC50 9. 6 mg/l	9 days	-	Based on Ethanol

Persistence and degradability

The biodegradability of this material has not been determined.

Section 12. Ecological information

Product/ingredient name	Test	Result	Remarks
Ethanol	EPA	95 % - Readily - 15 days	Based on Ethanol
	EPA	84 % - Readily - 20 days	Based on Ethanol
	EPA	74 % - Readily - 5 days	Based on Ethanol
	EPA	74 % - Readily - 10 days	Based on Ethanol

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Gasoline	-	-	Inherent
Ethanol	-	-	Readily

Bioaccumulative potential

This product is not expected to bioaccumulate through food chains in the environment.

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Gasoline	2 to 7	-	high
diisopropyl ether	2.4	-	low
Ethanol	-0.35	-	low

Mobility in soil

Mobility Spillages may penetrate the soil causing ground water contamination.

Soil/water partition coefficient (K_{OC}) Not available.

Other ecological information Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

Section 13. Disposal considerations

Disposal methods The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non- recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapour from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

Regulatory information		Proper shipping name	Classes	PG*	Label	Additional information
New Zealand Class	UN1203	MOTOR SPIRIT or GASOLINE or PETROL	3	II		The marine pollutant mark is not required when transported by road or rail. **Hazchem code** 3YE

Section 14. Transport information

ADG Class	UN1203	MOTOR SPIRIT or GASOLINE or PETROL	3	II		**Hazchem code** 3YE **Initial emergency response guide** 14
IATA Class	UN1203	MOTOR SPIRIT or GASOLINE or PETROL	3	II		The environmentally hazardous substance mark may appear if required by other transportation regulations.
IMDG Class	UN1203	MOTOR SPIRIT or GASOLINE or PETROL. Marine pollutant	3	II		The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg. **Emergency schedules (EmS)** F-E, S-E

PG* : Packing group

Section 15. Regulatory information

New Zealand Regulatory Information

HSNO Approval Number	HRC000003
HSNO Group Standard	Not applicable.
HSNO Classification	3.1 - FLAMMABLE LIQUIDS - Category A 6.3 - SKIN IRRITATION - Category B 6.7 - CARCINOGENICITY - Category B 6.1 - ACUTE TOXICITY (aspiration) (oral) - Category E 9.1 - AQUATIC ECOTOXICITY - Category B

Regulation according to other foreign laws

REACH Status	For the REACH status of this product please consult your company contact, as identified in Section 1.
United States inventory (TSCA 8b)	Not determined.
Australia inventory (AICS)	Contact local supplier or distributor.
Canada inventory status	Not determined.
China inventory (IECSC)	Not determined.
Japan inventory (ENCS)	Not determined.
Korea inventory (KECI)	At least one component is not listed.
Philippines inventory (PICCS)	Not determined.
Taiwan Chemical Substances Inventory (TCSI)	Not determined.

Section 16. Other information

History

Date of issue/Date of revision	14 March 2016
Date of previous issue	25 June 2015.
Version	2

Section 16. Other information

Key to abbreviations

Varies = may contain one or more of the following 101316-69-2, 101316-70-5, 101316-71-6, 101316-72-7, 64741-88-4, 64741-89-5, 64741-95-3, 64741-96-4, 64741-97-5, 64742-01-4, 64742-44-5, 64742-45-6, 64742-52-5, 64742-53-6, 64742-54-7, 64742-55-8, 64742-56-9, 64742-57-0, 64742-58-1, 64742-62-7, 64742-63-8, 64742-64-9, 64742-65-0, 64742-70-7, 72623-85-9, 72623-86-0, 72623-87-1, 74869-22-0, 90669-74-2

Notice to reader

Indicates information that has changed from previously issued version.

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from BP Group.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken. You can contact the BP Group to ensure that this document is the most current available. Alteration of this document is strictly prohibited.

SAFETY DATA SHEET

98 Octane Petrol (Ultimate)

Section 1. Identification

Product name	98 Octane Petrol (Ultimate)
Product code	0000003087
SDS no.	0000003087
Historic SDS no.	YSUY3
Use of the substance/mixture	Use only as a motor fuel for spark ignition engines. NOT for aviation use. Should NOT be used as a solvent nor cleaning agent.
Product type	Liquid.
Supplier	BP Oil New Zealand Limited Ground floor and 1st floor Watercare House 73 Remuera Road Newmarket Auckland New Zealand Phone 09 969 9300
Emergency telephone number	Tel: 0800 805 111
New Zealand National Poisons Centre	0800 764 766
OTHER PRODUCT INFORMATION	Technical Helpline 09 623 9451

Section 2. Hazards identification

HSNO Classification

3.1 - FLAMMABLE LIQUIDS - Category A
6.3 - SKIN IRRITATION - Category B
6.7 - CARCINOGENICITY - Category B
6.1 - ACUTE TOXICITY (aspiration) (oral) - Category E
9.1 - AQUATIC ECOTOXICITY - Category B

This material is classified as hazardous according to criteria in the Hazardous Substances (Minimum Degrees of Hazard) Regulations 2001 and has been classified according to the Hazardous Substances (Classifications) Regulations 2001.

This material is classified as DANGEROUS GOODS according to criteria in New Zealand Standard 5433:2012 Transport of Dangerous Goods on Land.

Routes of entry Dermal contact. Eye contact. Inhalation. Ingestion.

GHS label elements

Signal word Danger

Hazard statements

Extremely flammable liquid and vapour.
Causes mild skin irritation.
Suspected of causing cancer.
May be fatal if swallowed and enters airways.
Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves. Wear eye or face protection. Keep away from ignition sources such as heat/sparks/open flame. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Avoid release to the environment. Keep out of reach of children. If medical advice is needed: Have product container or label at hand.

Section 2. Hazards identification

Response Collect spillage. Immediately call a POISON CENTER or doctor/physician. IF SWALLOWED: Do NOT induce vomiting. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water [or shower]. IF exposed or concerned: Get medical advice/attention.

Storage Store locked up. Store in a well-ventilated place. Keep cool.

Disposal Dispose of contents and container in accordance with all local, regional, national and international regulations.

Symbol

Other hazards which do not result in classification Contains Benzene. Prolonged or repeated exposure to benzene can cause anaemia and other blood diseases, including leukaemia.

Section 3. Composition/information on ingredients

Substance/mixture Mixture

Methyl tert-butyl ether: <0.2%

Ingredient name	%	CAS number
Gasoline	> 90	86290-81-5
Benzene	< 1	71-43-2
diisopropyl ether	< 1	108-20-3
2-methylpropan-2-ol	< 1	75-65-0

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Inhalation If inhaled, remove to fresh air. Get medical attention.

Ingestion Do not induce vomiting. Get medical attention immediately. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Aspiration hazard if swallowed. Can enter lungs and cause damage.

Skin contact In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if symptoms occur.

Eye contact In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Check for and remove any contact lenses. Eyelids should be held away from the eyeball to ensure thorough rinsing. Get medical attention if symptoms occur.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician Treatment should in general be symptomatic and directed to relieving any effects. Product can be aspirated on swallowing or following regurgitation of stomach contents, and can cause severe and potentially fatal chemical pneumonitis, which will require urgent treatment. Because of the risk of aspiration, induction of vomiting and gastric lavage should be avoided. Gastric lavage should be undertaken only after endotracheal intubation. Monitor for cardiac dysrhythmias.

Protection of first-aiders No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Section 5. Firefighting measures

Extinguishing media

Suitable

In case of fire, use water fog, foam, dry chemical or carbon dioxide extinguisher or spray.

Not suitable

The use of a water jet may cause the fire to spread by splashing the burning product. Do not use water jet.

Specific hazards arising from the chemical

Extremely flammable liquid and vapour. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapour/gas is heavier than air and will spread along the ground. Vapours may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain. Liquid will float and may reignite on surface of water.

Hazardous combustion products

Combustion products may include the following:
carbon oxides (CO, CO_2) (carbon monoxide, carbon dioxide)

Hazchem code

3YE

Special precautions for fire-fighters

No action shall be taken involving any personal risk or without suitable training. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Immediately contact emergency personnel. No action shall be taken involving any personal risk or without suitable training. Eliminate all ignition sources. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Floors may be slippery; use care to avoid falling. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Put on appropriate personal protective equipment (see Section 8).

For emergency responders

Entry into a confined space or poorly ventilated area contaminated with vapour, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work. Wear self-contained breathing apparatus. Wear a suitable chemical protective suit. Chemical resistant boots. See also the information in "For non-emergency personnel".

Environmental precautions

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage. In case of small spillages in closed waters (i.e. ports), contain product with floating barriers or other equipment. Collect spilled product by absorbing with specific floating absorbents. If possible, large spillages in open waters should be contained with floating barriers or other mechanical means. If this is not possible, control the spreading of the spillage, and collect the product by skimming or other suitable mechanical means. The use of dispersants should be advised by an expert, and, if required, approved by local authorities. Collect recovered product and other contaminated materials in suitable tanks or containers for recycle, recovery or safe disposal.

Methods and material for containment and cleaning up

Small spill

Eliminate all ignition sources. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. The method and equipment used must be in conformance with appropriate regulations and industry practice on explosive atmospheres. Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

Large spill

Eliminate all ignition sources. Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Dike spill area and do not allow product to reach sewage system and surface or ground water. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Use spark-proof tools and explosion-proof equipment. Contaminated absorbent material may pose the same hazard as the spilt product. The method and equipment used must be in conformance with appropriate regulations and industry practice on explosive atmospheres. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Precautions for safe handling

Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not swallow. Never siphon by mouth. Avoid exposure - obtain special instructions before use. Avoid breathing vapour or mist. Use only with adequate ventilation. Avoid release to the environment. Do not enter storage areas and confined spaces unless adequately ventilated. Wear appropriate respirator when ventilation is inadequate. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. Wash thoroughly after handling. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Remove contaminated clothing and protective equipment before entering eating areas. Workers should wash hands and face before eating, drinking and smoking. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not reuse container. Aspiration hazard if swallowed. Can enter lungs and cause damage. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Separate from oxidising materials. Keep container tightly closed and sealed until ready for use. Store and use only in equipment/containers designed for use with this product. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Light hydrocarbon vapours can build up in the headspace of tanks. These can cause flammability/explosion hazards even at temperatures below the normal flash point (note: flash point must not be regarded as a reliable indicator of the potential flammability of vapour in tank headspaces). Tank headspaces should always be regarded as potentially flammable and care should be taken to avoid static electrical discharge and all ignition sources during filling, ullaging and sampling from storage tanks. Do not enter storage tanks. If entry to vessels is necessary, follow permit to work procedures. Entry to any tanks or other confined space requires a full risk assessment and appropriate control measures to be put in place in conformance with appropriate regulations and industry practice on confined space entry. When the product is pumped (e.g. during filling, discharge or ullaging) and when sampling, there is a risk of static discharge. Ensure equipment used is properly earthed or bonded to the tank structure. Electrical equipment should not be used unless it is intrinsically safe (i.e. will not produce sparks). Explosive air/vapour mixtures may form at ambient temperature. If product comes into contact with hot surfaces, or leaks occur from pressurised fuel pipes, the vapour or mists generated will create a flammability or explosion hazard. Product contaminated rags, paper or material used to absorb spillages, represent a fire hazard, and should not be allowed to accumulate. Dispose of safely immediately after use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Gasoline	**ACGIH TLV (United States).** TWA: 300 ppm 8 hours. Issued/Revised: 5/1996 TWA: 890 mg/m³ 8 hours. Issued/Revised: 5/1996 STEL: 500 ppm 15 minutes. Issued/Revised: 5/1996 STEL: 1480 mg/m³ 15 minutes. Issued/Revised: 5/1996
Benzene	**NZ HSWA 2015 (New Zealand). Absorbed through skin.** WES-STEL: 2.5 ppm 15 minutes. Issued/Revised: 9/2010 WES-TWA: 1 ppm 8 hours. Issued/Revised: 9/2010
diisopropyl ether	**NZ HSWA 2015 (New Zealand).** WES-STEL: 1300 mg/m³ 15 minutes. Issued/Revised: 1/1994 WES-STEL: 310 ppm 15 minutes. Issued/Revised: 1/1994 WES-TWA: 1040 mg/m³ 8 hours. Issued/Revised: 1/1994 WES-TWA: 250 ppm 8 hours. Issued/Revised: 1/1994
2-methylpropan-2-ol	**NZ HSWA 2015 (New Zealand).** WES-STEL: 455 mg/m³ 15 minutes. Issued/Revised: 9/2010 WES-STEL: 150 ppm 15 minutes. Issued/Revised: 9/2010 WES-TWA: 303 mg/m³ 8 hours. Issued/Revised: 9/2010 WES-TWA: 100 ppm 8 hours. Issued/Revised: 9/2010

Recommended monitoring procedures

If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Appropriate engineering controls

Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits. All activities involving chemicals should be assessed for their risks to health, to ensure exposures are adequately controlled. Personal protective equipment should only be considered after other forms of control measures (e.g. engineering controls) have been suitably evaluated. Personal protective equipment should conform to appropriate standards, be suitable for use, be kept in good condition and properly maintained.

Your supplier of personal protective equipment should be consulted for advice on selection and appropriate standards. For further information contact your national organisation for standards. The final choice of protective equipment will depend upon a risk assessment. It is important to ensure that all items of personal protective equipment are compatible.

