

SAFETY DATA SHEET

SECTION 1 – IDENTIFICATION: PRODUCT IDENTIFIER/CHEMICAL IDENTITY

1.1 PRODUCT IDENTIFIER: Octane Booster

1.2 PRODUCT CODE: ADOCTB375

1.3 RELEVANT IDENTIFIED USES OF THE MIXTURE AND USES ADVISED AGAINST:

RELEVANT IDENTIFIED USES: Multipurpose fuel additive.

RESTRICTIONS ON USE: None known.

1.4 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET:

SUPPLIER NAME: PENRITE OIL Company Pty Ltd (ABN: 25005 001 525),
ADDRESS (Australia): 110-116 Greens Road, Dandenong South VIC, Australia, 3175
TELEPHONE NUMBER (Australia): 1300 736 748; +61 3 9801 0877 (Int); Fax: 1800 736 748

ADDRESS (New Zealand): 75 Lady Ruby Drive, East Tamaki, Auckland, New Zealand, 2013

TELEPHONE NUMBER (New Zealand): 0800 533 698; Fax: 0800 533 698

E-MAIL: tech@penriteoil.com (Aust and NZ)

1.5 EMERGENCY TEL. NUMBER: Australia: 1300 736 748; New Zealand: 0800 533 698
(Poisons Information Centre (Aust 131 126; NZ 0800 764 766))

1.6 HSNO DETAILS:

HSNO APPROVAL NUMBER: HSR002587.

HSNO GROUP TITLE: Fuel Additives (Combustible, Toxic [6.7]) Group Standard 2006.

SECTION 2 – HAZARD(S) IDENTIFICATION

2.1 CLASSIFICATION OF THE HAZARDOUS CHEMICAL:

GHS CLASSIFICATION HAZARD

CLASS & CATEGORY: Under the Model Work Health and Safety Regulations the product would be rated as hazardous:

Flammable Liquid - Category 4

Acute Toxicity - Oral - Category 3

Acute Toxicity - Dermal - Category 3

Acute Toxicity - Inhalation - Category 3

Aspiration Hazard - Category 1

Skin Corrosion/Irritation - Category 2

Serious Eye Damage/Irritation - Category 2A

Toxic to Reproduction - Category 2

Specific Target Organ Toxicity (Repeated Exposure) - Category 2

Chronic Aquatic Toxicity - Category 2.

2.2 LABEL ELEMENTS INCLUDING PRECAUTIONARY STATEMENTS:

SIGNAL WORD: Danger

PICTOGRAMS:



HAZARD STATEMENTS:

H227 - Combustible liquid.

H301 - Toxic if swallowed.

H304 - May be fatal if swallowed and enters airways.

H311 - Toxic in contact with skin.

H315 - Causes skin irritation.

H319 - Causes serious eye irritation.

H331 - Toxic if inhaled.

H361d - Suspected of damaging the unborn child.

H373 - May cause damage to organs through prolonged or repeated exposure by inhalation.

H411 - Toxic to aquatic life with long lasting effects.

SAFETY DATA SHEET

SECTION 2 – HAZARD(S) IDENTIFICATION Continued

PRECAUTIONARY STATEMENTS:

PREVENTION:

- P102 - Keep out of reach of children.
- P103 - Read label before use.
- P202 - Do not handle until all safety precautions have been read and understood.
- P210 - Keep away from flames and hot surfaces - No smoking.
- P260 - Do not breathe mist, vapours and spray.
- P264 - Wash hands thoroughly after handling.
- P270 - Do not eat, drink or smoke when using this product.
- P271 - Use only outdoors or in a well-ventilated area.
- P272 - Contaminated work clothing should not be allowed out of the workplace.
- P273 - Avoid release to the environment.
- P280 - Wear protective gloves/eye protection/face protection.

RESPONSE:

- P101 - If medical advice is needed, have product container or label at hand.
- P301+P310 - IF SWALLOWED: Immediately call a POISON CENTRE or doctor/physician.
- P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
- P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P308+P313 - If exposed or concerned: Get medical advice/attention.
- P310 - Immediately call a POISON CENTRE or doctor/physician.
- P330 - Rinse mouth.
- P331 - Do NOT induce vomiting.
- P332+P313 - If skin irritation occurs: Get medical advice/attention.
- P337+P313 - If eye irritation persists: Get medical advice/attention.
- P361 - Remove/Take off immediately all contaminated clothing.
- P363 - Wash contaminated clothing before reuse.
- P370+P378 - In case of fire: Use carbon dioxide, alcohol resistant foam, dry chemical or water spray for extinction.
- P391 - Collect spillage.

STORAGE:

- P403+P233+P235 - Store in a well-ventilated place. Keep container tightly closed. Keep cool.
- P405 - Store locked up.

DISPOSAL:

- P501 - Dispose of contents/container in accordance with local regulations.

