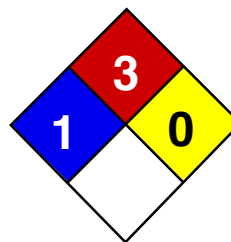




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Health	2
Fire	3
Reactivity	0
Personal Protection	H

## Material Safety Data Sheet Acetone MSDS

### Section 1: Chemical Product and Company Identification

<p><b>Product Name:</b> Acetone</p> <p><b>Catalog Codes:</b> SLA3502, SLA1645, SLA3151, SLA3808</p> <p><b>CAS#:</b> 67-64-1</p> <p><b>RTECS:</b> AL3150000</p> <p><b>TSCA:</b> TSCA 8(b) inventory: Acetone</p> <p><b>CI#:</b> Not applicable.</p> <p><b>Synonym:</b> 2-propanone; Dimethyl Ketone; Dimethylformaldehyde; Pyroacetic Acid</p> <p><b>Chemical Name:</b> Acetone</p> <p><b>Chemical Formula:</b> C<sub>3</sub>H<sub>6</sub>O</p>	<p><b>Contact Information:</b></p> <p><b>Sciencelab.com, Inc.</b> 14025 Smith Rd. Houston, Texas 77396</p> <p>US Sales: <b>1-800-901-7247</b> International Sales: <b>1-281-441-4400</b></p> <p>Order Online: <a href="http://ScienceLab.com">ScienceLab.com</a></p> <p><b>CHEMTREC (24HR Emergency Telephone), call:</b> 1-800-424-9300</p> <p><b>International CHEMTREC, call:</b> 1-703-527-3887</p> <p><b>For non-emergency assistance, call:</b> 1-281-441-4400</p>
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### Section 2: Composition and Information on Ingredients

**Composition:**

	Name	CAS #	% by Weight
[	Acetone	67-64-1	100

**Toxicological Data on Ingredients:** Acetone: ORAL (LD50): Acute: 5800 mg/kg [Rat]. 3000 mg/kg [Mouse]. 5340 g/kg Rabbit]. VAPOR (LC50): Acute: 50100 mg/m 8 hours [Rat]. 44000 mg/m 4 hours [Mouse].

### Section 3: Hazards Identification

**Potential Acute Health Effects:**

Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

**Potential Chronic Health Effects:**

CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female, Reproductive system/toxin/male [SUSPECTED]. The substance is toxic to central nervous system (CNS). The substance may be toxic to kidneys, the reproductive system, liver, skin. Repeated or prolonged exposure to the substance can produce target organs damage.

### Section 4: First Aid Measures

**Eye Contact:**

Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Get medical attention.

**Skin Contact:**

In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

**Serious Skin Contact:**

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

**Inhalation:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

**Serious Inhalation:**

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

**Ingestion:**

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

**Serious Ingestion:** Not available.

### Section 5: Fire and Explosion Data

**Flammability of the Product:** Flammable.

**Auto-Ignition Temperature:** 465°C (869°F)

**Flash Points:** CLOSED CUP: -20°C (-4°F). OPEN CUP: -9°C (15.8°F) (Cleveland).

**Flammable Limits:** LOWER: 2.6% UPPER: 12.8%

**Products of Combustion:** These products are carbon oxides (CO, CO<sub>2</sub>).

**Fire Hazards in Presence of Various Substances:** Highly flammable in presence of open flames and sparks, of heat.

**Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available. Slightly explosive in presence of open flames and sparks, of oxidizing materials, of acids.

**Fire Fighting Media and Instructions:**

Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

**Special Remarks on Fire Hazards:** Vapor may travel considerable distance to source of ignition and flash back.

**Special Remarks on Explosion Hazards:**

Forms explosive mixtures with hydrogen peroxide, acetic acid, nitric acid, nitric acid + sulfuric acid, chromic anhydride, chromyl chloride, nitrosyl chloride, hexachloromelamine, nitrosyl perchlorate, nitryl perchlorate, permonosulfuric acid, thiodiglycol + hydrogen peroxide, potassium ter-butoxide, sulfur dichloride, 1-methyl-1,3-butadiene, bromoform, carbon, air, chloroform, thitriazylperchlorate.

## Section 6: Accidental Release Measures

**Small Spill:**

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

**Large Spill:**

Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

## Section 7: Handling and Storage

**Precautions:**

Keep locked up.. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, reducing agents, acids, alkalis.

**Storage:**

Store in a segregated and approved area (flammables area) . Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Keep away from direct sunlight and heat and avoid all possible sources of ignition (spark or flame).