Section 8. Exposure controls/personal protection

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye protection

Chemical splash goggles.

Hand protection

Wear chemical resistant gloves.

Do not re-use gloves. Protective gloves must give suitable protection against mechanical risks (i.e. abrasion, blade cut and puncture). Protective gloves will deteriorate over time due to physical and chemical damage. Inspect and replace gloves on a regular basis. The frequency of replacement will depend upon the circumstances of use.

Recommended: Nitrile gloves. The presence of aromatic hydrocarbons in the product will significantly shorten the length of time that nitrile gloves will provide protection. Do not re-use nitrile gloves if exposed to aromatic hydrocarbons. Gloves made from fluoroelastomer resistant to hydrocarbons and a wide range of chemicals.
Wear a chemically resistant multi-layer laminate inner glove inside an outer nitrile glove. The purpose of the outer glove is to protect the inner glove from cuts and mechanical damage.

Skin protection

Use of protective clothing is good industrial practice. Cotton or polyester/cotton overalls will only provide protection against light superficial contamination that will not soak through to the skin. Overalls should be laundered on a regular basis. When the risk of skin exposure is high (e.g. when cleaning up spillages or if there is a risk of splashing) then chemical resistant aprons and/or impervious chemical suits and boots will be required. Wear suitable protective clothing. Footwear highly resistant to chemicals. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For greatest effectiveness against static electricity, overalls, boots and gloves should all be anti-static. When there is a risk of ignition wear inherently fire resistant protective clothes and gloves. Work clothing / overalls should be laundered on a regular basis. Laundering of contaminated work clothing should only be done by professional cleaners who have been told about the hazards of the contamination. Always keep contaminated work clothing away from uncontaminated work clothing and uncontaminated personal clothes. When the risk of skin exposure is high (from experience this could apply to the following tasks: cleaning work, maintenance and service, filling and transfer, taking samples and cleaning up spillages) then a chemical protective suit and boots will be required. Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection

In case of insufficient ventilation, wear suitable respiratory equipment. If there is a requirement for the use of a respiratory protective device, but the use of breathing apparatus (independent of ambient atmosphere) is not required, then a suitable filtering device must be worn. The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. The correct choice of respiratory protection depends upon the chemicals being handled, the conditions of work and use, and the condition of the respiratory equipment. Safety procedures should be developed for each intended application. Respiratory protection equipment should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions. Respiratory protection should conform to AS/NZS 1715 and AS/NZS 1716.

Section 9. Physical and chemical properties

Appearance

Physical state	Liquid.
Colour	Pale colour. Yellow. [Light]
Odour	Petrol [Strong]
Odour threshold	0.025 ppm (Based on Petrol)
pH	Not applicable. Based on Solubility in Water (insoluble in water.)
Melting point	<-60°C (<-76°F) (Based on Petrol)
Boiling point	30 to 210°C (86 to 410°F)
Drop Point	Not available.
Flash point	Closed cup: <-40°C (<-40°F)
Auto-ignition temperature	>350°C (>662°F)
Flammability (solid, gas)	Not applicable. Based on physical state.
Lower and upper explosive (flammable) limits	Lower: 1.4% Upper: 7.6%
Vapour pressure	27.1 to 45.1 kPa (203.04 to 338.4 mm Hg) [20°C (68°F)]
Vapour density	>1 [Air = 1]
Density	750 kg/m^3 (0.75 g/cm^3)
Solubility	insoluble in water.
Partition coefficient: n-octanol/water	2 to 7 (Based on Gasoline)
Decomposition temperature	Not observed to decompose by final boiling point: >210°C (>410°F)
Viscosity	Kinematic: 0.4 to 0.55 mm^2/s (0.4 to 0.55 cSt) at 40°C
Explosive properties	Based on Low boiling point naphtha - Not considered explosive based on structural and oxygen balance considerations. Vapours may form explosive mixtures with air.
Oxidising properties	Based on Low boiling point naphtha - Not considered oxidizing based on structural considerations.

Section 10. Stability and reactivity

Chemical stability	The product is stable.
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous polymerisation will not occur.
Conditions to avoid	Avoid all possible sources of ignition (spark or flame). Avoid excessive heat.
Incompatible materials	Reactive or incompatible with the following materials: oxidising materials
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on likely routes of exposure

Inhalation	Vapours may cause drowsiness and dizziness.
Ingestion	Irritating to mouth, throat and stomach. Aspiration hazard if swallowed -- harmful or fatal if liquid is aspirated into lungs.
Skin contact	Causes mild skin irritation.
Eye contact	No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation	Adverse symptoms may include the following: nausea or vomiting headache drowsiness/fatigue dizziness/vertigo

Section 11. Toxicological information

Ingestion Adverse symptoms may include the following:
nausea or vomiting

Skin contact Adverse symptoms may include the following:
irritation
redness

Eye contact Adverse symptoms may include the following:
pain or irritation
watering
redness

Acute toxicity

Product/ingredient name	Test	Species	Result	Exposure	Remarks
Gasoline	LC50 Inhalation Vapour	Rat	>7630 mg/m³ Nominal	4 hours	Based on Gasoline
	LC50 Inhalation Vapour	Rat	>5610 mg/m³ analytical	4 hours	Based on Gasoline
	LD50 Dermal	Rabbit	>2000 mg/kg	-	Based on Gasoline
	LD50 Oral	Rat	>5000 mg/kg	-	Based on Gasoline
diisopropyl ether	LC50 Inhalation Vapour	Rat	40.5 mg/m³	1 hours	-
	LD50 Dermal	Rabbit	2000 mg/kg	-	-
	LD50 Oral	Rat	8470 mg/kg	-	-
2-methylpropan-2-ol	LC50 Inhalation Vapour	Rat	>10000 ppm	4 hours	-
	LD50 Oral	Rabbit	3559 mg/kg	-	-
	LD50 Oral	Rat	2743 mg/kg	-	-

Conclusion/Summary Not available.

Irritation/Corrosion

Product/ingredient name	Species	Result	Score	Exposure	Observation	Conc.	Remarks
Gasoline	Rabbit	Skin - Irritant	-	-	-	-	Based on Gasoline
	Rabbit	Eyes - Non-irritating to the eyes.	-	-	-	-	Based on Gasoline

Sensitisation

Product/ingredient name	Route of exposure	Species	Result	Remarks
Gasoline	skin	Guinea pig	Not sensitising	Based on Gasoline

Potential chronic health effects

General No known significant effects or critical hazards.

Inhalation May be harmful by inhalation after often repeated exposure. Vapour, mist or fume may irritate the nose, mouth and respiratory tract. Solvent "sniffing" (abuse) or intentional overexposure to vapours can produce serious central nervous system effects, including unconsciousness, and possibly death.

Ingestion Not applicable.

Skin contact Not applicable.

Eye contact Not applicable.

Carcinogenicity Suspected of causing cancer. Risk of cancer depends on duration and level of exposure. May cause cancer Exposure to benzene may result in effects to the hematopoietic system causing blood disorders including anaemia and leukaemia. Benzene is classified by EEC as a category 1 carcinogen - substances known to be carcinogenic to man.
IARC assessment: benzene - carcinogenic to humans (Group 1)

Mutagenicity No known significant effects or critical hazards.

Teratogenicity No known significant effects or critical hazards.

Developmental effects No known significant effects or critical hazards.

Fertility effects No known significant effects or critical hazards.

Carcinogenicity

Product/ingredient name	Test		Species	Result		Exposure
Gasoline	Rat	Inhalation	113 weeks	Negative - Inhalation - Unspecified	-	Based on Gasoline
	Mouse	Dermal	102 weeks	Negative - Dermal - Unspecified	-	Based on Gasoline

Conclusion/Summary Benzene: May cause cancer

Mutagenicity

Product/ingredient name	Test	Experiment	Result	Remarks
Gasoline	Equivalent to OECD 476	Experiment: In vitro Subject: Mammal - species unspecified	Negative	Based on Gasoline
	Equivalent to OECD 471	Experiment: In vitro Subject: Non-mammalian species	Negative	Based on Gasoline
	EPA OPPTS 870.5395	Experiment: In vivo Subject: Unspecified Cell: Germ	Negative	Based on Gasoline vapour condensate
	Equivalent to OECD 475	Experiment: In vivo Subject: Unspecified Cell: Germ	Negative	Based on Gasoline

Conclusion/Summary Benzene: May cause genetic defects.

Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility	Developmental toxin	Species	Result	Exposure
Gasoline	-	Negative	-	Rat	Inhalation	2 generation
	-	-	Negative	Rat	Inhalation	14 days

Conclusion/Summary Development: Not classified. Based on available data, the classification criteria are not met.
Fertility: Not classified. Based on available data, the classification criteria are not met.
Effects on or via lactation: Not classified. Based on available data, the classification criteria are not met.

Section 11. Toxicological information

Aspiration hazard

Name
98 Octane Petrol (Ultimate) Gasoline

Other adverse symptoms

Excess exposure to vapors may produce headaches, dizziness, nausea, drowsiness, irritation of eyes, nose and throat and central nervous system depression. Aspiration of this material into the lungs can cause chemical pneumonia and can be fatal. Aspiration into the lungs can occur while vomiting after ingestion of this product. Inhalation of unleaded gasoline vapors did not produce birth defects in laboratory animals. Ingestion of this material can cause gastrointestinal irritation and diarrhea.

In a long-term inhalation study of whole unleaded gasoline vapors, exposure-related kidney damage and kidney tumors were observed in male rats. Similar kidney effects were not seen in female rats or in mice. At the highest exposure level (2056 ppm), female mice had an increased incidence of liver tumors. Results from subsequent scientific studies have shown that a broad variety of chemicals cause these kidney effects only in the male rat. Further studies have discovered the means by which the physiology of the male rat uniquely predispose it to these effects.
Consequently, the Risk Assessment Forum of the Environmental Protection Agency has recognized that these responses are not predictive of a human health hazard. The liver tumors that were increased in the high-dose female mice are likewise of questionable significance because of their high spontaneous occurrence even without chemical exposure and because the rate of their occurrence is accelerated by a broad spectrum of chemicals not commonly considered to be carcinogens (e.g., phenobarbital).
Thus, the significance of the mouse liver tumor response in terms of human health is questionable.

Gasoline is a complex mixture of hydrocarbons and contains benzene (typically no more than 2 volume%), toluene, and xylene. Chronic exposure to high levels of benzene has been shown to cause cancer (leukemia) in humans and other adverse blood effects (anemia). Benzene is considered a human carcinogen by IARC, NTP and OSHA. Over exposure to xylene and toluene can cause irritation to the upper respiratory tract, headache and narcosis. Some liver damage and lung inflammation were seen in chronic studies on xylene in guinea pigs but not in rats.

Solvent "sniffing" (abuse) or intentional overexposure to vapors can produce serious central nervous system effects, including unconsciousness, and possibly death.

Gasoline as a mixture is classified as a 2B (possible human) carcinogen by IARC.

Gasoline engine exhaust is classified as possibly carcinogenic to humans by IARC (2B). This classification is based primarily on animal and in vitro studies of gasoline engine exhaust condensates/extracts. Studies of the gaseous exhaust stream in animals did not provided sufficient evidence for classification as a carcinogen.

Section 12. Ecological information

Ecotoxicity

Water polluting material. May be harmful to the environment if released in large quantities. This material is toxic to aquatic life with long lasting effects.

Aquatic and terrestrial toxicity

Section 12. Ecological information

Product/ingredient name	Species	Result/Test	Exposure	Effects	Remarks
Gasoline	Micro-organism	Acute EC50 15.41 mg/l Nominal Fresh water	40 hours	growth inhibition	-
	Algae	Acute EL50 3.1 mg/l Nominal Fresh water	72 hours	(growth rate)	Based on Gasoline
	Algae	Acute EL50 3.7 mg/l Nominal Fresh water	96 hours	(growth rate)	Based on Gasoline
	Daphnia	Acute EL50 4.5 mg/l Nominal Fresh water	48 hours	Mobility	Based on straight-run light gasoline
	Fish	Acute LL50 10 mg/l Nominal Fresh water	96 hours	Mortality	Based on Naphtha (petroleum), isomerisation
	Fish	Acute LL50 8.2 mg/l Nominal Fresh water	96 hours	Mortality	Based on Naphtha (petroleum), light alkylate
	Algae	Acute NOELR 0.5 mg/l Nominal Fresh water	72 hours	(growth rate)	Based on Gasoline
	Daphnia	Acute NOELR 0.5 mg/l Nominal Fresh water	48 hours	Mobility	Based on Straight run gas oil
	Daphnia	Chronic EL50 10 mg/l Nominal Fresh water	21 days	Reproduction	Based on Naphtha (petroleum), light alkylate
	Daphnia	Chronic EL50 >40 mg/l Nominal Fresh water	21 days	Mobility	Based on Naphtha (petroleum), light alkylate
	Fish	Chronic EL50 10 mg/l Nominal Fresh water	21 days	Reproduction	Based on: Naphtha (petroleum), light alkylate; read across between species
	Fish	Chronic LL50 5.2 mg/l Nominal Fresh water	14 days	Mortality	Based on Naphtha (petroleum), light catalytic reformed
	Daphnia	Chronic NOELR 2.6 mg/l Nominal Fresh water	21 days	Reproduction	Based on Naphtha (petroleum), light alkylate
	Daphnia	Chronic NOELR	21 days	Mobility	Based on

		16 mg/l Nominal Fresh water			Naphtha (petroleum), light alkylate
	Fish	Chronic NOELR 2.6 mg/l Nominal Fresh water	14 days	Mortality	Based on Naphtha (petroleum), light catalytic reformed
	Fish	Chronic NOELR 2.6 mg/l Nominal Fresh water	21 days	Reproduction	Based on: Naphtha (petroleum), light alkylate; read across between species
	soil, plants	Chronic PNEC >0.4 mg/kg	-	-	-

Persistence and degradability

Expected to be biodegradable.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Gasoline	-	-	Inherent

Bioaccumulative potential

This product is not expected to bioaccumulate through food chains in the environment.