2.3 OTHER HAZARDS:

Due to the presence of solvents there is a possibility of organ system damage. The product contains small amounts of Naphthalene as an impurity which is considered extremely hazardous to children. The product is a combustible liquid and will potentially form flammable/explosive mixtures in air. There may be static discharge issues with the product in large scale operations that could lead to a fire. As for all chemical products, persons should not expose open wounds, cuts, abrasions or irritated skin to this material.

SAFETY DATA SHEET

SECTION 3 – COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENTS	CAS NUMBER	Concentration % W/W	GHS Classification*
Naphtha, petroleum, hydrodesulfurized heavy	64742-82-1	> 55%	Asp Haz 1 - H304
Distillates, petroleum, hydrotreated light	64742-47-8	20% - < 30%	Asp Haz 1 - H304
1-Hexanol, 2-ethyl-	104-76-7	5% - < 20%	Acut Tox 4 - H332 Eye Irrit 2A - H319 Skin Irrit 2 - H315 Toxic Repro 2 - H361d
Solvent naphtha, petroleum, heavy aromatic	64742-94-5	1% - < 4.0%	Asp Haz 1 - H304 STOT SE 3 - H336 AUH066 Chron Aq Tox 2 - H411
Manganese, tricarbonyl[(1,2,3,4,5-eta.)-1-methyl-2,4-cyclopentadien-1-yl]- (Methylcyclopentadienyl manganese Tricarbonyl [MMT])	12108-13-3	1% - < 3.0%	Acut Tox 1 - H300 Acut Tox 1 - H310 Acut Tox 1 - H330 STOT RE 1 - H372 Chron Aq Tox 1 - H410
Polyolefin alkyl phenol alkyl amine	-	1% - < 3.0%	Eye Irrit 2A - H319 Skin Irrit 2 - H315
Naphthalene**	91-20-3	< 0.5%	Acut Tox 4 - H302 Carc Cat 2 - H351 Chron Aq Tox 1 - H410
Complex mixture of additives	-	To 100%	Not Applic

Not Applic = Not Applicable

* Please see Section 15 of this SDS for full text of the Label Elements

**The Naphthalene is present as a component of the Solvent naphtha, (petroleum) heavy aromatic and not as an additional ingredient in the final mixture.

SECTION 4 – FIRST AID MEASURES

4.1 DESCRIPTION OF NECESSARY FIRST AID MEASURES:

INGESTION:

Rinse mouth out with water. If swallowed, do NOT induce vomiting. For advice, contact the Poisons Information Centre (phone Australia 131 126; New Zealand 0800 764 766) or a doctor at once. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. Within 6 hours of ingestion, if delayed symptoms, such as a fever greater than 38.3°C, shortness of breath, chest congestion or continued coughing/wheezing occurs transport immediately to a medical facility. As the product is hydrocarbon based and of low viscosity (1.26cSt @ 40°C), if ingested seek urgent medical assistance.

EYE:

If in eyes, hold eyelids apart and flush the eye immediately with large amounts of running water. Continue flushing for at least 15 minutes or until advised to stop by a Doctor. Check for contact lenses. If there are contact lenses, these should be removed after several minutes of rinsing by the exposed person or medical personnel if it can be done easily. As the product is rated as causes serious eye irritation, after flushing, if eye irritation persists seek medical attention.

SKIN CONTACT:

If skin or hair contact has occurred remove any contaminated clothing and footwear, wash skin or hair thoroughly with soap and water. As the product is a skin irritant and Toxic in contact with skin, after rinsing, if you feel unwell, contact the Poisons Information Centre (phone Australia 131 126; New Zealand 0800 764 766) or a doctor.

SAFETY DATA SHEET

SECTION 4 – FIRST AID MEASURES Continued

INHALATION: If affected, remove the patient from further exposure into fresh air, if safe to do so. If providing assistance, avoid exposure to yourself - only enter contaminated environments with adequate respiratory equipment, once environment has been assessed for flammable vapours. Once removed, lay patient down in a well-ventilated area and reassure them whilst waiting for medical assistance. If the person feels unwell and symptoms, such as dizziness or uncoordination occur, contact the Poisons Information Centre (phone Australia 131 126; New Zealand 0800 764 766) whilst waiting for medical assistance. If not breathing, provide artificial respiration and seek immediate medical assistance. If unconscious, place in a recovery position and seek immediate medical assistance. If irritation develops or persists, consult a Doctor.

PROTECTION FOR FIRST AIDERS: No personnel shall place themselves in a situation that is potentially hazardous to themselves. Assess the scenario for PPE requirements before entering. Assess environment for flammable vapours before entering. Never enter an environment with a flammable atmosphere. Do not enter contaminated area without a respirator or Self Contained Breathing Apparatus once you have assessed the atmosphere. As the product is hydrocarbon based and of low viscosity, if the person has ingested the product, do not use direct mouth-to-mouth resuscitation techniques. Always ensure that you are wearing gloves when dealing with first aid procedures involving chemicals and/or blood.

FIRST AID FACILITIES: Eye wash fountain and safety showers are recommended in the area where the product is used.