### Section 8: Exposure Controls/Personal Protection

**Engineering Controls:**

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

**Personal Protection:**

Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

**Personal Protection in Case of a Large Spill:**

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Exposure Limits:**

TWA: 500 STEL: 750 (ppm) from ACGIH (TLV) [United States] TWA: 750 STEL: 1000 (ppm) from OSHA (PEL) [United States] TWA: 500 STEL: 1000 [Australia] TWA: 1185 STEL: 2375 (mg/m<sup>3</sup>) [Australia] TWA: 750 STEL: 1500 (ppm) [United Kingdom (UK)] TWA: 1810 STEL: 3620 (mg/m<sup>3</sup>) [United Kingdom (UK)] TWA: 1800 STEL: 2400 from OSHA (PEL) [United States] Consult local authorities for acceptable exposure limits.

### Section 9: Physical and Chemical Properties

**Physical state and appearance:** Liquid.

**Odor:** Fruity. Mint-like. Fragrant. Ethereal

**Taste:** Pungent, Sweetish

**Molecular Weight:** 58.08

g/mole **Color:** Colorless.

Clear **pH (1%**

**soln/water):** Not

available. **Boiling Point:**

56.2°C (133.2°F)

**Melting Point:** -95.35 (-139.6°F)

**Critical Temperature:** 235°C (455°F)

**Specific Gravity:** 0.79 (Water = 1)

**Vapor Pressure:** 24 kPa (@ 20°C)

**Vapor Density:** 2 (Air = 1)

**Volatility:** Not available.

**Odor Threshold:** 62 ppm

**Water/Oil Dist. Coeff.:** The product is more soluble in water;  $\log(\text{oil/water}) = -0.2$

**Ionicity (in Water):** Not available.

**Dispersion Properties:** See solubility in water.

**Solubility:** Easily soluble in cold water, hot water.

## Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Excess heat, ignition sources, exposure to moisture, air, or water, incompatible materials.

**Incompatibility with various substances:** Reactive with oxidizing agents, reducing agents, acids, alkalis.

**Corrosivity:** Non-corrosive in presence of glass.

**Special Remarks on Reactivity:** Not available.

**Special Remarks on Corrosivity:** Not available.

**Polymerization:** Will not occur.

## Section 11: Toxicological Information

**Routes of Entry:** Absorbed through skin. Dermal contact. Eye contact. Inhalation.

**Toxicity to Animals:**

WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 3000 mg/kg [Mouse]. Acute toxicity of the vapor (LC50): 44000 mg/m<sup>3</sup> 4 hours [Mouse].

**Chronic Effects on Humans:**

CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female, Reproductive system/toxin/male [SUSPECTED]. Causes damage to the following organs: central nervous system (CNS). May cause damage to the following organs: kidneys, the reproductive system, liver, skin.

**Other Toxic Effects on Humans:**

Hazardous in case of skin contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:**

May affect genetic material (mutagenicity) based on studies with yeast (*S. cerevisiae*), bacteria, and hamster fibroblast cells. May cause reproductive effects (fertility) based upon animal studies. May contain trace amounts of benzene and formaldehyde which may cancer and birth defects. Human: passes the placental barrier.

**Special Remarks on other Toxic Effects on Humans:**

Acute Potential Health Effects: Skin: May cause skin irritation. May be harmful if absorbed through the skin. Eyes: Causes eye irritation, characterized by a burning sensation, redness, tearing, inflammation, and possible corneal injury. Inhalation: Inhalation at high concentrations affects the sense organs, brain and causes respiratory tract irritation. It also may affect the Central Nervous System (behavior) characterized by dizziness, drowsiness, confusion, headache, muscle weakness, and possibly motor incoordination, speech abnormalities, narcotic effects and coma. Inhalation may also affect the gastrointestinal tract (nausea, vomiting). Ingestion: May cause irritation of the digestive (gastrointestinal) tract (nausea, vomiting). It may also affect the Central Nervous System (behavior), characterized by depression, fatigue, excitement, stupor, coma, headache, altered sleep time, ataxia, tremors as well as the blood, liver, and urinary system (kidney, bladder, ureter) and endocrine system. May also have musculoskeletal effects. Chronic Potential Health Effects: Skin: May cause dermatitis. Eyes: Eye irritation.

## Section 12: Ecological Information

**Ecotoxicity:**

Ecotoxicity in water (LC50): 5540 mg/l 96 hours [Trout]. 8300 mg/l 96 hours [Bluegill]. 7500 mg/l 96 hours [Fathead Minnow].

0.1 ppm any hours [Water flea].

**BOD5 and COD:** Not available.

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The product itself and its products of degradation are not toxic.