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Gasoline	2 to 7	-	high
Benzene	2.13	11	low
diisopropyl ether	2.4	-	low
2-methylpropan-2-ol	0.317	-	low

Mobility in soil

Mobility Spillages may penetrate the soil causing ground water contamination.

Soil/water partition coefficient (K_{OC}) Not available.

Other adverse effects No known significant effects or critical hazards.

Other ecological information Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

Section 13. Disposal considerations

Disposal methods The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non- recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapour from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
New Zealand Class	UN1203	MOTOR SPIRIT or GASOLINE or PETROL. Marine pollutant	3	II		The marine pollutant mark is not required when transported by road or rail. **Hazchem code** 3YE
ADG Class	UN1203	MOTOR SPIRIT or GASOLINE or PETROL	3	II		**Hazchem code** 3YE **Initial emergency response guide** 14
IATA Class	UN1203	MOTOR SPIRIT or GASOLINE or PETROL	3	II		The environmentally hazardous substance mark may appear if required by other transportation regulations.
IMDG Class	UN1203	MOTOR SPIRIT or GASOLINE or PETROL. Marine pollutant	3	II		The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg. **Emergency schedules** F-E, S-E

PG* : Packing group

Section 15. Regulatory information

New Zealand Regulatory Information

HSNO Approval Number	HRC000003
HSNO Group Standard	Petrol (unleaded)
HSNO Classification	3.1 - FLAMMABLE LIQUIDS - Category A 6.3 - SKIN IRRITATION - Category B 6.7 - CARCINOGENICITY - Category B 6.1 - ACUTE TOXICITY (aspiration) (oral) - Category E 9.1 - AQUATIC ECOTOXICITY - Category B

Regulation according to other foreign laws

REACH Status	For the REACH status of this product please consult your company contact, as identified in Section 1.
United States inventory (TSCA 8b)	Not determined.
Australia inventory (AICS)	Contact local supplier or distributor.
Canada inventory status	At least one component is not listed.
China inventory (IECSC)	At least one component is not listed.
Japan inventory (ENCS)	At least one component is not listed.
Korea inventory (KECI)	At least one component is not listed.
Philippines inventory (PICCS)	At least one component is not listed.
Taiwan Chemical Substances Inventory (TCSI)	Not determined.

Section 16. Other information

History

Date of issue/Date of revision	15 May 2020
Date of previous issue	15 May 2020.
Version	2
Prepared by	Not available.
Key to abbreviations	Varies = may contain one or more of the following 64741-88-4, 64741-89-5, 64741-95-3, 64741-96-4, 64742-01-4, 64742-44-5, 64742-45-6, 64742-52-5, 64742-53-6, 64742-54-7, 64742-55-8, 64742-56-9, 64742-57-0, 64742-58-1, 64742-62-7, 64742-63-8, 64742-65-0, 64742-70-7, 72623-85-9, 72623-86-0, 72623-87-1

Notice to reader

Indicates information that has changed from previously issued version.

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from BP Group.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken. You can contact the BP Group to ensure that this document is the most current available. Alteration of this document is strictly prohibited.

SAFETY DATA SHEET

BP Diesel

Section 1. Identification

Product name	BP Diesel
Product code	0000003079
SDS no.	0000003079
Historic SDS no.	YSUYL
Use of the substance/mixture	Fuel for compression ignition diesel engines. For specific application advice see appropriate Technical Data Sheet or consult our company representative.
Product type	Oily liquid.
Supplier	BP Oil New Zealand Limited Ground floor and 1st floor Watercare House 73 Remuera Road Newmarket Auckland New Zealand Phone 09 969 9300
Emergency telephone number	Tel: 0800 805 111
New Zealand National Poisons Centre	0800 764 766
OTHER PRODUCT INFORMATION	Technical Helpline 09 623 9451

Section 2. Hazards identification

HSNO Classification	3.1 - FLAMMABLE LIQUIDS - Category D 6.3 - SKIN IRRITATION - Category B 6.7 - CARCINOGENICITY - Category B 6.1 - ACUTE TOXICITY (aspiration) (oral) - Category E 9.1 - AQUATIC ECOTOXICITY - Category B

This material is classified as hazardous according to criteria in the Hazardous Substances (Minimum Degrees of Hazard) Regulations 2001 and has been classified according to the Hazardous Substances (Classifications) Regulations 2001.

This material is classified as DANGEROUS GOODS according to criteria in New Zealand Standard 5433:2012 Transport of Dangerous Goods on Land.

Routes of entry	Dermal contact. Eye contact. Inhalation. Ingestion.

GHS label elements

Signal word	Danger
Hazard statements	Combustible liquid. Causes mild skin irritation. Suspected of causing cancer. May be fatal if swallowed and enters airways. Toxic to aquatic life with long lasting effects.
Precautionary statements	
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves. Wear eye or face protection. Keep away from flames and hot surfaces. Avoid release to the environment. Keep out of reach of children. If medical advice is needed: Have product container or label at hand.
Response	Collect spillage. Immediately call a POISON CENTER or doctor/physician. IF SWALLOWED: Do NOT induce vomiting. IF exposed or concerned: Get medical advice/attention.

Section 2. Hazards identification

Storage Store locked up. Store in a well-ventilated place. Keep cool.

Disposal Dispose of contents and container in accordance with all local, regional, national and international regulations.

Symbol

Other hazards which do not result in classification

Note: High Pressure Applications

Injections through the skin resulting from contact with the product at high pressure constitute a major medical emergency.

See 'Notes to physician' under First-Aid Measures, Section 4 of this Safety Data Sheet.

This material may contain significant quantities of polycyclic aromatic hydrocarbons, some of which have been shown by experimental studies to induce skin cancer.

Section 3. Composition/information on ingredients

Substance/mixture Substance

Complex mixture of middle distillate hydrocarbons, with carbon numbers in C10 to C28 range.

Ingredient name	%	CAS number
Diesel fuel	100	68334-30-5

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Inhalation If inhaled, remove to fresh air. Get medical attention.

Ingestion Do not induce vomiting. Get medical attention immediately. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Aspiration hazard if swallowed. Can enter lungs and cause damage.

Skin contact In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if symptoms occur.

Eye contact In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Check for and remove any contact lenses. Eyelids should be held away from the eyeball to ensure thorough rinsing. Get medical attention if symptoms occur.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician Treatment should in general be symptomatic and directed to relieving any effects. Product can be aspirated on swallowing or following regurgitation of stomach contents, and can cause severe and potentially fatal chemical pneumonitis, which will require urgent treatment. Because of the risk of aspiration, induction of vomiting and gastric lavage should be avoided. Gastric lavage should be undertaken only after endotracheal intubation. Monitor for cardiac dysrhythmias.

Note: High Pressure Applications

Injections through the skin resulting from contact with the product at high pressure constitute a major medical emergency. Injuries may not appear serious at first but within a few hours tissue becomes swollen, discoloured and extremely painful with extensive subcutaneous necrosis.

Surgical exploration should be undertaken without delay. Thorough and extensive debridement of the wound and underlying tissue is necessary to minimise tissue loss and prevent or limit permanent damage. Note that high pressure may force the product considerable distances along tissue planes.

Protection of first-aiders No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Section 5. Firefighting measures

Extinguishing media

Suitable

In case of fire, use water fog, foam, dry chemical or carbon dioxide extinguisher or spray.

Not suitable

The use of a water jet may cause the fire to spread by splashing the burning product. Do not use water jet.

Specific hazards arising from the chemical

Combustible liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain. Liquid will float and may reignite on surface of water.

Hazardous combustion products

Combustion products may include the following:
carbon oxides (CO, CO_2) (carbon monoxide, carbon dioxide)

Hazchem code

3Z

Special precautions for fire-fighters

No action shall be taken involving any personal risk or without suitable training. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Immediately contact emergency personnel. No action shall be taken involving any personal risk or without suitable training. Eliminate all ignition sources. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Floors may be slippery; use care to avoid falling. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Put on appropriate personal protective equipment (see Section 8).

For emergency responders

Entry into a confined space or poorly ventilated area contaminated with vapour, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work. Wear self-contained breathing apparatus. Wear a suitable chemical protective suit. Chemical resistant boots. See also the information in "For non-emergency personnel".

Environmental precautions

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage. In case of small spillages in closed waters (i.e. ports), contain product with floating barriers or other equipment. Collect spilled product by absorbing with specific floating absorbents. If possible, large spillages in open waters should be contained with floating barriers or other mechanical means. If this is not possible, control the spreading of the spillage, and collect the product by skimming or other suitable mechanical means. The use of dispersants should be advised by an expert, and, if required, approved by local authorities. Collect recovered product and other contaminated materials in suitable tanks or containers for recycle, recovery or safe disposal.

Methods and material for containment and cleaning up

Small spill

Eliminate all ignition sources. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. The method and equipment used must be in conformance with appropriate regulations and industry practice on explosive atmospheres. Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

Large spill

Eliminate all ignition sources. Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Dike spill area and do not allow product to reach sewage system and surface or ground water. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Use spark-proof tools and explosion-proof equipment. Contaminated absorbent material may pose the same hazard as the spilt product. The method and equipment used must be in conformance with appropriate regulations and industry practice on explosive atmospheres. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Precautions for safe handling

Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not swallow. Never siphon by mouth. Avoid exposure - obtain special instructions before use. Avoid breathing vapour or mist. Use only with adequate ventilation. Avoid release to the environment. Do not enter storage areas and confined spaces unless adequately ventilated. Wear appropriate respirator when ventilation is inadequate. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. Wash thoroughly after handling. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Remove contaminated clothing and protective equipment before entering eating areas. Workers should wash hands and face before eating, drinking and smoking. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not reuse container. Aspiration hazard if swallowed. Can enter lungs and cause damage. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Separate from oxidising materials. Keep container tightly closed and sealed until ready for use. Store and use only in equipment/containers designed for use with this product. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Light hydrocarbon vapours can build up in the headspace of tanks. These can cause flammability/explosion hazards even at temperatures below the normal flash point (note: flash point must not be regarded as a reliable indicator of the potential flammability of vapour in tank headspaces). Tank headspaces should always be regarded as potentially flammable and care should be taken to avoid static electrical discharge and all ignition sources during filling, ullaging and sampling from storage tanks. Do not enter storage tanks. If entry to vessels is necessary, follow permit to work procedures. Entry to any tanks or other confined space requires a full risk assessment and appropriate control measures to be put in place in conformance with appropriate regulations and industry practice on confined space entry. When the product is pumped (e.g. during filling, discharge or ullaging) and when sampling, there is a risk of static discharge. Ensure equipment used is properly earthed or bonded to the tank structure. Electrical equipment should not be used unless it is intrinsically safe (i.e. will not produce sparks). Explosive air/vapour mixtures may form at ambient temperature. If product comes into contact with hot surfaces, or leaks occur from pressurised fuel pipes, the vapour or mists generated will create a flammability or explosion hazard. Product contaminated rags, paper or material used to absorb spillages, represent a fire hazard, and should not be allowed to accumulate. Dispose of safely immediately after use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Fuels, diesel	**ACGIH TLV (United States). Absorbed through skin.** TWA: 100 mg/m³, (measured as total hydrocarbons) 8 hours. Issued/Revised: 1/2007 Form: Inhalable fraction and vapor TWA: 100 mg/m³ 8 hours. Issued/Revised: 1/2007 Form: Total hydrocarbons

Recommended monitoring procedures

If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Appropriate engineering controls

Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits. All activities involving chemicals should be assessed for their risks to health, to ensure exposures are adequately controlled. Personal protective equipment should only be considered after other forms of control measures (e.g. engineering controls) have been suitably evaluated. Personal protective equipment should conform to appropriate standards, be suitable for use, be kept in good condition and properly maintained.

Your supplier of personal protective equipment should be consulted for advice on selection and appropriate standards. For further information contact your national organisation for standards. The final choice of protective equipment will depend upon a risk assessment. It is important to ensure that all items of personal protective equipment are compatible.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye protection

Chemical splash goggles.

Hand protection

Wear chemical resistant gloves. Recommended: Nitrile gloves.

Do not re-use gloves. Protective gloves must give suitable protection against mechanical risks (i.e. abrasion, blade cut and puncture). Protective gloves will deteriorate over time due to physical and chemical damage. Inspect and replace gloves on a regular basis. The frequency of replacement will depend upon the circumstances of use.

