AIRCRAFT FUELING

1. INTRODUCTION

PNGC operate a Fuel Bowser, which contains Avgas 100LL. The primary purpose of the Fuel Bowser (Installation) is to refuel aircraft operated by PNGC, aircraft operated by members of PNGC and any others private users that may request a fuel uplift from PNGC. Negligence and or errors made in the receipt, storage and handling of fuel may endanger the aircraft and the lives of those on-board. It is of paramount importance that Fuel supplied by PNGC is fit for use.

Users of the PNGC fuel installation should familiarise themselves with guidance that is laid out in CAA CAP 748 and requirements of the ANO.

The PNGC Fuel Installation manager shall ensure that the following can be satisfied:

a. Fuel received at the PNGC installation is fit for use on aircraft;
b. the installation and storage of the dispensing process will render it unfit;
c. the Fuel Installation is appropriately labelled;
d. the fuel should be sampled on delivery to the Bowser;
e. The fuel is of the correct grade for the Bowser.

The CAA and or the Airfield operator may seek confirmation of compliance with the ANO.

2. SCOPE

The aim of this document is to provide PNGC Fuel users guidance on the safe delivery, storage and delivery of Avgas 100LL at PNGC facilities located at Middle Wallop Aerodrome.

3. FUEL RECEPTION AND STORAGE

When Fuel is received by the PNGC Bowser a period of time should be allowed for settling prior to taking a sample. If the sample is unsatisfactory then the process should be repeated. If after the third sample the fuel is deemed as unsatisfactory the PNGC Fuel Manager or nominated deputy shall Investigate and identify the cause of the contamination. No fuel shall be dispensed until the matter is resolved. If necessary the supplier should be contacted for advice. A delivery sample form shall be completed, Annex A and retained along with the Certificate of Conformity in the PNGC office / in the Log Cabin.

The fuel sample shall be taken at delivery and be stored for a minimum of seven days.

On delivery the Certificate of Conformity should be obtained from the supplier and the records archived in the PNGC office / in the Log Cabin.

4. FUEL SAMPLING & EQUIPMENT

The sampling equipment and jars should be kept scrupulously clean. Clear glass jar shall be used for sample

Fuel that is not required to be retained . Sample then to be emptied into the waste AVGAS Receptor

The Fuel should be considered not fit for use if the visual examination shows any of the following:

a. More than a trace of sediment;
b. Globules of water;
c. Cloudiness;
d. A positive reaction to Water finding paste or paper.

Fuel sampling should also take place after a period of heavy rain or snow or if the Bowser has been washed.

5. FUEL DELIVERY

Prior to the first delivery of fuel on any given day a Fuel sample shall be taken and examined as per paragraph 4, On successful completion of the fuel examination the record contained within the Bowser should be completed. The name of the person carrying out the examination shall be printed and a signature taken. The time and date of sample shall be recorded. The Fuel examination check record sheet is contained at Annex B.

When carrying out Fuelling the person must ensure the following:

a. That the aircraft is on Middle Wallop aircraft pan
b. That the aircraft is Earthed to the Bowser using the Earthing lead;
c. That here are no passengers within the aircraft;
d. Ensure the area around the aircraft accepting fuel is clear;
e. Ensure access to the area is not restricted that may obstruct RFFS vehicles;
f. Personal Electronic Devices should be switched off.
g. Ensure unnecessary personal are not present.
h. **NO SMOKING** and ensure no smoking within the vicinity of the Fuel Bowser.
i. Hand and eye protection is worn.

Fuelling should not commence if there are Electrical Storms within the vicinity of the Aerodrome.

On completion of Fuelling operations the **Fuel Uplift log** and **reconciliation log** shall be completed that is contained within the Log Cabin. The log sheet shall include the time and date of the Fuel delivery, the registration of the aircraft and who issued the Fuel.

The Fuel hose and Earth lead shall be wound in and the area examined to ensure no spillages.