4.2 MOST IMPORTANT SYMPTOMS & EFFECTS, BOTH ACUTE & DELAYED, CAUSED BY EXPOSURE:

ACUTE: The product contains a manganese component (MMT) which is highly toxic. Inhalation of high vapour concentrations, skin contact or ingestion may lead to MMT poisoning that may exhibit as giddiness, headache, nausea, chest tightness and breathing difficulties. Ingestion or inhalation of vapours may lead to irritation of the mouth and respiratory tract. Symptoms may include a burning sensation in the nose and throat, coughing or difficulty breathing. Ingestion may lead to nausea and diarrhoea. The product is an aspiration hazard. If material is aspirated into the lungs it may exhibit as coughing, wheezing, congestion or fever. The product is rated as a skin irritant. Skin contact may lead to redness or itching. The product is rated as an eye irritant. Eye contact may lead to localised burning, redness, pain, swelling and tearing.

CHRONIC: Skin contact may aggravate/exacerbate existing skin conditions, such as dermatitis. The product contains a manganese component (MMT) and these types of compounds may have the potential to cause serious damage to organs by prolonged or repeated exposure by inhalation. The NICNAS MMT Safety Fact Sheet states that "Animal studies show that long-term exposure to MMT results in damage to the liver and kidneys".

4.3 INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NECESSARY:

ADVICE TO DOCTOR: Treat symptomatically. As the product is hydrocarbon based and of low viscosity, if vomiting has occurred after ingestion, the patient should be monitored for adverse effects to ensure that the product has not aspirated into the lungs. Small amounts of this product aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary oedema. The NICNAS MMT Safety Fact Sheet states that "accidental ingestion by a child of concentrated MMT in aftermarket fuel additives may be fatal". The product contains low levels of Naphthalene as an impurity which is considered extremely hazardous to children.

SAFETY DATA SHEET

SECTION 5 – FIRE FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA:

SUITABLE MEDIA: Use extinguishing media appropriate for surrounding fire. Use carbon dioxide, alcohol resistant foam, dry chemical or water spray. Spray down fumes resulting from fire.

UNSUITABLE MEDIA: Avoid using full water jet directed at residual material that may be burning. Water may cause splattering on hot residues. Product will float on water.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE:

COMBUSTION HAZARDS: Combustion may produce oxides of carbon, manganese and nitrogen, as well as smoke and irritating vapours.

5.3 ADVICE FOR FIREFIGHTERS:

FIRE: This product is a combustible liquid with a typical flash point of 71°C. The vapour is heavier than air and will spread along the ground and may accumulate in low points or depressions. Therefore, ignition may occur well away from the point of release of the material. Keep storage tanks, pipelines, fire exposed surfaces, etc. cool with water spray.

HAZCHEM CODE: 3Z.

EXPLOSION: No information to indicate that the product is an explosion hazard; though the solvent component may form an explosive mixture with air. Note: Under the WHS legislation, this product is rated as Flammable Liquid - Category 4, with a typical Flash Point of 71°C. Extinguish all sources of flame or spark. Closed containers may explode when exposed to extreme heat.

PROTECTIVE EQUIPMENT:

In the event of a fire, wear full protective clothing and self-contained breathing equipment with full-face piece operated in the pressure demand or other positive pressure mode.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES:

PERSONAL PROTECTION: For small spills, wear Nitrile gloves, glasses/goggles, boots and full-length clothing. During routine operation for a small spill in the open a respirator is not required. However, if mists or vapours are generated, an approved organic vapour/particulate respirator is required. For large spills, or in confined spaces, a full chemically resistant body-suit is recommended and the atmosphere must be evaluated for oxygen deficiency and whether the atmosphere is flammable. If in doubt about potential oxygen deficiency, wear self-contained breathing apparatus. Never enter an environment with a flammable atmosphere.

CONTROL MEASURES: Ventilate area and extinguish and/or remove all sources of ignition. CAUTION: Vapour may form an explosive mixture with air. Never enter a spill area unless you know the vapours have dissipated to make the area safe. Stop the leak if safe to do so. CAUTION: The spilled product will be slippery. Avoid contact with the spilled material.

EMERGENCY PROCEDURES: In the event of a spill or accidental release, notify the relevant authorities in accordance with all applicable regulations.

6.2 ENVIRONMENTAL PRECAUTIONS:

SPILL ADVICE: Do not allow product to enter drains, surface water, sewers or watercourses - inform local authorities if this occurs. Take precautions against static discharge. Ensure all equipment is grounded and use non-sparking tools during clean up operations.

SAFETY DATA SHEET

SECTION 6 – ACCIDENTAL RELEASE MEASURES Continued

6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP:

CONTAINMENT: Contain the spill and absorb with a proprietary absorbent material, sand or earth. CAUTION: The spilled product will be slippery. Be careful of static discharges and/or sparking during clean up. For large spills prepare a bund/barrier/dyke ahead of the spill to confine the spill and allow later recovery. If there is the possibility of spills to enter drains, surface water, sewers or watercourses ensure bunding, or that drains are covered, to minimise the potential for this to occur.