Skin protection

Use of protective clothing is good industrial practice. Cotton or polyester/cotton overalls will only provide protection against light superficial contamination that will not soak through to the skin. Overalls should be laundered on a regular basis. When the risk of skin exposure is high (e.g. when cleaning up spillages or if there is a risk of splashing) then chemical resistant aprons and/or impervious chemical suits and boots will be required. Wear suitable protective clothing. Footwear highly resistant to chemicals. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For greatest effectiveness against static electricity, overalls, boots and gloves should all be anti-static. When there is a risk of ignition wear inherently fire resistant protective clothes and gloves. Work clothing / overalls should be laundered on a regular basis. Laundering of contaminated work clothing should only be done by professional cleaners who have been told about the hazards of the contamination. Always keep contaminated work clothing away from

Section 8. Exposure controls/personal protection

uncontaminated work clothing and uncontaminated personal clothes. When the risk of skin exposure is high (from experience this could apply to the following tasks: cleaning work, maintenance and service, filling and transfer, taking samples and cleaning up spillages) then a chemical protective suit and boots will be required. Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Recommended:

Respiratory protection

In case of insufficient ventilation, wear suitable respiratory equipment. If there is a requirement for the use of a respiratory protective device, but the use of breathing apparatus (independent of ambient atmosphere) is not required, then a suitable filtering device must be worn. The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. The correct choice of respiratory protection depends upon the chemicals being handled, the conditions of work and use, and the condition of the respiratory equipment. Safety procedures should be developed for each intended application. Respiratory protection equipment should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions. Respiratory protection should conform to AS/NZS 1715 and AS/ NZS 1716.

Section 9. Physical and chemical properties

Appearance

Physical state	Oily liquid.
Colour	Clear Colourless. to Amber.
Odour	Diesel fuel
pH	Not applicable. Based on Solubility in Water (Very slightly soluble in water)
Melting point	Not available.
Boiling point	>180°C (>356°F)
Drop Point	Not available.
Flash point	Closed cup: >61.5°C (>142.7°F) [Pensky-Martens.]
Auto-ignition temperature	240°C (464°F)
Lower and upper explosive (flammable) limits	Lower: 0.7% Upper: 5%
Vapour pressure	0.093 kPa (0.7 mm Hg) [20°C (68°F)]
Vapour density	Not available.
Density	830 kg/m³ (0.83 g/cm³)
Solubility	Very slightly soluble in water
Partition coefficient: n-octanol/water	>3
Viscosity	Kinematic: 2 to 4.5 mm²/s (2 to 4.5 cSt) at 40°C

Section 10. Stability and reactivity

Chemical stability	The product is stable.
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous polymerisation will not occur.
Conditions to avoid	Avoid all possible sources of ignition (spark or flame). Avoid excessive heat.
Incompatible materials	Reactive or incompatible with the following materials: oxidising materials.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 8. Exposure controls/personal protection

uncontaminated work clothing and uncontaminated personal clothes. When the risk of skin exposure is high (from experience this could apply to the following tasks: cleaning work, maintenance and service, filling and transfer, taking samples and cleaning up spillages) then a chemical protective suit and boots will be required. Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Recommended:

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Flash point	Closed cup: >61.5°C (>142.7°F) [Pensky-Martens.]
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Lower and upper explosive (flammable) limits	Lower: 0.7% Upper: 5%
Vapour pressure	0.093 kPa (0.7 mm Hg) [20°C (68°F)]
Vapour density	Not available.
Density	830 kg/m³ (0.83 g/cm³)
Solubility	Very slightly soluble in water
Partition coefficient: n-octanol/water	>3
Viscosity	Kinematic: 2 to 4.5 mm²/s (2 to 4.5 cSt) at 40°C

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Incompatible materials	Reactive or incompatible with the following materials: oxidising materials.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Product/ingredient name	Route of exposure	Species	Result	Remarks
Fuels, diesel	skin	Guinea pig	Not sensitising	Based on No. 2 Heating Oil.
	skin	Guinea pig	Not sensitising	Based on Diesel fuel

Potential chronic health effects

General May cause damage to organs through prolonged or repeated exposure. Vapour, mists or fumes may contain polycyclic aromatic hydrocarbons some of which are known to produce skin cancer. Vapour, mist or fume may irritate the nose, mouth and respiratory tract.

Inhalation Vapour, mists or fumes may contain polycyclic aromatic hydrocarbons some of which are known to produce skin cancer. May be harmful by inhalation after often repeated exposure. Vapour, mist or fume may irritate the nose, mouth and respiratory tract.

Ingestion If swallowed, may irritate the mouth, throat and digestive system. If swallowed, may cause abdominal pain, stomach cramps, nausea, vomiting, diarrhoea, dizziness and drowsiness.

Skin contact As with all such products containing potentially harmful levels of polycyclic aromatic hydrocarbons, prolonged or repeated skin contact may eventually result in dermatitis or more serious irreversible skin disorders including cancer.

Eye contact Vapour, mist or fume may cause eye irritation. Exposure to vapour, mist or fume may cause stinging, redness and watering of the eyes.

Carcinogenicity Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity No known significant effects or critical hazards.

Teratogenicity No known significant effects or critical hazards.

Developmental effects No known significant effects or critical hazards.

Fertility effects No known significant effects or critical hazards.

Carcinogenicity

Product/ingredient name	Test		Species	Result		Exposure
Fuels, diesel	Mouse	Dermal	2 years	Positive - Dermal - Unspecified	-	Based on Heating Oil.

Conclusion/Summary Suspected of causing cancer.

Mutagenicity

Product/ingredient name	Test	Experiment	Result	Remarks
Fuels, diesel	OECD 471	Experiment: In vitro Subject: Non-mammalian species	Positive	Based on Diesel fuel
	Equivalent to OECD 476	Experiment: In vitro Subject: Mammalian-Animal Cell: Germ	Negative	Based on Heating Oil.
	not guideline	Experiment: In vivo Subject: Unspecified Cell: Somatic	Negative	Based on Heating Oil.

Conclusion/Summary Not classified. Based on available data, the classification criteria are not met.

Reproductive toxicity

Section 11. Toxicological information

Product/ingredient name	Maternal toxicity	Fertility	Developmental toxin	Species	Result	Exposure
Fuels, diesel	-	-	Negative	Rat	Dermal	20 days
	-	-	Negative	Rat	Dermal	10 days
	-	-	Negative	Rat	Dermal	10 days

Conclusion/Summary

Development: Not classified. Based on available data, the classification criteria are not met.
Fertility: Not classified. Based on available data, the classification criteria are not met.
Effects on or via lactation: Not classified. Based on available data, the classification criteria are not met.

Aspiration hazard

Name
Fuels, diesel

Section 12. Ecological information

Ecotoxicity

Water polluting material. May be harmful to the environment if released in large quantities. This material is toxic to aquatic life with long lasting effects.

Aquatic and terrestrial toxicity

Product/ingredient name	Species	Result/Test	Exposure	Effects	Remarks
Fuels, diesel	Micro-organism	EL50 >1000 mg/l Nominal Fresh water	40 hours	growth inhibition	Based on Vacuum gas oil / Hydrocracked gas oil / Distillate Fuel
	Micro-organism	NOELR 3.217 mg/l Nominal Fresh water	40 hours	growth inhibition	Based on Vacuum gas oil / Hydrocracked gas oil / Distillate Fuel
	Algae	Acute EL50 22 mg/l Nominal Fresh water	72 hours	(growth rate)	Based on Diesel fuel
	Daphnia	Acute EL50 210 mg/l Nominal Fresh water	48 hours	Mobility	Based on Diesel fuel
	Daphnia	Acute EL50 68 mg/l Nominal Fresh water	48 hours	Mobility	Based on Diesel fuel
	Algae	Acute ErL50 78 mg/l Nominal Fresh water	72 hours	(growth rate)	Based on Diesel fuel
	Fish	Acute LL50 65 mg/l Nominal Fresh water	96 hours	Mortality	Based on Diesel fuel
	Fish	Acute LL50 21 mg/l Nominal Fresh water	96 hours	Mortality	Based on Diesel fuel
	Algae	Acute NOELR 10 mg/l Nominal	72 hours	(growth rate)	Based on Diesel fuel

Section 12. Ecological information

		Fresh water		
	Algae	Acute NOELR 1 mg/l Nominal Fresh water	72 hours	(growth rate)	Based on Diesel fuel
	Daphnia	Acute NOELR 46 mg/l Nominal Fresh water	48 hours	Mobility	Based on Diesel fuel
	Fish	Chronic NOEL 0. 083 mg/l Nominal Fresh water	14 days	Mortality	Based on Vacuum gas oil / Hydrocracked gas oil / Distillate Fuel
	Daphnia	Chronic NOELR 0.2 mg/l Nominal Fresh water	21 days	Immobilisation	Based on Vacuum gas oil / Hydrocracked gas oil / Distillate Fuel

Persistence and degradability

Expected to be biodegradable.

Product/ingredient name	Test	Result	Remarks
Fuels, diesel	OECD 301 F	60 % - Readily - 28 days	Based on Diesel fuel
	OECD 301 F	57.5 % - Not readily - 28 days	Based on Diesel fuel
	Equivalent to EPA OTS 796. 3100	35 % - Not readily - 28 days	Based on Gas Oils (petroleum), solvent refined

Bioaccumulative potential

This product is not expected to bioaccumulate through food chains in the environment.

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Fuels, diesel	>3	-	low

Mobility in soil

Mobility Spillages may penetrate the soil causing ground water contamination. This material may accumulate in sediments.

Soil/water partition coefficient (K_{oc}) Not available.

Other ecological information Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

Section 13. Disposal considerations

Disposal methods The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non- recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapour from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

		Fresh water		
	Algae	Acute NOELR 1 mg/l Nominal Fresh water	72 hours	(growth rate)	Based on Diesel fuel
	Daphnia	Acute NOELR 46 mg/l Nominal Fresh water	48 hours	Mobility	Based on Diesel fuel
	Fish	Chronic NOEL 0. 083 mg/l Nominal Fresh water	14 days	Mortality	Based on Vacuum gas oil / Hydrocracked gas oil / Distillate Fuel
	Daphnia	Chronic NOELR 0.2 mg/l Nominal Fresh water	21 days	Immobilisation	Based on Vacuum gas oil / Hydrocracked gas oil / Distillate Fuel

Persistence and degradability

Expected to be biodegradable.

Product/ingredient name	Test	Result	Remarks
Fuels, diesel	OECD 301 F	60 % - Readily - 28 days	Based on Diesel fuel
	OECD 301 F	57.5 % - Not readily - 28 days	Based on Diesel fuel
	Equivalent to EPA OTS 796. 3100	35 % - Not readily - 28 days	Based on Gas Oils (petroleum), solvent refined

Bioaccumulative potential

This product is not expected to bioaccumulate through food chains in the environment.

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Fuels, diesel	>3	-	low

Mobility in soil

Mobility Spillages may penetrate the soil causing ground water contamination. This material may accumulate in sediments.

Soil/water partition coefficient (K_{oc}) Not available.

Other ecological information Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

Section 13. Disposal considerations

Disposal methods The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non- recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapour from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Section 15. Regulatory information

Philippines inventory (PICCS)	All components are listed or exempted.
Taiwan Chemical Substances Inventory (TCSI)	All components are listed or exempted.

Section 16. Other information

History

Date of issue/Date of revision	14 February 2019
Date of previous issue	21 February 2014.
Version	4
Prepared by	Not available.
Key to abbreviations	Varies = may contain one or more of the following 64741-88-4, 64741-89-5, 64741-95-3, 64741-96-4, 64742-01-4, 64742-44-5, 64742-45-6, 64742-52-5, 64742-53-6, 64742-54-7, 64742-55-8, 64742-56-9, 64742-57-0, 64742-58-1, 64742-62-7, 64742-63-8, 64742-65-0, 64742-70-7, 72623-85-9, 72623-86-0, 72623-87-1

Notice to reader

Indicates information that has changed from previously issued version.

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from BP Group.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken. You can contact the BP Group to ensure that this document is the most current available. Alteration of this document is strictly prohibited.

SAFETY DATA SHEET

REFRIGERANT R32

Compilation date: 08/05/2015

Revision date: 24/10/2018

Revision No: 2

Section 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name: * REFRIGERANT R32

REACH registered number(s): 01-2119471312-47

CAS number: 75-10-5

EINECS number: 200-839-4

Product code: R32

Synonyms: DIFLUOROMETHANE

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

Use of substance / mixture: ES 1 - Formulating, blending, repacking - Industrial use. Refrigerant

1.3. Details of the supplier of the safety data sheet

Company name: National Refrigerants Ltd
4 Watling Close
Sketchley Meadows Business Park
Hinckley
Leicestershire
LE10 3EZ
United Kingdom

Tel: 01455 630790

Fax: 01455 630791

Email: sds@nationalref.com

1.4. Emergency telephone number

New Zealand National Poisons Centre **0800 764 766**

Section 2: Hazards identification

2.1. Classification of the substance or mixture

Classification under CLP: Flam. Gas 1: H220; Press. Gas: H280; -: EUH044

Most important adverse effects: Extremely flammable gas. Contains gas under pressure; may explode if heated. Risk of explosion if heated under confinement.

2.2. Label elements

Label elements:

Hazard statements: * H220: Extremely flammable gas.
H280: Contains gas under pressure; may explode if heated.
EUH044: Risk of explosion if heated under confinement.

[cont...]

Hazard pictograms: GHS02: Flame

GHS04: Gas cylinder

Signal words: Danger

Precautionary statements: * P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P377: Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

P410+403: Protect from sunlight. Store in a well-ventilated place.