6. INCIDENT MANAGEMENT & FIRE

In the event of a Major spillage the person operating Bowser shall immediately contact Middle Wallop Fire & Emergency on 01264784444 and inform them of the Incident. Following this and where appropriate the containment of the spillage may be attempted using the minor spillage equipment contained within the Bowser. Major spill kit in the ISO container is to be taken to the aircraft refueling area in the event of a major spill.

Refer to the Material Safety Data Sheet for Full measures to be implemented following accidental release.

In the event of a **Fire** the emergency services should be contacted immediately on 999 and then Middle Wallop Fire & Emergency informed on **01264784444**. Following the Incident the PNGC Fuel Manager and Chairman PNGC shall be immediately informed.

In case of fire use water fog, foam, dry chemical or carbon dioxide extinguisher or spray. **Do not use water jet.**

Do not attempt to extinguish the fire if it poses a risk to life and the area should be immediately evacuated and persons prevented from entering the area.

7. FIRST AID MEASURES

Refer to the Material Safety Data Sheet.

8. PERIODIC MAINTENACE OF THE BOWSER

The PNGC MT committee member shall be responsible for the servicing and maintenance of the Fuel Bowser. He or she shall inform the PNGC Fuel Manager if there are any known serviceability issues with the Bowser or the intent to carry out maintenance. The Bowser shall be kept in a clean condition. The MT member shall also ensure that the Bowser is kept fuelled and that this is checked on a weekly interval.

The PNGC Fuel member shall ensure the periodic maintenance of the tank, the fuel metering and delivery equipment.

9. OPERATION of THE BOWSER AND TRAINING

The PNGC Fuel Manager and or CFI shall ensure operators are trained in the use of the Fuel Bowser. Records are kept at Annex C. The Bowser should only be operated by the following people:

a. Users holding an a Flight Crew Licence trained in use of the Bowser;
b. Student pilots trained in the Use of a Fuel Bowser;
c. PNGC MT team member trained in the use of the Bowser.

Users shall ensure that they are familiar with this document, CAP748, the ANO and demonstrate that they are competent in the use of the Bowser. They should display knowledge of known hazards and procedures following an Incident.

10. STATIC DISHARGE AND BONDING

Users of the Fuel Bowser should take note a spark of sufficient intensity may be created to ignite fuel vapour from the discharge of Electrostatic Energy!

Bonding connections should be made to designated Bonding points on the aircraft or to clean and bare metal surfaces. Bonding should occur prior to the fuel filler caps being removed and before fuel delivery commences. The bonding lead should remain connected until fuelling is complete and the filler caps installed again.

11. AUDIT

The PNGC Fuel Member shall carry out monthly Audits to ensure compliance with this document is being maintained. Records of the Audit shall be kept in the PNGC Log Cabin.

ANNEX A

FUEL DELIVERY RECORD AND SAMPLE

Date of fuel delivery ……..

Time of fuel delivery ……

Fuel quantity delivered ..... litres

Type of Fuel……

Supplier…….

Name of fuel deliverer ……..

Name of PNGC Officer receiving fuel……

Certificate of Conformity Number ……

Fuel sample 1 **PASS/FAIL**

Fuel sample 2 **PASS/FAIL/NA**

Fuel sample 3 **PASS/FAIL/NA**

Is Fuel Satisfactory for delivery **YES/NO?**

Record Actions taken below if fuel sample for delivery fuel was unsatisfactory.

Comments or Observations

Name……Signature……Time and date…….

Note: These records must be retained for a minimum of twelve months and the fuel sample retained for a minimum of seven days. Ensure Certificate of Conformity is kept with this record.

ANNEX B
FUEL EXAMINATION AND WATER CHECK RECORD SHEET

Date and Time	Fuel sample satis' YES/NO	Water present YES/NO	Name (print & sign)

ANNEX C
TRAINING & AUTHORISATION RECORD

Name	Date training completed & Auth'd	Completed by

A copy is to be kept in the Fuel records within the PNGC Log Cabin & one in the Fuel Bowser.