**Special Remarks on the Products of Biodegradation:** Not available.

### Section 13: Disposal Considerations

**Waste Disposal:**

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

### Section 14: Transport Information

**DOT Classification:** CLASS 3: Flammable liquid.

**Identification:** : Acetone UNNA: 1090 PG: II

**Special Provisions for Transport:** Not available.

### Section 15: Other Regulatory Information

**Federal and State Regulations:**

California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (male) which would require a warning under the statute: Benzene California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Benzene California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Benzene, Formaldehyde Connecticut hazardous material survey.: Acetone Illinois toxic substances disclosure to employee act: Acetone Illinois chemical safety act: Acetone New York release reporting list: Acetone Rhode Island RTK hazardous substances: Acetone Pennsylvania RTK: Acetone Florida: Acetone Minnesota: Acetone Massachusetts RTK: Acetone Massachusetts spill list: Acetone New Jersey: Acetone New Jersey spill list: Acetone Louisiana spill reporting: Acetone California List of Hazardous Substances (8 CCR 339): Acetone TSCA 8(b) inventory: Acetone TSCA 4(a) final test rules: Acetone TSCA 8(a) IUR: Acetone

**Other Regulations:**

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

**Other Classifications:**

**WHMIS (Canada):**

CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2B: Material causing other toxic effects (TOXIC).

**DSCL (EEC):**

R11- Highly flammable. R36- Irritating to eyes. S9- Keep container in a well-ventilated place. S16- Keep away from sources of ignition - No smoking. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

**HMIS (U.S.A.):**

**Health Hazard:** 2

**Fire Hazard:** 3

**Reactivity:** 0

**Personal Protection:** h

**National Fire Protection Association (U.S.A.):**

**Health:** 1

**Flammability:** 3

**Reactivity:** 0

**Specific**

**hazard:**

**Protective Equipment:**

Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

**Section 16: Other Information****References:**

-Material safety data sheet issued by: la Commission de la Sant  et de la S curit  du Travail du Qu bec. -The Sigma-

Aldrich Library of Chemical Safety Data, Edition II. -Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. LOLI, RTECS, HSDB databases. Other MSDSs

**Other Special Considerations:** Not available.

**Created:** 10/10/2005 08:13 PM

**Last Updated:** 05/21/2013 12:00 PM

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**Safety Data Sheet**



## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

**Product Name:** DURACELL® ALKALINE BATTERIES

**Product Identification:** Alkaline Manganese Dioxide Cells –

**Tradenames:** Plus, Ultra, Simply

**Product Use:** Energy Source

**SDS Date of Preparation:** November 2, 2009; Updated May 19, 2010

### Duracell Designations:

Name/Size	Duracell Designation	Voltage	IEC Designation
Duracell Plus/Simply D	MN1300	1,5	LR20
Duracell Ultra D	MX1300	1,5	LR20
Duracell Plus/Simply C	MN1400	1,5	LR14
Duracell Ultra C	MX1400	1,5	LR14
Duracell Plus/Simply AA	MN1500	1,5	LR6
Duracell Ultra AA	MX1500	1,5	LR6
Duracell Plus/Simply AAA	MN2400	1,5	LR03
Duracell Ultra AAA	MX2400	1,5	LR03
Duracell Plus/Simply 9V	MN1604	9	6LR61
Duracell Ultra 9V	MX1604	9	6LR61
Duracell 4.5V	MN1203	4,5	3LR12
Duracell AAAA	MN2500	1,5	
Duracell MN11	MN11	6	
Duracell MN9100 N	MN9100	1,5	LR1
Duracell 7K67 J	7K67J	6,2	4LR61

### Company Identification:

#### EU Office

Procter & Gamble UK.  
The Heights, Brooklands  
Weybridge, Surrey  
KT13 0XP UK  
Telephone: +44-1-93-289-6000

#### Switzerland Office

Procter & Gamble  
Switzerland SARL  
Route de Saint-Georges 47  
1213 Petit-Lancy, 1, Geneva,  
Telephone: +41-58-004-6111

#### US Office

Duracell, a division of P&G  
Berkshire Corporate Park  
Bethel, CT 06801 USA  
Telephone: 203-796-4000

**Emergency Phone Number:** INFOTRAC 24-Hour Emergency Response Hotline: 1-352-323-3500 (United States of America)

## SECTION 2: HAZARDS IDENTIFICATION

**Physical Appearance:** Copper top battery.

**CAUTION:** May explode or leak, and cause burn injury, if recharged, disposed of in fire, mixed with a different battery type, inserted backwards or disassembled. Replace all used batteries at the same time. Do not carry batteries loose in your pocket or purse. Do not remove the battery label.