2.3. Other hazards

PBT: This product is not identified as a PBT/vPvB substance.

Section 3: Composition/information on ingredients

3.1. Substances

Chemical identity: REFRIGERANT R32

CAS number: 75-10-5

EINECS number: 200-839-4

REACH registered number(s): 01-2119471312-47

Section 4: First aid measures

4.1. Description of first aid measures

Skin contact: Remove all contaminated clothes and footwear immediately unless stuck to skin. Drench the affected skin with running water for 10 minutes or longer if substance is still on skin. Do not use hot water. If frostbite has occurred call a physician.

Eye contact: Bathe the eye with running water for 15 minutes. Transfer to hospital for specialist examination.

Ingestion: * Ingestion is unlikely due to its physical properties and is not expected to be dangerous. Since this product is a gas, refer to the inhalation section.

Inhalation: Remove casualty from exposure ensuring one's own safety whilst doing so. If conscious, ensure the casualty sits or lies down. If unconscious, check for breathing and apply artificial respiration if necessary. Consult a doctor.

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

Skin contact: There may be redness or whiteness of the skin in the area of exposure. Frost-bite may occur causing the affected area to become white and numb.

Eye contact: There may be pain and redness. Corneal burns may occur. May cause permanent damage.

Ingestion: * Ingestion is unlikely due to the physical properties of the product. As product is a gas refer to inhalation section.

Inhalation: * Inhalation may produce the following symptoms: Shortness of breath, dizziness, weakness,

nausea, headache, narcosis, irregular cardiac activity. asphyxia May cause cardiac arrhythmia.

Delayed / immediate effects: No data available.

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

Immediate / special treatment: Do Not give adrinaline or similar drugs.

Section 5: Fire-fighting measures

5.1. Extinguishing media

Extinguishing media: * Do not extinguish burning gas. cut off source of gas if safe to do so - IF NOT POSSIBLE LEAVE GAS TO BURN. Extinguish secondary fire with: carbon dioxide, Powder, Sand, Foam. Suitable extinguishing media for the surrounding fire should be used. Use water spray to cool containers.

5.2. Special hazards arising from the substance or mixture

Exposure hazards: * Extremely flammable. Forms explosive air-vapour mixture. In combustion emits toxic fumes of hydrogen fluoride.

5.3. Advice for fire-fighters

Advice for fire-fighters: Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

Section 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: * Evacuate the area immediately. Ventilate the area, especially low or enclosed places where heavy vapours might collect. Refer to section 8 of SDS for personal protection details.

6.2. Environmental precautions

Environmental precautions: Stop release if safe to do so. The product evaporates readily. Prevent from entering sewers, basements and work pits, or any place where the accumulation can be dangerous.

6.3. Methods and material for containment and cleaning up

Clean-up procedures: * Material evaporates. Ventilate the area, especialy low or enclosed places where heavy vapours might collect. Do not use equipment in clean-up procedure which may produce sparks. Refer to section 13 of SDS for suitable method of disposal.

6.4. Reference to other sections

Reference to other sections: * Refer to section 8 of SDS. Refer to section 13 of SDS.

Section 7: Handling and storage

7.1. Precautions for safe handling

Handling requirements: Ensure there is sufficient ventilation of the area. Ensure there is exhaust ventilation of the area. Do not handle in a confined space. Earth any equipment used in handling. Use non-sparking tools. Smoking is forbidden.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in a cool, well ventilated area. Keep away from sources of ignition. Keep container tightly closed. Keep away from direct sunlight. Store at a temperature not exceeding 45°C.

Suitable packaging: Must only be kept in original packaging.

7.3. Specific end use(s)

Specific end use(s): * ES1 - Fromulation, blending, repacking - Industrial use.

Section 8: Exposure controls/personal protection

8.1. Control parameters

*** Workplace exposure limits:** **Respirable dust**

State	8 hour TWA	15 min. STEL	8 hour TWA	15 min. STEL
UK	1000 ppm	-	-	-

DNEL/PNEC Values

REFRIGERANT R32

Type	Exposure	Value	Population	Effect
DNEL	Inhalation (developmental tox)	13936 mg/m3	Workers	Systemic
DNEL	Inhalation (developmental tox)	2476 mg/m3	Consumers	Systemic
PNEC	Fresh water	0.142 mg/l	-	-
PNEC	Fresh water sediments	0.534 mg/kg	-	-

8.2. Exposure controls

Engineering measures: Ensure there is sufficient ventilation of the area. Ensure there is exhaust ventilation of the area. Ensure lighting and electrical equipment are not a source of ignition. Use only in closed systems.

Respiratory protection: * Respiratory protection not required. Self-contained breathing apparatus must be available in case of emergency.

Hand protection: * Protective gloves. Material: Low temperature resistant gloves. The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection: Safety glasses with side-shields. Safety goggles.

Skin protection: * Protective clothing. Avoid skin contace with leaking liquid (danger of frostbite).

Environmental: Gas escapes to be kept to the minimum by engineering processes and operating methods.

Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

State: Liquified gas

Colour: Colourless

Odour: Characteristic odour

Evaporation rate: No data available.
Oxidising: Not applicable.
Solubility in water: No data available.
Also soluble in: Diethyl ether. Acetone. Chloroform.
Boiling point/range°C: -51.7
Flammability limits %: lower: 12.7
Flash point°C: Not applicable.
Autoflammability°C: 530
Relative density: 1.1
Melting point/range°C: -136
upper: 33.4
Part.coeff. n-octanol/water: log Pow: 0.21
Vapour pressure: 17.01 Bar at 20oC
pH: No data available.

9.2. Other information

Other information: * R32 Liquid density: 959 kg / m3 at 25 degrees C. R32 Vapour Density: 1.86 (Air=1)

Section 10: Stability and reactivity

10.1. Reactivity

Reactivity: Stable under recommended transport or storage conditions.

10.2. Chemical stability

Chemical stability: Stable under normal conditions.

10.3. Possibility of hazardous reactions

Hazardous reactions: Can form potential explosive atmosphere in air. May react violently with oxidants.

10.4. Conditions to avoid

Conditions to avoid: Heat. Hot surfaces. Sources of ignition. Flames. Direct sunlight.

10.5. Incompatible materials

Materials to avoid: Oxidising agents. Finely powdered metals. Alkali metals. Alkali earth metals.

10.6. Hazardous decomposition products

Haz. decomp. products: In combustion emits toxic fumes of carbon dioxide / carbon monoxide. In combustion emits toxic fumes of hydrogen fluoride.

Section 11: Toxicological information

11.1. Information on toxicological effects

Toxicity values:

Route	Species	Test	Value	Units
GASES	RAT	LD50	520000	ppmV

Symptoms / routes of exposure

Skin contact: There may be redness or whiteness of the skin in the area of exposure. Frost-bite may occur causing the affected area to become white and numb.

Eye contact: There may be pain and redness. Corneal burns may occur. May cause permanent damage.

Ingestion: * Ingestion is unlikely due to the physical properties of the product. As product is a gas refer to inhalation section.

Inhalation: * Inhalation may produce the following symptoms: Shortness of breath, dizziness, weakness, nausea, headache, narcosis, irregular cardiac activity. asphyxia May cause cardiac arrhythmia.

Delayed / immediate effects: No data available.

Other information: Not applicable.

Section 12: Ecological information

12.1. Toxicity

Ecotoxicity values:

Species	Test	Value	Units
ALGAE	96H ErC50	142	mg/l
Daphnia magna	48H EC50	652	mg/l
FISH	96H LC50	1.057	mg/l

12.2. Persistence and degradability

Persistence and degradability: Only slightly biodegradable.

12.3. Bioaccumulative potential

Bioaccumulative potential: No bioaccumulation potential.

12.4. Mobility in soil

Mobility: Absorbed only slowly into soil.

12.5. Results of PBT and vPvB assessment

PBT identification: This product is not identified as a PBT/vPvB substance.

12.6. Other adverse effects

Other adverse effects: Ozone Depletion Potential (ODP): 0 (R11 = 1) R32 Global Warming Potential (GWP): 650 (CO2=1) Contains fluoronated greenhouse gases covered by the Kyoto Protocol.

Section 13: Disposal considerations

13.1. Waste treatment methods

Disposal operations: Product evaporates.

Recovery operations: Consult manufacturer or supplier for information regarding recovery and recycling of the product. If recovery is not possible, incinerat at a licensed installation.

Waste code number: 14 06 01

Disposal of packaging: Return to supplier.

NB: The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

Section 14: Transport information

14.1. UN number

UN number: UN3252

14.2. UN proper shipping name

Shipping name: DIFLUOROMETHANE (R 32)

14.3. Transport hazard class(es)

Transport class: 2

14.4. Packing group

14.5. Environmental hazards

Environmentally hazardous: No **Marine pollutant:** No

14.6. Special precautions for user

Tunnel code: B/D

Transport category: 2

Section 15: Regulatory information

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

Specific regulations: * Contains fluorinated greenhouse gases covered by the Kyoto Protocol. Regulation on Fluorineted Greenhouse Gases 842/2006/EC: Listed

15.2. Chemical Safety Assessment

Chemical safety assessment: * A chemical safety assessment has not been carried out for the substance or the mixture by the supplier.

Section 16: Other information

Other information

Other information: This safety data sheet is prepared in accordance with Commission Regulation (EU) No 2015/830.

* indicates text in the SDS which has changed since the last revision.

Phrases used in s.2 and s.3: EUH044: Risk of explosion if heated under confinement.

H220: Extremely flammable gas.

H280: Contains gas under pressure; may explode if heated.

Legal disclaimer: * The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. This company shall not be held liable for any damage resulting from handling or from contact with the above product.

SAFETY DATA SHEET

REFRIGERANT R134A

Compilation date: 20/4/2015

Revision date: 26/2/2018

Revision No: 4

Section 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name: REFRIGERANT R134A

REACH registered number(s): 01-2119459374-33

CAS number: 811-97-2

EINECS number: 212-377-0

Product code: R134A

Synonyms: * NORFLURANE
HFC-134A, GENETRON 134A
1,1,1,2-TETRAFLUOROETHANE

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

Use of substance / mixture: * Refrigerant Propellant PC16: Heat transfer fluids.

1.3. Details of the supplier of the safety data sheet

Company name: National Refrigerants Ltd
4 Watling Close
Sketchley Meadows Business Park
Hinckley
Leicestershire
LE10 3EZ
United Kingdom

Tel: 01455 630790

Fax: 01455 630791

Email: sds@nationalref.com

1.4. Emergency telephone number

New Zealand National Poisons Centre **0800 764 766**

Section 2: Hazards identification

2.1. Classification of the substance or mixture

Classification under CLP: Press. Gas: H280

Most important adverse effects: Contains gas under pressure; may explode if heated.

2.2. Label elements

Label elements:

Hazard statements: H280: Contains gas under pressure; may explode if heated.

Hazard pictograms: GHS04: Gas cylinder

[cont...]

Signal words: Warning

Precautionary statements: * P280: Wear protective gloves/eye protection/face protection.
P284: [In case of inadequate ventilation] wear respiratory protection.
P410+403: Protect from sunlight. Store in a well-ventilated place.

2.3. Other hazards

PBT: This product is not identified as a PBT/vPvB substance.

Section 3: Composition/information on ingredients

3.1. Substances

Chemical identity: REFRIGERANT R134A

CAS number: 811-97-2

EINECS number: 212-377-0

REACH registered number(s): 01-2119459374-33

Section 4: First aid measures

4.1. Description of first aid measures

Skin contact: Remove all contaminated clothes and footwear immediately unless stuck to skin. Drench the affected skin with running water for 10 minutes or longer if substance is still on skin. Do not use hot water. If frostbite has occurred call a physician.

Eye contact: * Remove contact lenses if present and easy to do so. Bathe the eye with running water for 15 minutes. Transfer to hospital for specialist examination.

Ingestion: * Ingestion is unlikely due to its physical properties and is not expected to be dangerous. Since this product is a gas, refer to the inhalation section.

Inhalation: Remove casualty from exposure ensuring one's own safety whilst doing so. If conscious, ensure the casualty sits or lies down. If unconscious, check for breathing and apply artificial respiration if necessary. Consult a doctor.

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

Skin contact: There may be redness or whiteness of the skin in the area of exposure. Frost-bite may occur causing the affected area to become white and numb. Severe burns may occur.

Eye contact: There may be severe pain. Corneal burns may occur. May cause permanent damage.

Ingestion: * Ingestion is unlikely due to the physical properties of the product. As product is a gas refer to inhalation section.

Inhalation: Inhalation may produce the following symptoms: Shortness of breath, dizziness, weakness, nausea, headache, narcosis, irregular cardiac activity. asphyxia May cause cardiac arrhythmia.

Delayed / immediate effects: May cause cardiac arrhythmia.

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

Immediate / special treatment: Do Not give adrinaline or similar drugs.

Section 5: Fire-fighting measures

5.1. Extinguishing media

Extinguishing media: * The product is not flammable. Suitable extinguishing media for the surrounding fire should be used. Water spray. Alcohol resistant foam. Dry chemical powder. Carbon dioxide. Use water spray to cool containers.

5.2. Special hazards arising from the substance or mixture

Exposure hazards: In combustion emits toxic fumes of hydrogen fluoride.