ANNEX D

SAFETY DATA SHEET

SEE FOLLOWING PAGES FOR SAFETY DATA SHEET

SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: **AVGAS 100LL**
Product Description: Hydrocarbons and Additives
Product Code: 51052-60, 97R223
Intended Use: Aviation fuel

COMPANY IDENTIFICATION

Supplier: **EXXON MOBIL CORPORATION**
22777 Springwoods Village Parkway
Spring, TX 77389 USA

24 Hour Health Emergency	609-737-4411
Transportation Emergency Phone	800-424-9300 or 703-527-3887 CHEMTREC
Product Technical Information	800-662-4525
MSDS Internet Address	www.exxon.com, www.mobil.com

SECTION 2 HAZARDS IDENTIFICATION

This material is hazardous according to regulatory guidelines (see (M)SDS Section 15).

CLASSIFICATION:

Flammable liquid: Category 2.
Skin irritation: Category 2. Specific target organ toxicant (central nervous system): Category 3. Specific target organ toxicant (repeated exposure): Category 2. Aspiration toxicant: Category 1.

LABEL:

Pictogram:

Signal Word: Danger

Hazard Statements:

H225: Highly flammable liquid and vapor. H304: May be fatal if swallowed and enters airways. H315: Causes skin irritation. H336: May cause drowsiness or dizziness.H373: May cause damage to organs through prolonged or repeated exposure. Central Nervous system

Precautionary Statements:

P210: Keep away from heat/sparks/open flames/hot surfaces. -- No smoking. P233: Keep container tightly closed. P240: Ground / bond container and receiving equipment. P241: Use explosion-proof electrical, ventilating, and lighting equipment. P242: Use only non-sparking tools. P243: Take precautionary measures against static discharge. P260: Do not breathe mist / vapours. P264: Wash skin thoroughly after handling. P271: Use only outdoors or in a well-ventilated area. P273: Avoid release to the environment. P280: Wear protective gloves and eye / face protection.P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P302 + P352: IF ON SKIN: Wash with plenty of soap and water. P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing. P312: Call a POISON CENTER or doctor/physician if you feel unwell. P331: Do NOT induce vomiting. P332 + P313: If skin irritation occurs: Get medical advice/ attention. P362 + P364: Take off contaminated clothing and wash it before reuse. P370 + P378: In case of fire: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish. P391: Collect spillage.P403 + P235: Store in a well- ventilated place. Keep cool. P405: Store locked up.P501: Dispose of contents and container in accordance with local regulations.

Contains: LIGHT ALKYLATION NAPHTHA

Other hazard information:

HAZARD NOT OTHERWISE CLASSIFIED (HNOC): None as defined under 29 CFR 1910.1200.

PHYSICAL / CHEMICAL HAZARDS

Material can accumulate static charges which may cause an ignition. Material can release vapors that readily form flammable mixtures. Vapor accumulation could flash and/or explode if ignited.

HEALTH HAZARDS

May be irritating to the eyes, nose, throat, and lungs.

ENVIRONMENTAL HAZARDS

Expected to be toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

NFPA Hazard ID:	Health:	2	Flammability:	3	Reactivity:	0
HMIS Hazard ID:	Health:	2*	Flammability:	3	Reactivity:	0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a mixture.

Hazardous Substance(s) or Complex Substance(s) required for disclosure

Name	CAS#	Concentration*	GHS Hazard Codes
ISOPENTANE	78-78-4	<= 10%	H224, H304, H336, H401, H411

LIGHT ALKYLATION NAPHTHA	64741-66-8	> 75%	H224, H304, H336, H315, H401, H411
TETRAETHYL LEAD	78-00-2	< 0.1%	H227, H300(1), H310(1), H330(1), H360(1A)(D), H361(F), H373, H400(M factor 1), H410(M factor 1)
TOLUENE	108-88-3	<= 15%	H225, H304, H336, H315, H373, H401, H412

* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

As per paragraph (i) of 29 CFR 1910.1200, formulation is considered a trade secret and specific chemical identity and exact percentage (concentration) of composition may have been withheld. Specific chemical identity and exact percentage composition will be provided to health professionals, employees, or designated representatives in accordance with applicable provisions of paragraph (i).