EU Classification of Preparation: Not classified as a dangerous preparation.

### SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	EINECS Number	Amount	Classification
Manganese Dioxide	1313-13-9	215-202-6	35-40 %	Xn, R20/22
Zinc	7440-66-6	231-175-3	10-25 %	N, R50/53
Potassium Hydroxide (35 %)	1310-58-3	215-181-3	5-10 %	C, Xn, R22, R35
Graphite (natural or synthetic)	7782-42-5, 7440-44-0	231-955-3 231-153-3	1-5 %	None

Note: Some Duracell alkaline batteries contain a Duracell Power Check™ battery energy gauge, which is a small conductive strip located underneath the PVC battery label that indicates the amount of charge in the battery. It is composed of minute quantities of conductive materials. Due to the small quantity of materials and their solid form, a health or environmental risk is unlikely.

### SECTION 4: FIRST AID MEASURES

**General Advice:** The chemicals and metals in this product are contained in a sealed can. Exposure to the contents will not occur unless the battery leaks, is exposed to high temperatures or is mechanically, physically, or electrically abused. Damaged battery will release concentrated potassium hydroxide, which is caustic. Anticipated potential leakage of potassium hydroxide is 2 to 20 ml, depending on battery size.

**Eye Contact:** If battery is leaking and material contacts the eye, flush thoroughly with copious amounts of running water for 30 minutes. Seek immediate medical advice.

**Skin Contact:** If battery is leaking and material contacts the skin, remove any contaminated clothing and flush exposed skin with copious amounts of running water for at least 15 minutes. If irritation, injury or pain persists, seek medical advice.

**Inhaled:** If battery is leaking, contents may be irritating to respiratory passages. Move to fresh air. If irritation persists, seek medical advice.

**Swallowed:** If battery contents are swallowed, do not induce vomiting. If the victim is alert, have them rinse their mouth and the surrounding skin with water for at least 15 minutes. Seek immediate medical attention.

Note: This SDS does not include or address the small button cell batteries which can be ingested.

## SECTION 5: FIRE FIGHTING MEASURES

**Fire and Explosion Hazards:** Batteries may burst and release hazardous decomposition products when exposed to a fire situation.

**Extinguishing Media:** Use any extinguishing media that is appropriate for the surrounding fire.

**Special Fire Fighting Procedures:** Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing. Fight fire from a distance or protected area. Cool fire exposed batteries to prevent rupture. Use caution when handling fire-exposed containers (containers may rocket or explode in heat of fire).

**Hazardous Combustion Products:** Thermal degradation may produce hazardous fumes of zinc and manganese; hydrogen gas, caustic vapors of potassium hydroxide and other toxic by-products.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

Notify safety personnel of large spills. Caustic potassium hydroxide may be released from leaking or ruptured batteries. Clean-up personnel should wear appropriate protective clothing to avoid eye and skin contact and inhalation of vapors or fumes. Increase ventilation. Carefully collect batteries and place in an appropriate container for disposal.

## SECTION 7: HANDLING AND STORAGE

Avoid mechanical or electrical abuse. DO NOT short circuit or install incorrectly. Batteries may explode, pyrolyze or vent if disassembled, crushed, recharged or exposed to high temperatures. Install batteries in accordance with equipment instructions. Do not mix battery systems, such as alkaline and zinc carbon, in the same equipment. Replace all batteries in equipment at the same time. Do not carry batteries loose in a pocket or bag. Do not remove battery tester or battery label.

**Storage:** Store batteries in a dry place at normal room temperature. Do not refrigerate – this will not make them last longer.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

The following occupational exposure limits are provided for informational purposes. No exposure to the battery components should occur during normal consumer use. **Refer to specific country regulations for additional exposure limit information.**

Chemical Name	Exposure Limits
Manganese Dioxide	0,5 mg/m <sup>3</sup> TWA UK WEL 0,5 mg/m <sup>3</sup> TWA (inhalable) DFG MAK 0,2 mg/m <sup>3</sup> VL Belgium 0,2 mg/m <sup>3</sup> TWA Denmark LV
Zinc	None established for zinc metal
Potassium Hydroxide	2 mg/m <sup>3</sup> STEL UK WEL 2 mg/m <sup>3</sup> VCD Belgium 2 mg/m <sup>3</sup> Ceiling Denmark LV
Graphite	4 mg/m <sup>3</sup> TWA UK WEL (respirable dust) 10 mg/m <sup>3</sup> TWA UK WEL (inhalable dust) 1,5 mg/m <sup>3</sup> TWA DFG MAK (respirable dust) 4 mg/m <sup>3</sup> TWA DFG MAK (inhalable dust) 2 mg/m <sup>3</sup> VL Belgium (respirable dust)