5.3. Advice for fire-fighters

Advice for fire-fighters: Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

Section 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: If outside keep bystanders upwind and away from danger point. Ventilate the area, especially low or enclosed places where heavy vapours might collect.

6.2. Environmental precautions

Environmental precautions: Stop release if safe to do so. The product evaporates readily. Prevent from entering sewers, basements and work pits, or any place where the accumulation can be dangerous.

6.3. Methods and material for containment and cleaning up

Clean-up procedures: Material evaporates. Ventilate the area, especialy low or enclosed places where heavy vapours might collect.

6.4. Reference to other sections

Reference to other sections: Refer to section 8 of SDS.

Section 7: Handling and storage

7.1. Precautions for safe handling

Handling requirements: Ensure there is sufficient ventilation of the area. Ensure there is exhaust ventilation of the area. Do not handle in a confined space.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in a cool, well ventilated area. Store at a temperature not exceeding 45°C. Keep container tightly closed. Keep away from direct sunlight.

Suitable packaging: Must only be kept in original packaging.

7.3. Specific end use(s)

Specific end use(s): No data available.

Section 8: Exposure controls/personal protection

8.1. Control parameters

Workplace exposure limits: **Respirable dust**

State	8 hour TWA	15 min. STEL	8 hour TWA	15 min. STEL
EU	4240 mg/m3	-	-	-

DNEL/PNEC Values

REFRIGERANT R134A

Type	Exposure	Value	Population	Effect
DNEL	Inhalation	2476 mg/m3	Workers	Systemic
DNEL	Inhalation	2476 mg/m3	Consumers	Systemic
PNEC	Fresh water	0.01 mg/l	-	-
PNEC	Marine water	0.75 mg/l	-	-
PNEC	Microorganisms in sewage treatment	73 mg/l	-	-
DNEL	Inhalation	13936 mg/m3	Workers	Systemic
PNEC	Fresh water sediments	0.75 mg/kg	-	-

8.2. Exposure controls

Engineering measures: Ensure there is sufficient ventilation of the area. Ensure there is exhaust ventilation of the area.

Respiratory protection: Self-contained breathing apparatus must be available in case of emergency.

Hand protection: * Viton gloves. The suitability for a specific workplace should be discussed with the producers of the protective gloves. Protective gloves. Material: Low temperature resistant gloves.

Eye protection: Safety glasses with side-shields. Safety goggles. Face-shield.

Skin protection: Protective clothing.

Environmental: Gas escapes to be kept to the minimum by engineering processes and operating methods.

Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

State: Liquified gas

Colour: Colourless

Odour: Barely perceptible odour

Evaporation rate: Not applicable.

Oxidising: Not applicable.

Solubility in water: Slightly soluble
Boiling point/range°C: -26.2
Melting point/range°C: -101.
Flammability limits %: lower: No data available.
upper: No data available.
Flash point°C: Not applicable.
Part.coeff. n-octanol/water: No data available.
Autoflammability°C: >750
Vapour pressure: 5915 hPa at 21oC
Relative density: 1.2
pH: Not applicable.

9.2. Other information

Other information: R134a Relative Vapour Dencity: 3.5 (Air=1)

Section 10: Stability and reactivity

10.1. Reactivity

Reactivity: Stable under recommended transport or storage conditions.

10.2. Chemical stability

Chemical stability: Stable under normal conditions.

10.3. Possibility of hazardous reactions

Hazardous reactions: Hazardous reactions will not occur under normal transport or storage conditions.

10.4. Conditions to avoid

Conditions to avoid: Heat. Hot surfaces. Direct sunlight.

10.5. Incompatible materials

Materials to avoid: Alkali metals. Alkali earth metals. Finely powdered metals.

10.6. Hazardous decomposition products

Haz. decomp. products: In combustion emits toxic fumes of hydrogen fluoride. In combustion emits toxic fumes of carbon dioxide / carbon monoxide.

Section 11: Toxicological information

11.1. Information on toxicological effects

Toxicity values:

Route	Species	Test	Value	Units
GASES	RAT	4H LC50	567000	ppmV

Symptoms / routes of exposure

Skin contact: There may be redness or whiteness of the skin in the area of exposure. Frost-bite may occur causing the affected area to become white and numb. Severe burns may occur.

Eye contact: There may be severe pain. Corneal burns may occur. May cause permanent damage.

Ingestion: * Ingestion is unlikely due to the physical properties of the product. As product is a gas refer to inhalation section.

Inhalation: Inhalation may produce the following symptoms: Shortness of breath, dizziness, weakness,

nausea, headache, narcosis, irregular cardiac activity. asphyxia May cause cardiac arrhythmia.

Delayed / immediate effects: May cause cardiac arrhythmia.

Section 12: Ecological information

12.1. Toxicity

Ecotoxicity values:

Species	Test	Value	Units
Daphnia magna	48H EC50	980	mg/l
RAINBOW TROUT (Oncorhynchus mykiss)	96H LC50	450	mg/l
GREEN ALGA (Selenastrum capricornutum)	72H ErC50	118	mg/l

12.2. Persistence and degradability

Persistence and degradability: Not readily biodegradable.

12.3. Bioaccumulative potential

Bioaccumulative potential: No data available.

12.4. Mobility in soil

Mobility: No data available.

12.5. Results of PBT and vPvB assessment

PBT identification: This product is not identified as a PBT/vPvB substance.

12.6. Other adverse effects

Other adverse effects: Ozone Depletion Potential (ODP): 0 (R11 = 1) R134a Global Warming Potential (GWP): 1430 (CO_2 = 1) Contains fluoronated greenhouse gases covered by the Kyoto Protocol.

Section 13: Disposal considerations

13.1. Waste treatment methods

Disposal operations: * Recover to a recovery cylinder and return to a refrigerant recovery facility.

Recovery operations: Consult manufacturer or supplier for information regarding recovery and recycling of the product. If recovery is not possible, incinerat at a licensed installation.

Waste code number: 14 06 01

Disposal of packaging: Return to supplier.

NB: The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

Section 14: Transport information

14.1. UN number

UN number: UN3159

14.2. UN proper shipping name

Shipping name: 1,1,1,2-TETRAFLUOROETHANE (R 134A)

14.3. Transport hazard class(es)

Transport class: 2

14.4. Packing group

14.5. Environmental hazards

Environmentally hazardous: No **Marine pollutant:** No

14.6. Special precautions for user

Tunnel code: C/E

Transport category: 3

Section 15: Regulatory information

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

Specific regulations: Contains fluorinated greenhouse gases covered by the Kyoto Protocol.

15.2. Chemical Safety Assessment

Chemical safety assessment: A chemical safety assessment has been carried out for the substance or the mixture by the supplier.

Section 16: Other information

Other information

Other information: This safety data sheet is prepared in accordance with Commission Regulation (EU) No 2015/830.

* indicates text in the SDS which has changed since the last revision.

Phrases used in s.2 and s.3: H280: Contains gas under pressure; may explode if heated.

Legal disclaimer: * The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. This company shall not be held liable for any damage resulting from handling or from contact with the above product.

[final page]

SAFETY DATA SHEET

REFRIGERANT R404A

Compilation date: 14/05/2015

Revision date: 08/02/2018

Revision No: 2

Section 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name: REFRIGERANT R404A

Product code: R404A

Synonyms: GENETRON 404A

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

Use of substance / mixture: Industrial and Professional use. Advised Against: Consumer use.

1.3. Details of the supplier of the safety data sheet

Company name: National Refrigerants Ltd

4 Watling Close

Sketchley Meadows Business Park

Hinckley

Leicestershire

LE10 3EZ

United Kingdom

Tel: 01455 630790

Fax: 01455 630791

Email: sds@nationalref.com

1.4. Emergency telephone number

New Zealand National Poisons Centre **0800 764 766**

Section 2: Hazards identification

2.1. Classification of the substance or mixture

Classification under CLP: Press. Gas: H280

Most important adverse effects: Contains gas under pressure; may explode if heated.

2.2. Label elements

Label elements:

Hazard statements: H280: Contains gas under pressure; may explode if heated.

Hazard pictograms: GHS04: Gas cylinder

Signal words: Warning

Precautionary statements: P410+403: Protect from sunlight. Store in a well-ventilated place.

[cont...]

2.3. Other hazards

PBT: This product is not identified as a PBT/vPvB substance.

Section 3: Composition/information on ingredients

3.2. Mixtures

Hazardous ingredients:

REFRIGERANT R143A - REACH registered number(s): 01-2119492869-13

EINECS	CAS	PBT / WEL	CLP Classification	Percent
206-996-5	420-46-2	Substance with a Community workplace exposure limit.	Flam. Gas 1: H220; Press. Gas: H280	50-70%

PENTAFLUOROETHANE - REACH registered number(s): 01-2119485636-25

206-557-8	354-33-6	Substance with a Community workplace exposure limit.	Press. Gas: H280	30-50%

REFRIGERANT R134A - REACH registered number(s): 01-2119459374-33

212-377-0	811-97-2	Substance with a Community workplace exposure limit.	Press. Gas: H280	1-10%

Section 4: First aid measures

4.1. Description of first aid measures

Skin contact: Remove all contaminated clothes and footwear immediately unless stuck to skin. Drench the affected skin with running water for 10 minutes or longer if substance is still on skin. Do not use hot water. If frostbite has occurred call a physician.

Eye contact: Bathe the eye with running water for 15 minutes. Transfer to hospital for specialist examination.

Ingestion: Not applicable.

Inhalation: Remove casualty from exposure ensuring one's own safety whilst doing so. If conscious, ensure the casualty sits or lies down. If unconscious, check for breathing and apply artificial respiration if necessary. Consult a doctor.

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

Skin contact: There may be redness or whiteness of the skin in the area of exposure. Frost-bite may occur causing the affected area to become white and numb.

Eye contact: There may be irritation and pain. There may be severe pain. Corneal burns may occur. May cause permanent damage.

Ingestion: Not applicable.

Inhalation: Inhalation may produce the following symptoms: Shortness of breath, dizziness, weakness, nausea, headache, narcosis, irregular cardiac activity. Asphyxia. May cause cardiac arrhythmia.

Delayed / immediate effects: No data available.

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

Immediate / special treatment: Do Not give adrinaline or similar drugs.

Section 5: Fire-fighting measures

5.1. Extinguishing media

Extinguishing media: Water spray. Carbon dioxide. Alcohol resistant foam. Dry chemical powder. Suitable extinguishing media for the surrounding fire should be used. Use water spray to cool containers.

5.2. Special hazards arising from the substance or mixture

Exposure hazards: In combustion emits toxic fumes of carbon dioxide / carbon monoxide. In combustion emits toxic fumes of hydrogen fluoride.

5.3. Advice for fire-fighters

Advice for fire-fighters: Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

Section 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: Evacuate the area immediately. Ventilate the area, especialy low or enclosed places where heavy vapours might collect.

6.2. Environmental precautions

Environmental precautions: The product evaporates readily. Stop release if safe to do so. Prevent from entering sewers, basements and work pits, or any place where the accumulation can be dangerous.

6.3. Methods and material for containment and cleaning up

Clean-up procedures: Material evaporates. Ventilate the area, especialy low or enclosed places where heavy vapours might collect.

6.4. Reference to other sections

Reference to other sections: Refer to section 8 of SDS.

Section 7: Handling and storage

7.1. Precautions for safe handling

Handling requirements: Ensure there is sufficient ventilation of the area. Ensure there is exhaust ventilation of the area. Do not handle in a confined space.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in a cool, well ventilated area. Keep container tightly closed. Keep away from direct sunlight. Store at a temperature not exceeding 45°C.

Suitable packaging: Must only be kept in original packaging.

7.3. Specific end use(s)

Specific end use(s): ES1 - Fromulation, blending, repacking - Industrial use.

Section 8: Exposure controls/personal protection

8.1. Control parameters

Hazardous ingredients:

REFRIGERANT R143A

Workplace exposure limits: **Respirable dust**

State	8 hour TWA	15 min. STEL	8 hour TWA	15 min. STEL
EU	1000 ppm	-	-	-

PENTAFLUOROETHANE

EU	1000 ppm	-	-	-

REFRIGERANT R134A

EU	4240 mg/m3	-	-	-

DNEL/PNEC Values

Hazardous ingredients:

REFRIGERANT R143A

Type	Exposure	Value	Population	Effect
DNEL	Inhalation	38800 mg/m3	Workers	Systemic
DNEL	Inhalation	10700 mg/m3	General Population	Systemic

PENTAFLUOROETHANE

Type	Exposure	Value	Population	Effect
DNEL	Inhalation	16444 mg/m3	Workers	Systemic
DNEL	Inhalation	1753 mg/m3	Consumers	Systemic
PNEC	Fresh water	0.1 mg/l	-	-
PNEC	Fresh water sediments	0.6 mg/kg	-	-

REFRIGERANT R134A

Type	Exposure	Value	Population	Effect
DNEL	Inhalation	2476 mg/m3	Workers	Systemic
DNEL	Inhalation	2476 mg/m3	Consumers	Systemic
PNEC	Fresh water	0.01 mg/l	-	-
PNEC	Marine water	0.75 mg/l	-	-
PNEC	Microorganisms in sewage treatment	73 mg/l	-	-
DNEL	Inhalation	13936 mg/m3	Workers	Systemic

PNEC	Fresh water sediments	0.75 mg/kg	-	-

8.2. Exposure controls

Engineering measures: Ensure there is exhaust ventilation of the area. Use only in closed systems.