SECTION 4 FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

Seek immediate medical attention. Do not induce vomiting.

NOTE TO PHYSICIAN

If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately. This material, or a component, may be associated with cardiac sensitization following very high exposures (well above occupational exposure limits) or with concurrent exposure to high stress levels or heart-stimulating substances like epinephrine. Administration of such substances should be avoided.

PRE-EXISTING MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED BY EXPOSURE

Contains hydrocarbon solvent/petroleum hydrocarbons; skin contact may aggravate an existing dermatitis.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop a leak. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Unusual Fire Hazards: Extremely Flammable. Vapors are flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger. Hazardous material. Firefighters should consider protective equipment indicated in Section 8.

Hazardous Combustion Products: Aldehydes, Incomplete combustion products, Oxides of carbon, Smoke, Fume, Sulfur oxides

FLAMMABILITY PROPERTIES

Flash Point [Method]: -40°C (-40°F) [ASTM D-56]
Flammable Limits (Approximate volume % in air): LEL: 1.4 UEL: 7.6
Autoignition Temperature: 430°C (806°F)

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

PROTECTIVE MEASURES

Avoid contact with spilled material. Warn or evacuate occupants in surrounding and downwind areas if required due to toxicity or flammability of the material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: half-face or full-face respirator with filter(s) for organic vapor and, when applicable, H2S, or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to aromatic hydrocarbons are recommended. Note: gloves made of polyvinyl acetate (PVA) are not water- resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

SPILL MANAGEMENT

Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do it without risk. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Prevent entry into waterways, sewer, basements or confined areas. A vapor suppressing foam may be used to reduce vapors. Use clean non-sparking tools to collect absorbed material. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Large Spills: Water spray may reduce vapor; but may not prevent ignition in closed spaces.

Water Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop

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leak if you can do it without risk. Do not confine in area of spill. Advise occupants and shipping in downwind areas of fire and explosion hazard and warn them to stay clear. Allow liquid to evaporate from the surface.
Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Avoid all personal contact. Prevent exposure to ignition sources, for example use non-sparking tools and explosion-proof equipment. Potentially toxic/irritating fumes/vapors may be evolved from heated or agitated material. Do not siphon by mouth. Use only with adequate ventilation. Do not use as a cleaning solvent or other non-motor fuel uses. For use as a motor fuel only. It is dangerous and/or unlawful to put fuel into unapproved containers. Do not fill container while it is in or on a vehicle. Static electricity may ignite vapors and cause fire. Place container on ground when filling and keep nozzle in contact with container. Do not use electronic devices (including but not limited to cellular phones, computers, calculators, pagers or other electronic devices, etc.) in or around any fueling operation or storage area unless the devices are certified intrinsically safe by an approved national testing agency and to the safety standards required by national and/or local laws and regulations. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Static Accumulator: This material is a static accumulator. A liquid is typically considered a nonconductive, static accumulator if its conductivity is below 100 pS/m (100x10E-12 Siemens per meter) and is considered a semiconductive, static accumulator if its conductivity is below 10,000 pS/m. Whether a liquid is nonconductive or semiconductive, the precautions are the same. A number of factors, for example liquid temperature, presence of contaminants, anti-static additives and filtration can greatly influence the conductivity of a liquid.

STORAGE

Ample fire water supply should be available. A fixed sprinkler/deluge system is recommended. The type of container used to store the material may affect static accumulation and dissipation. Keep container closed.
Handle containers with care. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area. Outside or detached storage preferred. Storage containers should be grounded and bonded. Fixed storage containers, transfer containers and associated equipment should be grounded and bonded to prevent accumulation of static charge.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

Exposure limits/standards (Note: Exposure limits are not additive)