CLEANING PROCEDURES: Having contained the spill, as mentioned above, collect all material quickly and place used absorbent in suitable containers. Be careful of static discharges and/or sparking during clean up. Use only non-sparking tools during cleaning operations. CAUTION: The spilled product will be slippery. Follow local regulations for the disposal of waste. For large spills that have been banded, the material can be pumped, using flammable liquid equipment, into vessels and returned for reprocessing or destruction. Personnel must wear the appropriate clothing as required in Section 6.1 during cleaning procedures; after the environment has been evaluated. Wash contaminated area and objects with detergent and water after spill has been cleared. Rinse the cleaned area with water. Do not allow wash water or rinsings to enter drains, surface water, sewers or water courses.

SECTION 7 – HANDLING AND STORAGE, INCLUDING HOW THE CHEMICAL MAY BE SAFELY USED

7.1 PRECAUTIONS FOR SAFE HANDLING:

SAFE HANDLING: Avoid contact with the product by using appropriate protective equipment such as gloves, glasses or goggles and full-length clothing. Extinguish any potential sources of ignition before using, as flammable vapours will be generated during application. Do not leave containers in direct sunlight. Due to the possibility of pressure build up in the container, open the container with care. Avoid breathing mists or vapours. Do not smoke when handling the material. Prevent small spills and leakage to avoid slip hazards. Properly dispose of any contaminated rags or cleaning materials in order to prevent fire hazards. Eating, drinking, and smoking should be prohibited in the area where this material is handled, stored and processed. Workers should follow good personal hygiene practices, such as washing hands before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Keep containers tightly closed when not in use. Please note that flammable mixtures may be formed when residual material remains in empty containers. Prevent product from entering waterways, drains or sewers. There is the potential for electrostatic accumulation in the product. As a precaution, containers should always be earthed before dispensing commences.

7.2 CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES:

SAFE STORAGE: Classified as a Class 1 Combustible Liquid (Typical Flash Point = 71°C). Store in a cool, dry, well ventilated area away from direct sunlight, ignition sources, oxidising agents, foodstuffs and clothing. Keep containers closed when not in use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Store only in original containers. It is recommended that the product is stored below 25°C.

INCOMPATIBILITIES: Strong oxidizing substances including strong acids.

SAFETY DATA SHEET

SECTION 8 – EXPOSURE CONTROLS & PERSONAL PROTECTION

8.1 EXPOSURE CONTROL MEASURES:

EXPOSURE LIMIT VALUES: Exposure standards for the product have not been established. The following values are applicable for the individual components:

Distillates, petroleum, hydrotreated light (Manufacturer recommendation):

TWA: 100 mg/m³ (ACGIH)

Solvent naphtha, petroleum, heavy aromatic:

TWA: 500 ppm 2000 mg/m³ (OSHA)

Methylcyclopentadienyl manganese tricarbonyl (MMT) (Skin annotation):

TWA: 0.2 mg/m³

Naphthalene:

TWA: 10 ppm 52 mg/m³ STEL: 15 ppm 79 mg/m³

2-Ethyl hexanol (Switzerland Occupational Exposure Limits):

TWA: 20 ppm 110 mg/m³ STEL: 20 ppm 110 mg/m³

8.2 BIOLOGICAL MONITORING:

No data available.

8.3 CONTROL BANDING: No data available.

8.4 ENGINEERING CONTROLS:

ENGINEERING CONTROLS: Special ventilation is not normally required when using this product in normal use scenarios. However, in the operation of certain equipment, at elevated temperatures, or in confined spaces mists or vapour may be generated and local exhaust ventilation should be provided to maintain airborne concentration levels below the nominated exposure standard and at an acceptable level that does not cause irritation. Please note: Due to the combustible nature of the product, if there is a necessity to use ventilation equipment it should not be a potential source of ignition for any vapours generated.

8.5 INDIVIDUAL PROTECTION MEASURES:

EYE & FACE PROTECTION: Wear safety glasses/goggles to avoid eye contact when handling. If there is a risk of splashing during use, a full face shield is recommended. Use eye protection in accordance with AS 1336 and AS 1337.

SKIN (HAND) PROTECTION: If there is the chance of contact with the material wear gloves to provide hand protection. Nitrile rubber gloves are recommended.

SKIN (CLOTHING) PROTECTION:

During normal operating procedures, long sleeved clothing is recommended to avoid skin contact. Due to the toxic nature of the MMT component, soiled clothing should be removed immediately and washed with detergent prior to re-use.

RESPIRATORY PROTECTION: During routine operation a respirator is not required. However, if mists or vapours are generated, an approved half face organic vapour/particulate respirator is required. Use respirators in accordance with AS 1715 and AS 1716.

THERMAL PROTECTION: Not applicable.