Respiratory protection: Self-contained breathing apparatus must be available in case of emergency. Vapours are heavier than air and can cause suffocation by reducing the oxygen available for breathing.

Hand protection: Protective gloves.

Eye protection: Safety glasses with side-shields. Safety goggles. Face-shield.

Skin protection: Protective clothing.

Environmental: Gas escapes to be kept to the minimum by engineering processes and operating methods.

Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

State: Gas

Colour: Colourless

Odour: Characteristic odour

Evaporation rate: Not applicable.

Oxidising: Not applicable.

Solubility in water: No data available.

Boiling point/range°C: -45.5

Melting point/range°C: No data available.

Flammability limits %: lower: Not applicable.

upper: Not applicable.

Flash point°C: Not applicable.

Part.coeff. n-octanol/water: No data available.

Autoflammability°C: Not applicable.

Vapour pressure: 12 546 hPa at 25oC

Relative density: 1,05 g/cm3 at 25oC

pH: Approx. 7

9.2. Other information

Other information: No data available.

Section 10: Stability and reactivity

10.1. Reactivity

Reactivity: Stable under recommended transport or storage conditions.

10.2. Chemical stability

10.3. Possibility of hazardous reactions

Hazardous reactions: Hazardous reactions will not occur under normal transport or storage conditions. Decomposition may occur on exposure to conditions or materials listed below.

10.4. Conditions to avoid

Conditions to avoid: Heat. Hot surfaces. Direct sunlight.

10.5. Incompatible materials

Materials to avoid: Alkali metals. Alkali earth metals. Finely powdered metals. Strong oxidising agents.

10.6. Hazardous decomposition products

Haz. decomp. products: In combustion emits toxic fumes of hydrogen fluoride. In combustion emits toxic fumes of carbon dioxide / carbon monoxide.

Section 11: Toxicological information

11.1. Information on toxicological effects

Hazardous ingredients:

REFRIGERANT R143A

GASES	RAT	4H LC50	2030	mg/l

PENTAFLUOROETHANE

GASES	RAT	4H LC50	800000	ppmV

REFRIGERANT R134A

GASES	RAT	4H LC50	567000	ppmV

Toxicity values: No data available.

Symptoms / routes of exposure

Skin contact: There may be redness or whiteness of the skin in the area of exposure. Frost-bite may occur causing the affected area to become white and numb.

Eye contact: There may be irritation and pain. There may be severe pain. Corneal burns may occur. May cause permanent damage.

Ingestion: Not applicable.

Inhalation: Inhalation may produce the following symptoms: Shortness of breath, dizziness, weakness, nausea, headache, narcosis, irregular cardiac activity. Asphyxia. May cause cardiac arrhythmia.

Delayed / immediate effects: No data available.

Section 12: Ecological information

12.1. Toxicity

Hazardous ingredients:

REFRIGERANT R143A

ALGAE	72H ErC50	71	mg/l

Daphnia magna	48H EC50	300	mg/l
FISH	96H LC50	109	mg/l

REFRIGERANT R134A

Daphnia magna	48H EC50	980	mg/l
GREEN ALGA (Selenastrum capricornutum)	72H ErC50	118	mg/l
RAINBOW TROUT (Oncorhynchus mykiss)	96H LC50	450	mg/l

12.2. Persistence and degradability

Persistence and degradability: No data available.

12.3. Bioaccumulative potential

Bioaccumulative potential: No data available.

12.4. Mobility in soil

Mobility: No data available.

12.5. Results of PBT and vPvB assessment

PBT identification: This product is not identified as a PBT/vPvB substance.

12.6. Other adverse effects

Other adverse effects: Ozone Depletion Potential (ODP): 0 (R11 = 1) R404A Global Warming Potential (GWP): 3922 (CO_2=1) Contains fluoronated greenhouse gases covered by the Kyoto Protocol.

Section 13: Disposal considerations

13.1. Waste treatment methods

Disposal operations: Product evaporates.

Recovery operations: Consult manufacturer or supplier for information regarding recovery and recycling of the product. If recovery is not possible, incinerate at a licenced instalation.

Disposal of packaging: Return to supplier.

NB: The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

Section 14: Transport information

14.1. UN number

UN number: UN3337

14.2. UN proper shipping name

Shipping name: REFRIGERANT GAS R 404A

14.3. Transport hazard class(es)

Transport class: 2

14.4. Packing group

14.5. Environmental hazards

Environmentally hazardous: No **Marine pollutant:** No

14.6. Special precautions for user

Special precautions: No special precautions.

Tunnel code: C/E

Transport category: 3

Section 15: Regulatory information

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

Specific regulations: Not applicable.

15.2. Chemical Safety Assessment

Chemical safety assessment: A chemical safety assessment has not been carried out for the substance or the mixture by the supplier.

Section 16: Other information

Other information

Other information: This safety data sheet is prepared in accordance with Commission Regulation (EU) No 2015/830.

* indicates text in the SDS which has changed since the last revision.

Phrases used in s.2 and s.3: H220: Extremely flammable gas.

H280: Contains gas under pressure; may explode if heated.

Legal disclaimer: National Refrigerants Ltd believes that the information and recommendations contained herein (including data and statments) are accurate as of the date hereof. NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY, OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HEREIN. The information provided herein relates only to the specific product designated. National Refrigerants expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information.

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SAFETY DATA SHEET

REFRIGERANT R410A

Compilation date: 18/05/2015

Revision date: 09/04/2018

Revision No: 1a

Section 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name: REFRIGERANT R410A

Product code: R410A

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

Use of substance / mixture: Refrigerant

1.3. Details of the supplier of the safety data sheet

Company name: National Refrigerants Ltd

4 Watling Close

Sketchley Meadows Business Park

Hinckley

Leicestershire

LE10 3EZ

United Kingdom

Tel: 01455 630790

Fax: 01455 630791

Email: sds@nationalref.com

1.4. Emergency telephone number

New Zealand National Poisons Centre **0800 764 766**

Section 2: Hazards identification

2.1. Classification of the substance or mixture

Classification under CLP: Press. Gas: H280

Most important adverse effects: Contains gas under pressure; may explode if heated.

2.2. Label elements

Label elements:

Hazard statements: H280: Contains gas under pressure; may explode if heated.

Hazard pictograms: GHS04: Gas cylinder

Signal words: Warning

Precautionary statements: P410+403: Protect from sunlight. Store in a well-ventilated place.

[cont...]

2.3. Other hazards

PBT: This product is not identified as a PBT/vPvB substance.

Section 3: Composition/information on ingredients

3.2. Mixtures

Hazardous ingredients:

DIFLUOROMETHANE - REACH registered number(s): 01-2119471312-47

EINECS	CAS	PBT / WEL	CLP Classification	Percent
200-839-4	75-10-5	Substance with a Community workplace exposure limit.	Flam. Gas 1: H220; Press. Gas: H280	50.000%

PENTAFLUOROETHANE - REACH registered number(s): 01-2119485636-25

206-557-8	354-33-6	Substance with a Community workplace exposure limit.	Press. Gas: H280	50.000%

Section 4: First aid measures

4.1. Description of first aid measures

Skin contact: Remove all contaminated clothes and footwear immediately unless stuck to skin. Drench the affected skin with running water for 10 minutes or longer if substance is still on skin. Do not use hot water. If frostbite has occurred call a physician.

Eye contact: Bathe the eye with running water for 15 minutes. Consult a doctor.

Ingestion: Not applicable.

Inhalation: Remove casualty from exposure ensuring one's own safety whilst doing so. If unconscious, check for breathing and apply artificial respiration if necessary. Consult a doctor.

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

Skin contact: There may be mild irritation at the site of contact. Frost-bite may occur causing the affected area to become white and numb.

Eye contact: There may be pain and redness. Corneal burns may occur. May cause permanent damage.

Ingestion: Not applicable.

Inhalation: Inhalation may produce the following symptoms: Shortness of breath, dizziness, weakness, nausea, headache, narcosis, irregular cardiac activity. asphyxia May cause cardiac arrhythmia.

Delayed / immediate effects: May cause cardiac arrhythmia.

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

Immediate / special treatment: Not applicable.

Section 5: Fire-fighting measures

5.1. Extinguishing media

Extinguishing media: Alcohol resistant foam. Water spray. Carbon dioxide. Dry chemical powder. Suitable extinguishing media for the surrounding fire should be used. Use water spray to cool containers.

5.2. Special hazards arising from the substance or mixture

Exposure hazards: In combustion emits toxic fumes. Non flamable gas.

5.3. Advice for fire-fighters

Advice for fire-fighters: Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

Section 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: Refer to section 8 of SDS for personal protection details. Notify the police and fire brigade immediately. If outside keep bystanders upwind and away from danger point.

6.2. Environmental precautions

Environmental precautions: Stop release if safe to do so. Prevent from entering sewers, basements and work pits, or any place where the accumulation can be dangerous.

6.3. Methods and material for containment and cleaning up

Clean-up procedures: Material evaporates. Ventilate the area, especialy low or enclosed places where heavy vapours might collect.

6.4. Reference to other sections

Reference to other sections: Refer to section 8 of SDS.

Section 7: Handling and storage

7.1. Precautions for safe handling

Handling requirements: Ensure there is sufficient ventilation of the area. Avoid the formation or spread of mists in the air.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in a cool, well ventilated area. Keep container tightly closed. Store at a temperature not exceeding 45°C.

Suitable packaging: Must only be kept in original packaging.

7.3. Specific end use(s)

Specific end use(s): No data available.

Section 8: Exposure controls/personal protection

8.1. Control parameters

Hazardous ingredients:

DIFLUOROMETHANE

Workplace exposure limits: **Respirable dust**

State	8 hour TWA	15 min. STEL	8 hour TWA	15 min. STEL
UK	1000 ppm	-	-	-

PENTAFLUOROETHANE

EU	1000 ppm	-	-	-

DNEL/PNEC Values

Hazardous ingredients:

DIFLUOROMETHANE

Type	Exposure	Value	Population	Effect
DNEL	Inhalation (developmental tox)	13936 mg/m3	Workers	Systemic
DNEL	Inhalation (developmental tox)	2476 mg/m3	Consumers	Systemic
PNEC	Fresh water	0.142 mg/l	-	-
PNEC	Fresh water sediments	0.534 mg/kg	-	-

PENTAFLUOROETHANE

Type	Exposure	Value	Population	Effect
DNEL	Inhalation	16444 mg/m3	Workers	Systemic
DNEL	Inhalation	1753 mg/m3	Consumers	Systemic
PNEC	Fresh water	0.1 mg/l	-	-
PNEC	Fresh water sediments	0.6 mg/kg	-	-

8.2. Exposure controls

Engineering measures: Ensure there is sufficient ventilation of the area.

Respiratory protection: Respiratory protection not required.

Hand protection: Protective gloves.

Eye protection: Safety glasses. Ensure eye bath is to hand.

Skin protection: Protective clothing.

Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

State: Liquified gas

Colour: Colourless

Odour: Characteristic odour

Evaporation rate: No data available.

Oxidising: Not applicable.

Solubility in water: No data available.
Boiling point/range°C: -48.5
Melting point/range°C: No data available.
Flammability limits %: lower: Not applicable.
upper: Not applicable.
Flash point°C: Not applicable.
Autoflammability°C: Not applicable.
Vapour pressure: 14.706 Bar at 20oC
Relative density: 1081 kg/m3 at 20oC
pH: No data available.

9.2. Other information

Other information: No data available.

Section 10: Stability and reactivity

10.1. Reactivity

Reactivity: Stable under recommended transport or storage conditions.

10.2. Chemical stability

Chemical stability: Stable under normal conditions. Stable at room temperature.

10.3. Possibility of hazardous reactions

Hazardous reactions: Hazardous reactions will not occur under normal transport or storage conditions. Decomposition may occur on exposure to conditions or materials listed below.

10.4. Conditions to avoid

Conditions to avoid: Heat. Hot surfaces. Sources of ignition. Flames.

10.5. Incompatible materials

Materials to avoid: Strong oxidising agents. Alkali metals. Alkali earth metals. Finely powdered metals.

10.6. Hazardous decomposition products

Haz. decomp. products: In combustion emits toxic fumes.

Section 11: Toxicological information

11.1. Information on toxicological effects

Hazardous ingredients:

DIFLUOROMETHANE

GASES	RAT	LD50	520000	ppmV

PENTAFLUOROETHANE

GASES	RAT	4H LC50	800000	ppmV

Toxicity values: No data available.

Symptoms / routes of exposure

Skin contact: There may be mild irritation at the site of contact. Frost-bite may occur causing the affected area to become white and numb.

Eye contact: There may be pain and redness. Corneal burns may occur. May cause permanent damage.

Ingestion: Not applicable.

Inhalation: Inhalation may produce the following symptoms: Shortness of breath, dizziness, weakness, nausea, headache, narcosis, irregular cardiac activity. asphyxia May cause cardiac arrhythmia.

Delayed / immediate effects: May cause cardiac arrhythmia.

Other information: No data available

Section 12: Ecological information

12.1. Toxicity

Hazardous ingredients:

DIFLUOROMETHANE

ALGAE	96H ErC50	142	mg/l
Daphnia magna	48H EC50	652	mg/l
FISH	96H LC50	1.057	mg/l

12.2. Persistence and degradability

Persistence and degradability: Biodegradable.