Substance Name	Form	Limit / Standard			NOTE	Source
ISOPENTANE		TWA	1000 ppm		N/A	ACGIH
TETRAETHYL LEAD		OSHA Action level	0.03 mg/m3		N/A	OSHA Sp.Reg.
TETRAETHYL LEAD		TWA	0.05 mg/m3		N/A	OSHA Sp.Reg.
TETRAETHYL LEAD [as Pb]		TWA	0.075 mg/m3		Skin	OSHA Z1
TETRAETHYL LEAD [as Pb]		TWA	0.1 mg/m3		Skin	ACGIH
TOLUENE		Ceiling	300 ppm		N/A	OSHA Z2
TOLUENE		Maximum concentration	500 ppm		N/A	OSHA Z2
TOLUENE		TWA	200 ppm		N/A	OSHA Z2
TOLUENE		TWA	20 ppm		N/A	ACGIH

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

Biological limits

Substance	Specimen	Sampling Time	Limit	Determinant	Source
TOLUENE	Blood	Prior to last shift of work wk	0.02 mg/l	Toluene	ACGIH BELs (BEIs)
TOLUENE	Creatinine in urine	End of shift	0.3 mg/g	o-Cresol, with hydrolysis	ACGIH BELs (BEIs)
TOLUENE	Urine	End of shift	0.03 mg/l	Toluene	ACGIH BELs (BEIs)

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

Use explosion-proof ventilation equipment to stay below exposure limits.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:
Chemical resistant gloves are recommended.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:
Chemical/oil resistant clothing is recommended.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State: Liquid
Color: Blue
Odor: Characteristic

Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 °C): 0.725

Flammability (Solid, Gas): N/A
Flash Point [Method]: -40°C (-40°F) [ASTM D-56]
Flammable Limits (Approximate volume % in air): LEL: 1.4 UEL: 7.6
Autoignition Temperature: 430°C (806°F)
Boiling Point / Range: >= 35°C (95°F)
Decomposition Temperature: N/D
Vapor Density (Air = 1): 3 at 101 kPa

Vapor Pressure: [N/D at 20 °C] | 38 kPa (285 mm Hg) at 38 °C - 49 kPa (367.5 mm Hg) at 38°C

Evaporation Rate (n-butyl acetate = 1): N/D

pH: N/A

Log Pow (n-Octanol/Water Partition Coefficient): > 3.5

Solubility in Water: Negligible

Viscosity: <1 cSt (1 mm2/sec) at 40 °C

Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: -58°C (-72°F)

Melting Point: N/A

SECTION 10 STABILITY AND REACTIVITY

REACTIVITY: See sub-sections below.

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Heat, sparks, flame, and build up of static electricity.

MATERIALS TO AVOID: Alkalies, Halogens, Strong Acids, Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks
Inhalation	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Irritation: No end point data for material.	Elevated temperatures or mechanical action may form vapors, mist, or fumes which may be irritating to the eyes, nose, throat, or lungs.
Ingestion	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin Corrosion/Irritation: No end point data for material.	Irritating to the skin. Based on assessment of the components.
Eye	
Serious Eye Damage/Irritation: No end point data for material.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.
Sensitization	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: No end point data for material.	Not expected to be a skin sensitizer. Based on assessment of the components.

Aspiration: Data available.	May be fatal if swallowed and enters airways. Based on physico-chemical properties of the material.

Germ Cell Mutagenicity: No end point data for material.	Not expected to be a germ cell mutagen. Based on assessment of the components.
Carcinogenicity: No end point data for material.	Not expected to cause cancer. Based on assessment of the components.
Reproductive Toxicity: No end point data for material.	Not expected to be a reproductive toxicant. Based on assessment of the components.
Lactation: No end point data for material.	Not expected to cause harm to breast-fed children.
Specific Target Organ Toxicity (STOT)	
Single Exposure: No end point data for material.	May cause drowsiness or dizziness. Based on assessment of the components.
Repeated Exposure: No end point data for material.	Concentrated, prolonged or deliberate exposure may cause organ damage. Based on assessment of the components.