SAFETY DATA SHEET

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

9.1 PHYSICAL AND CHEMICAL PROPERTIES:

APPEARANCE:	Amber liquid.
ODOUR:	Characteristic hydrocarbon solvent odour.
ODOUR THRESHOLD:	No data available.
pH:	Not applicable.
MELTING/FREEZING POINT:	No data available.
INITIAL BOILING POINT:	No data available.
BOILING RANGE (°C):	No data available.
FLASHPOINT (°C):	Typically 71°C.
EVAPORATION RATE:	No data available.
FLAMMABILITY LIMITS (%):	No data available.
VAPOUR PRESSURE (kPa):	No data available.
VAPOUR DENSITY:	No data available.
DENSITY (g/mL @ 15°C):	Typically 0.805.
SOLUBILITY IN WATER(g/L):	Insoluble in water.
PARTITION COEFFICIENT:	No data available for n-octanol/water.
AUTO-IGNITION TEMP (°C):	No data available.
DECOMPOSITION TEMP (°C):	No data available.
VISCOSITY (cSt @ 100°C):	No data available.
VISCOSITY(cSt @ 40°C):	Typically 1.26.

SECTION 10 – STABILITY AND REACTIVITY

- 10.1 REACTIVITY:** The product does not pose any further reactivity hazards other than those listed in the following sub-sections.
- 10.2 CHEMICAL STABILITY:** Stable under recommended storage and handling conditions (see section 7).
- 10.3 POSSIBILITY OF HAZARDOUS REACTIONS:** Keep away from strong oxidising agents, such as strong acids, chlorates, nitrates and peroxides. Hazardous polymerisation does not occur.
- 10.4 CONDITIONS TO AVOID:** The product has a relatively low flash point of 71°C. Avoid ignition sources including heat and sparks. Observe the usual precautionary measures for handling chemicals. Do not heat the container or leave the container open when not in use.
- 10.5 INCOMPATIBLE MATERIALS:** Strong oxidising agents including strong acids.
- 10.6 HAZARDOUS DECOMPOSITION PRODUCTS:** Hazardous decomposition products are not expected to form during normal storage requirements. See Section 5.2 for Hazardous Combustion products.

SECTION 11 – TOXICOLOGICAL INFORMATION

11.1 INFORMATION ON TOXICOLOGICAL EFFECTS:

The product is a mixture and test data is not available for the product as a whole.

Distillates, petroleum, hydrotreated light (IUCLID)

Oral – LD₅₀ (Rat): > 5000mg/kg

Dermal – LD₅₀ (Rabbit): > 2000mg/kg

Solvent naphtha, petroleum, heavy aromatic

Oral – LD₅₀ (Rat): > 2500mg/kg

Dermal – LD₅₀ (Rabbit): > 2000mg/kg

Inhalation – LC₅₀ (Rat, vapour, 6 hours): > 11.67mg/m³

2-Ethylhexanol -

Oral – LD₅₀ (Rat): 2040mg/kg

Dermal – LD₅₀ (Rat): > 3000mg/kg

Inhalation – LC₅₀ (Rat, vapour, 4 hours): 0.89 - 5.3mg/l

SAFETY DATA SHEET

SECTION 11 – TOXICOLOGICAL INFORMATION Continued

Naphthalene

Oral – LD₅₀ (Rat): > 2000mg/kg
Dermal – LD₅₀ (Rat): > 2500mg/kg
Inhalation – LC₅₀ (Rat, vapour, 8 hours): > 100ppm

Methylcyclopentadienyl manganese tricarbonyl (MMT)

Oral – LD₅₀ (Rat): 9 - 176mg/kg bw
Dermal – LD₅₀ (Rat): 140 -795mg/kg bw
Inhalation – LC₅₀ (Rat, vapour, 1 hours): 220 - 247mg/m³
Inhalation – LC₅₀ (Rat, vapour, 4 hours): 2 - 76mg/m³

11.2 SWALLOWED:

The Manganese (MMT) component means this is a Schedule 6 Poison and rated as toxic if swallowed. The MMT is considered highly toxic by ingestion and especially hazardous to children. The NICNAS MMT Safety Fact Sheet states that “accidental ingestion by a child of concentrated MMT in aftermarket fuel additives may be fatal”. Ingestion of this product may cause irritation to the mouth, throat and digestive tract with symptoms of nausea, abdominal discomfort, diarrhoea and vomiting. MMT poisoning may exhibit as giddiness, headache, nausea, chest tightness and breathing difficulties. During normal usage ingestion should not be a means of exposure.

11.3 SKIN CORROSION/ IRRITATION:

Due to the MMT Component the product is toxic in contact with skin. The manganese constituent has the Skin Annotation assigned to it. This means absorption through the skin may be a significant source of exposure. Absorption of MMT means that the person could exhibit symptoms of MMT poisoning through skin contact. Due to the nature of the product, skin contact is the most likely means for health effects to occur. The product is rated as Causes skin irritation. Prolonged or repeated contact may cause defatting of the skin which may lead to dermatitis. Correct handling procedures incorporating appropriate protective clothing and gloves should minimise the risk of skin irritation. People with pre-existing skin conditions, such as dermatitis, should take extreme care so as not to exacerbate the condition.