12.3. Bioaccumulative potential

Bioaccumulative potential: No bioaccumulation potential.

12.4. Mobility in soil

Mobility: Readily absorbed into soil.

12.5. Results of PBT and vPvB assessment

PBT identification: This product is not identified as a PBT/vPvB substance.

12.6. Other adverse effects

Other adverse effects: Ozone Depletion Potential (ODP): 0 (R11 = 1) R410A Globlal Warming Potential (GWP): 1980 (CO_2=1) Contains fluoronated greenhouse gases covered by the Kyoto Protocol.

Section 13: Disposal considerations

13.1. Waste treatment methods

Disposal operations: Product evaporates.

Recovery operations: Consult manufacturer or supplier for information regarding recovery and recycling of the product. If recovery is not possible, incinerat at a licensed installation.

Waste code number: 14 06 01

Disposal of packaging: Return to supplier.

NB: The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

Section 14: Transport information

14.1. UN number

UN number: UN3163

14.2. UN proper shipping name

Shipping name: LIQUEFIED GAS, N.O.S.
(DIFLUOROMETHANE; PENTAFLUOROETHANE)

14.3. Transport hazard class(es)

Transport class: 2

14.4. Packing group

14.5. Environmental hazards

Environmentally hazardous: No **Marine pollutant:** No

14.6. Special precautions for user

Special precautions: No special precautions.

Tunnel code: C/E

Transport category: 3

Section 15: Regulatory information

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

Specific regulations: Contains fluorinated greenhouse gases covered by the Kyoto Protocol.

15.2. Chemical Safety Assessment

Section 16: Other information

Other information

Other information: This safety data sheet is prepared in accordance with Commission Regulation (EU) No 2015/830.

* indicates text in the SDS which has changed since the last revision.

Phrases used in s.2 and s.3: H220: Extremely flammable gas.
H280: Contains gas under pressure; may explode if heated.

Legal disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. This company shall not be held liable for any damage resulting from handling or from contact with the above product.

[final page]

SAFETY DATA SHEET

REFRIGERANT R449A

Compilation date: 27/05/2016

Revision No: 1

Section 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name: REFRIGERANT R449A

Product code: R449A

Synonyms: OPTEON XP40

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

Use of substance / mixture: PC16: Heat transfer fluids.

1.3. Details of the supplier of the safety data sheet

Company name: National Refrigerants Ltd

4 Watling Close

Sketchley Meadows Business Park

Hinckley

Leicestershire

LE10 3EZ

United Kingdom

Tel: 01455 630790

Fax: 01455 630791

Email: sds@nationalref.com

1.4. Emergency telephone number

New Zealand National Poisons Centre **0800 764 766**

Section 2: Hazards identification

2.1. Classification of the substance or mixture

Classification under CLP: Press. Gas: H280

Most important adverse effects: Contains gas under pressure; may explode if heated.

2.2. Label elements

Label elements:

Hazard statements: H280: Contains gas under pressure; may explode if heated.

Signal words: Warning

Hazard pictograms: GHS04: Gas cylinder

Precautionary statements: P410+403: Protect from sunlight. Store in a well-ventilated place.

[cont...]

2.3. Other hazards

PBT: This product is not identified as a PBT/vPvB substance.

Section 3: Composition/information on ingredients

3.2. Mixtures

Hazardous ingredients:

1,1,1,2-TETRAFLUOROETHANE - REACH registered number(s): 01-2119459374-33

EINECS	CAS	PBT / WEL	CLP Classification	Percent
212-377-0	811-97-2	Substance with a Community workplace exposure limit.	Press. Gas: H280	10-30%

REFRIGERANT R1234YF - REACH registered number(s): 01-0000019665-61

-	754-12-1	Substance with a Community workplace exposure limit.	Flam. Gas 1: H220; Press. Gas: H280	10-30%

PENTAFLUOROETHANE - REACH registered number(s): 01-2119485636-25

206-557-8	354-33-6	Substance with a Community workplace exposure limit.	Press. Gas: H280	10-30%

DIFLUOROMETHANE

200-839-4	75-10-5	Substance with a Community workplace exposure limit.	Flam. Gas 1: H220; Press. Gas: H280	10-30%

Section 4: First aid measures

4.1. Description of first aid measures

Skin contact: Remove all contaminated clothes and footwear immediately unless stuck to skin. Drench the affected skin with running water for 10 minutes or longer if substance is still on skin. Do not use hot water. If frostbite has occurred call a physician.

Eye contact: Bathe the eye with running water for 15 minutes. Consult a doctor.

Ingestion: Not applicable.

Inhalation: Remove casualty from exposure ensuring one's own safety whilst doing so. If unconscious, check for breathing and apply artificial respiration if necessary. Consult a doctor.

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

Skin contact: There may be redness or whiteness of the skin in the area of exposure. Frost-bite may occur causing the affected area to become white and numb.

Eye contact: There may be severe pain. Corneal burns may occur. May cause permanent damage.

Ingestion: Not applicable.

Inhalation: Inhalation may produce the following symptoms: Shortness of breath, dizziness, weakness, nausea, headache, narcosis, irregular cardiac activity. Asphyxia. May cause cardiac arrhythmia.

7.3. Specific end use(s)

Specific end use(s): No data available.

Section 8: Exposure controls/personal protection

8.1. Control parameters

Hazardous ingredients:

1,1,1,2-TETRAFLUOROETHANE

Workplace exposure limits: **Respirable dust**

State	8 hour TWA	15 min. STEL	8 hour TWA	15 min. STEL
EU	4240 mg/m3	-	-	-

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EU	500 ppm	-	-	-

PENTAFLUOROETHANE

EU	1000 ppm	-	-	-

DIFLUOROMETHANE

UK	1000 ppm	-	-	-

DNEL/PNEC Values

Hazardous ingredients:

1,1,1,2-TETRAFLUOROETHANE

Type	Exposure	Value	Population	Effect
DNEL	Inhalation	13936 mg/m3	Workers	Systemic
DNEL	Inhalation	2476 mg/m3	Consumers	Systemic
PNEC	Fresh water	0.1 mg/l	-	-
PNEC	Marine water	0.01 mg/l	-	-
PNEC	Microorganisms in sewage treatment	73 mg/l	-	-
PNEC	Fresh water sediments	0.75 mg/kg dw	-	-
PNEC	Water (Intermittent release)	1 mg/l	-	-

PENTAFLUOROETHANE

Type	Exposure	Value	Population	Effect
DNEL	Inhalation	16444 mg/m3	Workers	Systemic
DNEL	Inhalation	1753 mg/m3	Consumers	Systemic
PNEC	Fresh water	0.1 mg/l	-	-
PNEC	Fresh water sediments	0.6 mg/kg	-	-

Delayed / immediate effects: May cause cardiac arrithymia.

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

Immediate / special treatment: Not applicable.

Section 5: Fire-fighting measures

5.1. Extinguishing media

Extinguishing media: Alcohol resistant foam. Water spray. Carbon dioxide. Dry chemical powder. Suitable extinguishing media for the surrounding fire should be used. Use water spray to cool containers.

5.2. Special hazards arising from the substance or mixture

Exposure hazards: In combustion emits toxic fumes. Non-flammable gas.

5.3. Advice for fire-fighters

Advice for fire-fighters: Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

Section 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: Refer to section 8 of SDS for personal protection details. Notify the police and fire brigade immediately. If outside keep bystanders upwind and away from danger point.

6.2. Environmental precautions

Environmental precautions: Stop release if it is safe to do so. Prevent from entering sewers, basements and work pits, or any place where accumulation could be dangerous.

6.3. Methods and material for containment and cleaning up

Clean-up procedures: Material evaporates. Ventilate the area, especially low or enclosed places where heavy vapours might collect.

6.4. Reference to other sections

Reference to other sections: Refer to section 8 of SDS.

Section 7: Handling and storage

7.1. Precautions for safe handling

Handling requirements: Ensure there is sufficient ventilation of the area. Avoid the formation or spread of mists in the air.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in a cool, well ventilated area. Keep container tightly closed. Store at a temperature not exceeding 45°C.

Suitable packaging: Must only be kept in original packaging.

DIFLUOROMETHANE

Type	Exposure	Value	Population	Effect
DNEL	Inhalation (developmental tox)	16444 mg/m3	Workers	Systemic
DNEL	Inhalation (developmental tox)	1753 mg/m3	Consumers	Systemic

8.2. Exposure controls

Engineering measures: Ensure there is sufficient ventilation of the area.

Respiratory protection: Self-contained breathing apparatus must be available in case of emergency. Vapours are heavier than air and can cause suffocation by reducing the oxygen available for breathing.

Hand protection: Protective gloves.

Eye protection: Safety glasses with side-shields. Safety goggles. Face-shield. Safety glasses.

Skin protection: Protective clothing.

Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

State: Liquified gas

Colour: Colourless

Odour: Characteristic odour

Boiling point/range°C: -46.0

Flash point°C: Not applicable.

Vapour pressure: 12.748 hPa @ 25oC

Relative density: 1.10 @ 25oC

9.2. Other information

Other information: R449A: Relative vapour density: 3.07 at 25degC (Air=1)

Section 10: Stability and reactivity

10.1. Reactivity

Reactivity: Stable under recommended transport or storage conditions.

10.2. Chemical stability

Chemical stability: Stable under normal conditions. Stable at room temperature.

10.3. Possibility of hazardous reactions

Hazardous reactions: Hazardous reactions will not occur under normal transport or storage conditions. Decomposition may occur on exposure to conditions or materials listed below.

10.4. Conditions to avoid

Conditions to avoid: Heat. Hot surfaces. Sources of ignition. Flames.

10.5. Incompatible materials

Materials to avoid: Strong oxidising agents. Strong acids.

10.6. Hazardous decomposition products

Haz. decomp. products: In combustion emits toxic fumes.

Section 11: Toxicological information

11.1. Information on toxicological effects

Hazardous ingredients:

1,1,1,2-TETRAFLUOROETHANE

GASES	RAT	4H LC50	567000	ppmV

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GASES	RAT	4H LC50	> 400000	ppmV

PENTAFLUOROETHANE

GASES	RAT	4H LC50	800000	ppmV

DIFLUOROMETHANE

GASES	RAT	LD50	520000	ppmV

Toxicity values: No data available.

Symptoms / routes of exposure

Skin contact: There may be redness or whiteness of the skin in the area of exposure. Frost-bite may occur causing the affected area to become white and numb.

Eye contact: There may be severe pain. Corneal burns may occur. May cause permanent damage.

Ingestion: Not applicable.

Inhalation: Inhalation may produce the following symptoms: Shortness of breath, dizziness, weakness, nausea, headache, narcosis, irregular cardiac activity. Asphyxia. May cause cardiac arrhythmia.

Delayed / immediate effects: May cause cardiac arrithymia.

Section 12: Ecological information

12.1. Toxicity

Hazardous ingredients:

1,1,1,2-TETRAFLUOROETHANE

ALGAE	72H ErC50	118	mg/l
Daphnia magna	48H EC50	980	mg/l
RAINBOW TROUT (Oncorhynchus mykiss)	96H LC50	450	mg/l

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ALGAE	96H LC50	> 100	mg/l
Daphnia magna	48H EC50	> 83	mg/l
FISH	96H ErC50	>197	mg/l

DIFLUOROMETHANE

ALGAE	96H ErC50	142	mg/l
Daphnia magna	48H EC50	652	mg/l
FISH	96H LC50	1.057	mg/l

12.2. Persistence and degradability

Persistence and degradability: Not biodegradable.

12.3. Bioaccumulative potential

Bioaccumulative potential: No bioaccumulation potential.

12.4. Mobility in soil

Mobility: No data available.

12.5. Results of PBT and vPvB assessment

PBT identification: This product is not identified as a PBT/vPvB substance.

12.6. Other adverse effects

Other adverse effects: Ozone Depletion Potential (ODP): 0 (R11 = 1) Contains fluorinated greenhouse gases covered by the Kyoto Protocol. R449A: Global Warming Potential (GWP): 1397 (CO_2=1)

Section 13: Disposal considerations

13.1. Waste treatment methods

Disposal operations: Product evaporates.

Recovery operations: Consult manufacturer or supplier for information regarding recovery and recycling of the product. If recovery is not possible, incinerate at a licenced installation.

Waste code number: 14 06 01

Disposal of packaging: Return to supplier.

NB: The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

Section 14: Transport information

14.1. UN number

UN number: UN1078

14.2. UN proper shipping name

Shipping name: REFRIGERANT GAS, N.O.S.
(1,1,1,2-TETRAFLUOROETHANE; PENTAFLUOROETHANE)

14.3. Transport hazard class(es)

Transport class: 2

14.4. Packing group

14.5. Environmental hazards

Environmentally hazardous: No **Marine pollutant:** No

14.6. Special precautions for user

Special precautions: No special precautions.

Tunnel code: C/E

Transport category: 3

Section 15: Regulatory information

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

Specific regulations: Contains fluorinated greenhouse gases covered by the Kyoto Protocol.

15.2. Chemical Safety Assessment

Section 16: Other information

Other information

Other information: This safety data sheet is prepared in accordance with Commission Regulation (EU) No 453/2010.

* indicates text in the SDS which has changed since the last revision.

Phrases used in s.2 and s.3: H220: Extremely flammable gas.

H280: Contains gas under pressure; may explode if heated.

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