TOXICITY FOR SUBSTANCES

NAME	ACUTE TOXICITY
TETRAETHYL LEAD	Inhalation Lethality: 1 hour(s) LC50 0.85 mg/l (Vapor) (Rat); Oral Lethality: LD50 14.18 mg/kg (Rat)

OTHER INFORMATION

For the product itself:

Target Organs Repeated Exposure: Central Nervous system

Exposure to this material, or one of its components, in situations where there is the potential for high levels, such as in confined spaces or with abuse, may result in abnormal heart rhythm (arrhythmia). High-level exposure to hydrocarbons (above occupational exposure limits) may initiate arrhythmia in a worker that is undergoing stress or is taking a heart-stimulating substance such as epinephrine, a nasal decongestant, or an asthma or cardiovascular drug. Aviation gasoline leaded: Chronic inhalation studies resulted in liver tumors in female mice and kidney tumors in male rats. Neither result considered significant for human health risk assessment by United States EPA and others. Did not cause mutations In Vitro or In Vivo. Negative in inhalation developmental studies and reproductive toxicity studies.Inhalation of high concentrations in animals resulted in reversible central nervous system depression, but no persistent neurotoxic effects. Non-sensitizing in test animals. Caused nerve damage in humans from abusive use (sniffing). Lead may produce maternal toxicity, toxicity to fetus, and adverse effects to blood, bone marrow, central/peripheral nervous systems, kidney, liver, and reproductive systems.

Contains:

Light alkylate naphtha: Carcinogenic in animal tests. Chronic inhalation studies resulted in kidney tumors in male rats. This result was not considered significant for human health risk assessment by the United States EPA and others. Did not cause mutations In vitro or in vivo. Inhalation of vapors did not result in reproductive or developmental effects in test animals. Inhalation of high concentrations in animals resulted in reversible central nervous system depression, but no persistent toxic effect on the nervous system. Non-sensitizing in test animals.

TOLUENE : Concentrated, prolonged or deliberate inhalation may cause brain and nervous system damage. Prolonged and repeated exposure of pregnant animals (> 1500 ppm) have been reported to cause adverse fetal developmental effects.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC	3 = IARC 1	5 = IARC 2B
2 = NTP SUS	4 = IARC 2A	6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Expected to be toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

MOBILITY

More volatile component -- Highly volatile, will partition rapidly to air. Not expected to partition to sediment and wastewater solids.

Less volatile component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Majority of components -- Expected to be inherently biodegradable

Atmospheric Oxidation:

More volatile component -- Expected to degrade rapidly in air

BIOACCUMULATION POTENTIAL

Majority of components -- Potential to bioaccumulate is low.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

RCRA Information: Disposal of unused product may be subject to RCRA regulations (40 CFR 261). Disposal of the used product may also be regulated due to ignitability, corrosivity, reactivity or toxicity as determined by the Toxicity Characteristic Leaching Procedure (TCLP). Potential RCRA characteristics: IGNITABILITY. TCLP (LEAD, BENZENE)

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should

be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT)

Proper Shipping Name: GASOLINE

Hazard Class & Division: 3

ID Number: 1203

Packing Group: II

Marine Pollutant: Yes

ERG Number: 128

Label(s): 3

Transport Document Name: UN1203, GASOLINE, 3, PG II, MARINE POLLUTANT

LAND (TDG)

Proper Shipping Name: GASOLINE

Hazard Class & Division: 3

UN Number: 1203

Packing Group: II

Special Provisions: 17

SEA (IMDG)

Proper Shipping Name: MOTOR SPIRIT or GASOLINE or PETROL

Hazard Class & Division: 3

EMS Number: F-E, S-E

UN Number: 1203

Packing Group: II

Marine Pollutant: Yes

Label(s): 3

Transport Document Name: UN1203, MOTOR SPIRIT or GASOLINE or PETROL, 3, PG II, (-40°C c.c.), MARINE POLLUTANT

AIR (IATA)

Proper Shipping Name: MOTOR SPIRIT or GASOLINE or PETROL

Hazard Class & Division: 3

UN Number: 1203

Packing Group: II

Label(s) / Mark(s): 3

Transport Document Name: UN1203, GASOLINE, 3, PG II

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: This material is considered hazardous in accordance with OSHA HazCom 2012, 29 CFR 1910.1200.