11.4 SERIOUS EYE DAMAGE/ IRRITATION:

The product is rated as Causes serious eye irritation. Symptoms may include localised burning, redness and tearing. Correct handling procedures incorporating appropriate eye protection should minimise the risk of eye irritation.

11.5 RESPIRATORY OR SKIN SENSITISATION:

This product is not expected to be a skin sensitizer according to OECD Test 406, based on the available data and the known hazards of the components. This product is not expected to be a respiratory tract sensitizer, based on the available data and the known hazards of the components.

11.6 GERM CELL MUTAGENICITY:

This product is not expected to be mutagenic according to tests such as OECD Tests 471, 475, 476, 478 and 479, based on the available data and the known hazards of the components.

11.7 CARCINOGENICITY:

The product is not expected to be a carcinogen according to OECD Test 451, based on the available data and the known hazards of the components. The product contains < 0.5% Naphthalene, as a component of the solvent naphtha, petroleum, heavy aromatic ingredient, which is rated as Carcinogenic Category 2: H351 - Suspected of causing cancer. The additive package manufacturer states that weak carcinogenic liver response was observed in mice, but not rats. A National Toxicology Program final report states that lifetime inhalation exposure to naphthalene resulted in increases in nose tumours in rats and lung tumours in female mice.

SAFETY DATA SHEET

SECTION 11 – TOXICOLOGICAL INFORMATION Continued

11.8 REPRODUCTIVE TOXICITY:

The product contains 2-Ethylhexanol which was reported in the NICNAS IMAP Report, “to cause developmental toxicity, but not teratogenicity, in rats following exposure via the oral route (REACH). These effects were noted in the absence of signs of marked maternal toxicity.” In conjunction with other study data available, the NICNAS IMAP Report there is “sufficient evidence to classify this chemical as potentially toxic to development.” By calculation the product would be rated as Suspected of damaging the unborn child.

11.9 SPECIFIC TARGET ORGAN TOXICITY (STOT) - SINGLE EXPOSURE:

This product contains MMT and is rated as Toxic if inhaled. The lungs appear to be the organ most sensitive to MMT, both acutely and chronically. Inhalation of large amounts of vapours means that the person could exhibit symptoms of MMT poisoning. This product contains hydrocarbon components, hence inhalation of vapours or mists (generated at elevated temperatures or by mechanical action) may cause irritation to the nose and throat. Inhalation of high concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea. Exposure to high levels of hydrocarbon solvent vapours may impact on the liver and kidneys.

11.10 SPECIFIC TARGET ORGAN TOXICITY (STOT) - REPEATED EXPOSURE:

There is no data available for the product as a whole. A published paper showed that a 90 day chronic inhalation study of the manganese constituent indicated that 3mg/m³ showed detectable effects in mice. There is a NICNAS PEC Report for this product where it states, “data are sufficient from the 30 week repeat dose inhalation toxicity study for MMT to meet the Approved Criteria (NOHSC, 1999a) for severe effects after repeated or prolonged exposure by the inhalation route (Toxic: Danger of Serious Damage to Health by Prolonged Exposure Through Inhalation).” By calculation, based upon the data in the HSIS System and the level of MMT present in the final product, it would be rated as May cause damage to organs through prolonged or repeated exposure by inhalation.

11.11 ASPIRATION HAZARD: This product is rated as an aspiration hazard - May be fatal if swallowed and enters airways. Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary oedema. This can be fatal. As the product is hydrocarbon based, if the product has been ingested or vomiting has occurred after ingestion, the patient must seek medical attention and should be monitored for adverse effects.

11.12 OTHER INFORMATION: This product contains low levels of naphthalene. Naphthalene exposure may cause severe dermatitis in sensitised persons. Ingestion of naphthalene has caused hemolysis in humans deficient in glucose-6-phosphate dehydrogenase.

SECTION 12 – ECOLOGICAL INFORMATION

12.1 ECOTOXICITY:

Aquatic Toxicity – Methylcyclopentadienyl manganese tricarbonyl (MMT)
EC₅₀ (Daphnia Magna, 4 and 48 hr): 0.87 mg/L and 0.83 mg/L respectively.
LC₅₀ TLm (Bluegill sunfish, 12 hr): 0.2 mg/L.
LC₅₀ TLm (Fathead Minnow, 12 hr): 0.23 - 0.36 mg/L.

There is no data available for the product as a whole. However, some of the components have been rated as Very toxic and toxic to aquatic life with long lasting effects. Based upon these nominated values the product is expected to be rated by calculation as Toxic to aquatic life with long lasting effects.

12.2 PERSISTENCE & DEGRADABILITY:

Based on the available data and the known hazards of the components, the solvent constituents are expected to be inherently biodegradable, however the product contains components that may persist in the environment. MMT is subject to rapid photochemical degradation in the atmosphere with a reported atmospheric half-life of 8 - 18 seconds.

SAFETY DATA SHEET

SECTION 12 – ECOLOGICAL INFORMATION Continued

12.3 BIOACCUMULATIVE POTENTIAL:

No data available.

12.4 MOBILITY IN SOIL:

The solvent component is relatively volatile and will evaporate to the air if released to the environment.

12.5 OTHER ADVERSE EFFECTS:

There is no data available for the product as a whole. The product will float on water and the solvent component will evaporate rapidly into the air. As the product contains MMT it should not be released into the stormwater, sewers or natural waterways.

SECTION 13 – DISPOSAL CONSIDERATIONS

13.1 DISPOSAL METHODS: PRODUCT:

The product should not be released to the environment, so any unused material should be recycled wherever possible or be disposed of as hazardous waste at an appropriate collection depot. The product is also suitable for incineration at very high temperatures to prevent formation of undesirable combustion products. Spilled product that cannot be recovered should be absorbed and then shovelled into a suitable waste container, such as a plastic drum and then be treated as a solid waste. Follow Government regulations for disposal of such waste. All unused, waste or spilled product must be taken for recycling or disposal by suitably licensed contractors in accordance with Government regulations. Note: Waste product must be handled as a Combustible liquid.

CONTAINERS:

Empty containers may contain residual product. Caution: Residues are combustible and will ignite with a source of ignition. Containers should be completely drained in a well ventilated area where vapours cannot accumulate and then stored until reconditioned or disposed of. Empty containers should be taken for recycling or disposal through suitably licensed contractors in accordance with Government regulations. As containers may contain combustible residues, they should not be pressurised, cut by a grinder, drilled or exposed to heat, flames or other sources of ignition. Closed containers when exposed to such conditions/treatment may explode causing serious injury.

SECTION 14 – TRANSPORT INFORMATION

This product is regulated for land, sea or air transportation. (HS Code: 3911.19)

14.1 LAND (ADG Code):

UN NUMBER: 3082

UN PROPER SHIPPING NAME:

ENVIRONMENTALLY HAZADOUS SUBSTANCE, LIQUID, N.O.S. (Contains Methylcyclopentadienyl manganese tricarbonyl, Petroleum naphtha, heavy, aromatic and Naphthalene).

TRANSPORT HAZARD CLASS(ES):

9

PACKAGING GROUP:

III

ENVIRONMENTAL

HAZARDS:

Yes

SPECIAL PRECAUTIONS

FOR USER:

274, 331, AU01.

HAZCHEM CODE:

3Z.

SAFETY DATA SHEET

SECTION 14 – TRANSPORT INFORMATION Continued

14.2 SEA (IMDG):

UN NUMBER: 3082
UN PROPER SHIPPING NAME: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Contains Methylcyclopentadienyl manganese tricarbonyl, petroleum naphtha heavy, aromatic and Naphthalene).

TRANSPORT HAZARD

CLASS(ES): 9
PACKAGING GROUP: III
ENVIRONMENTAL HAZARDS: Yes
SPECIAL PRECAUTIONS FOR USER: 274, 969

14.3 AIR (IATA):

UN NUMBER: 3082
UN PROPER SHIPPING NAME: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Contains Methylcyclopentadienyl manganese tricarbonyl, Petroleum naphtha, heavy, aromatic and Naphthalene).

TRANSPORT HAZARD

CLASS(ES): 9
PACKAGING GROUP: III
ENVIRONMENTAL HAZARDS: Yes
SPECIAL PRECAUTIONS FOR USER: A97, A197.

SECTION 15 – REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS:

APPLICABLE REGULATIONS:

SUSMP: Schedule 6 (S6).
AICS: All ingredients are on the AICS List.
MONTREAL PROTOCOL: Not determined.
STOCKHOLM CONVENTION: Not determined.
ROTTERDAM CONVENTION: Not determined.
BASEL CONVENTION: Not determined.
INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS (MARPOL): Not determined.

OTHER REGULATORY INFORMATION:

GHS CLASSIFICATION HAZARD CLASS & CATEGORY

AND HAZARD STATEMENT: Flammable Liquids Category 4; H227 - Combustible liquid.
Acute Toxicity - Oral - Category 1; H300 - Fatal if swallowed.
Acute Toxicity - Oral - Category 3; H301 - Toxic if swallowed.
Acute Toxicity - Oral - Category 4; H302 - Harmful if swallowed.
Aspiration Hazard Category 1; H304 - May be fatal if swallowed and enters airway.
Acute Toxicity - Dermal Category 1; H310 - Fatal in contact with skin.
Acute Toxicity - Dermal Category 3; H311 - Toxic in contact with skin.
Acute Toxicity - Dermal Category 4; H312 - Harmful in contact with skin.
Skin Corrosion/Irritation Category 2; H315 - Causes skin irritation.
Serious Eye Damage/Irritation Category 2A; H319 - Causes serious eye irritation.
Acute Toxicity - Inhalation Category 1; H330 - Fatal if inhaled.
Acute Toxicity - Inhalation Category 3; H331 - Toxic if inhaled.
Acute Toxicity - Inhalation Category 4; H332 - Harmful if inhaled.