Listed or exempt from listing/notification on the following chemical inventories: AICS, DSL, IECSC, KECI, PICCS, TSCA

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302

CERCLA: This material is not subject to any special reporting under the requirements of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Contact local authorities to determine if other reporting requirements apply.

SARA (311/312) REPORTABLE GHS HAZARD CLASSES: Aspiration Hazard, Flammable (gases, aerosols, liquids, or solids), Skin Corrosion or Irritation, Specific Target Organ toxicity (single or repeated exposure)

SARA (313) TOXIC RELEASE INVENTORY:

Chemical Name	CAS Number	Typical Value
TOLUENE	108-88-3	<= 15%

The following ingredients are cited on the lists below:

Chemical Name	CAS Number	List Citations
ETHYLENE DIBROMIDE	106-93-4	10, 11, 18
ISOPENTANE	78-78-4	1, 13, 16, 17, 18, 19
TETRAETHYL LEAD	78-00-2	1, 4, 10, 11, 15
TOLUENE	108-88-3	1, 4, 11, 13, 15, 16, 17, 18, 19

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16 OTHER INFORMATION

WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov. Chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm are created by the combustion of this product.

This warning is given to comply with California Health and Safety Code 25249.6 and does not constitute an admission or a waiver of rights.

N/D = Not determined, N/A = Not applicable

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):

H224: Extremely flammable liquid and vapor; Flammable Liquid, Cat 1
H225: Highly flammable liquid and vapor; Flammable Liquid, Cat 2
H300(2): Fatal if swallowed; Acute Tox Oral, Cat 2

H304: May be fatal if swallowed and enters airways; Aspiration, Cat 1
H310(1): Fatal in contact with skin; Acute Tox Dermal, Cat 1
H315: Causes skin irritation; Skin Corr/Irritation, Cat 2
H330(1): Fatal if inhaled; Acute Tox Inh, Cat 1
H336: May cause drowsiness or dizziness; Target Organ Single, Narcotic
H360(1A)(D): May damage the unborn child; Repro Tox, Cat 1A (Develop)
H361(F): Suspected of damaging fertility; Repro Tox, Cat 2 (Fertility)
H373: May cause damage to organs through prolonged or repeated exposure; Target Organ, Repeated, Cat 2
H400: Very toxic to aquatic life; Acute Env Tox, Cat 1
H401: Toxic to aquatic life; Acute Env Tox, Cat 2
H410: Very toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 1
H411: Toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 2 H412:
Harmful to aquatic life with long lasting effects; Chronic Env Tox, Cat 3

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Composition: Component Table information was modified.
GHS Target Organ List information was added.
GHS Target Organ List information was deleted.
Section 01: Company Contact Methods information was modified.
Section 01: Company Mailing Address information was modified.
Section 04: First Aid Notes information was modified.
Section 06: Accidental Release - Spill Management - Water information was modified.
Section 06: Protective Measures information was modified.
Section 07: Handling and Storage - Handling information was modified. Section 07:
Handling and Storage - Storage Phrases information was modified.
Section 08: Biological Exposure Limits (ACG BEL) - Limit Header information was added.
Section 08: Biological Exposure Limits (ACG BEL) Table information was modified.
Section 08: Biological Exposure Limits (South Africa) - Limit Header information was deleted.
Section 08: Exposure Limits Table information was modified.
Section 10: Materials to Avoid information was modified.
Section 11 Substance Toxicology table information was modified.
Section 11: Chronic Tox - Component information was modified.
Section 11: Other Health Effects information was modified.
Section 15: SARA (311/312) REPORTABLE GHS HAZARD CLASSES information was added.
Section 15: SARA (311/312) REPORTABLE HAZARD CATEGORIES information was deleted.
Section 16: HCode Key information was modified.
Section 16: Standard phrases for California Proposition 65 information was modified.

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