SAFETY DATA SHEET

SECTION 15 – REGULATORY INFORMATION Continued

GHS CLASSIFICATION HAZARD CLASS & CATEGORY AND HAZARD

STATEMENT (Continued): Specific Target Organ Toxicity (Single Exposure) Category 3; H336 - May cause drowsiness or dizziness.
Carcinogenicity Category 2; H351 - Suspected of causing cancer.
Toxic to Reproduction Category 2; H361d - Suspected of damaging the unborn child.
Specific Target Organ Toxicity (Repeated Exposure) Category 1; H372 - Causes damage to organs through prolonged or repeated exposure by inhalation.
Specific Target Organ Toxicity (Repeated Exposure) Category 2; H373 - May cause damage to organs through prolonged or repeated exposure by inhalation.
Chronic Aquatic Toxicity Category 1; H410 - Very toxic to aquatic life with long lasting effects.
Chronic Aquatic Toxicity Category 2; H411 - Toxic to aquatic life with long lasting effects.
AUH066 - Repeated exposure may cause skin dryness or cracking.

HSNO APPROVAL NUMBER: HSR002587.

HSNO GROUP TITLE: Fuel Additives (Combustible, Toxic [6.7]) Group Standard 2006.

SECTION 16 – ANY OTHER RELEVANT INFORMATION

SDS INFORMATION:

Date of SDS Preparation: 21st March 2017

Revision: 0.41

REVISION CHANGES: Change of colour in Section 9.

ACRONYMS:

SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
CAS Number	Chemical Abstracts Service Registry Number
EINECS	European Inventory of Existing Commercial Chemical Substances
UN Number	United Nations Number
OSHA	Occupational Safety and Health Administration
ACGIH	American Conference of Governmental Industrial Hygienists
HSE-WEL	Health and Safety Executive - Workplace Exposure Limit
IMDG	International Maritime Dangerous Goods
IATA	International Air Transport Association
IUCLID	International Uniform Chemical Information Database
RTECS	Registry of Toxic Effects of Chemical Substances
%W/W	Percent weight for weight
OECD	Organisation for Economic Co-Operation and Development
ADG Code	Australian Code for the Transport of Dangerous Goods by Road and Rail
HAZCHEM Code	Emergency action code of numbers and letters which gives information to emergency services
NOHSC	National Occupational Health and Safety Commission
NICNAS	National Industrial Chemicals Notification & Assessment Scheme
IMAP	Inventory Multi-Tiered Assessment and Prioritisation
AICS	Australian Inventory of Chemical Substances
TWA	Time-Weighted Average
STEL	Short term Exposure Limit
HSNO	Hazardous Substances and New Organisms Act 1996
GHS	Globally Harmonised System of Classification and Labelling of Chemicals
WHS	Work Health and Safety
PPE	Personal Protective Equipment.

SAFETY DATA SHEET

SECTION 16 – ANY OTHER RELEVANT INFORMATION Continued

LITERATURE REFERENCES AND SOURCES OF DATA:

OECD Guidelines for Testing of Chemicals
Annex I: OECD Test Guidelines for Studies Included in SIDS
Manual for the Assessment of Chemicals Chapter 2 Data Gathering
International Toxicity Testing Guidelines
Hazardous Substance Information System - Guidance Material for Hazard Classifications
Preparation of Safety Data Sheets for Hazardous Chemicals Code of Practice.
Model Work Health and Safety Regulations.
Model Work Health and Safety Regulations - Transitional Principles
Workplace Exposure Standards for Airborne Contaminants
Australian Dangerous Goods Code 7th Edition
Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004)]
Guidance on the Classification of Hazardous Chemicals under the WHS Regulations
Assigning a Hazardous Substance to a Group Standard
User Guide to the HSNO Thresholds and Classifications
Summary User Guide to the HSNO Thresholds and Classifications of Hazardous Substances
Correlation between GHS and New Zealand HSNO Hazard Classes and Categories
HSNO Control Regulations
Record of Group Standard Assignment
Labelling of Hazardous Substances Hazard and Precautionary Information
Thresholds and Classifications Under the Hazardous Substances and New Organisms Act 1996
Workplace Exposure Standards and Biological Exposure Indices
NICNAS IMAP Human Health Tier II Assessment for 1-Hexanol, 2-Ethyl- CAS Number: 104-76-7
NICNAS Priority Existing Chemical Report No 24 - Methylcyclopentadienyl manganese tricarbonyl (MMT)
June 2003

All information contained in this Safety Data Sheet and the health, safety and environmental information are considered to be accurate to the best of our knowledge as of the issue date specified above. However, no warranty or representation, expressed or implied, is made as to the accuracy or completeness of the data and information contained in this data sheet.

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