**Ventilation:** No special ventilation is needed for normal use.

**Respiratory Protection:** None required for normal use.

**Skin Protection:** None required for normal use. Use neoprene, rubber or latex gloves when handling leaking batteries.

**Eye Protection:** None required for normal use. Wear safety goggles when handling leaking batteries.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

**Appearance and Odor:** Copper top battery.

**Water Solubility:** Insoluble

## SECTION 10: STABILITY AND REACTIVITY

**Stability:** This product is stable.

**Incompatibility/Conditions to Avoid:** Contents are incompatible with strong oxidizing agents. Do not heat, crush, disassemble, short circuit or recharge.

**Hazardous Decomposition Products:** Thermal decomposition may produce hazardous fumes of zinc and manganese; caustic vapors of potassium hydroxide and other toxic by-products.

**Hazardous Polymerization:** Will not occur

## SECTION 11: TOXICOLOGICAL INFORMATION

### **Potential Health Effects:**

The chemicals and metals in this product are contained in a sealed can. Exposure to the contents will not occur unless the battery leaks, is exposed to high temperatures or is mechanically, physically, or electrically abused. Damaged battery will release concentrated potassium hydroxide, which is caustic. Anticipated potential leakage of potassium hydroxide is 2 to 20 ml, depending on battery size.

**Eye Contact:** Contact with battery contents may cause severe irritation and burns. Eye damage is possible.

**Skin Contact:** Contact with battery contents may cause severe irritation and burns.

**Inhalation:** Inhalation of vapors or fumes released due to heat or a large number of leaking batteries may cause respiratory and eye irritation.

**Ingestion:** Swallowing is not anticipated due to battery size. Choking may occur if smaller AAA batteries are swallowed. Ingestion of battery contents (from a leaking battery) may cause mouth, throat and intestinal burns and damage.

### **Acute Toxicity Data:**

Manganese Dioxide: LD50 oral rat >3478 mg/kg

Potassium Hydroxide: LD50 oral rat 273 mg/kg

**Chronic Effects:** The chemicals in this product are contained in a sealed can and exposure does not occur during normal handling and use. No chronic effects would be expected from handling a leaking battery.

**Target Organs:** Skin, eyes and respiratory system.

**Carcinogenicity:** None of the components of this product are listed as carcinogens by the EU Directive on the classification and labeling of substances.

## SECTION 12: ECOLOGICAL INFORMATION

No ecotoxicity data is available. This product is not expected to present an environmental hazard.

## SECTION 13: DISPOSAL INFORMATION

Disposal should be in accordance with national and local regulations. Do not incinerate except for disposal in a controlled incinerator.

Duracell alkaline manganese dioxide batteries are labeled in compliance with EU Battery Directive 2006/66.

## SECTION 14: TRANSPORT INFORMATION

**Transportation Information** – Products covered by this SDS, in their original form, are considered “dry cell” batteries and are not regulated as “DANGEROUS GOODS” for transportation.

For finished packaged product transported by ground (ADR/RID): – not regulated

For finished packaged product transported by sea (IMDG) – not regulated

For finished packaged product transported by air (IATA): – not regulated

## SECTION 15: REGULATORY INFORMATION

**EU Classification of Preparation:** Not classified as a dangerous preparation.

**REACH:** These products are manufactured articles and not subject to REACH registration requirements.

**EU Labeling:** None Required

Labeling is not required because batteries are classified as articles under the both REACH and the Dangerous Preparations Directive and as such are exempt from the requirement for labeling.

## SECTION 16: OTHER INFORMATION

**P&G Hazard Rating:** Health: 0      Fire: 0      Reactivity: 0

## EU Classes and Risk Phrases for Reference (See Sections 2 and 3)

C Corrosive

N Dangerous for the Environment

Xn Harmful

R20/22 : Harmful by inhalation and if swallowed. R22 Harmful if swallowed. R35

Causes severe burns

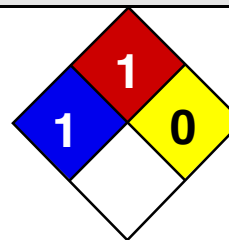
R50/53 : Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

=====  
=== Data supplied is for use only in connection with occupational safety and health.

**DISCLAIMER:** This SDS is intended to provide a brief summary of our knowledge and guidance regarding the use of this material. The information contained here has been compiled from sources considered by Procter & Gamble to be dependable and is accurate to the best of the Company's knowledge. It is not meant to be an all-inclusive document on worldwide hazard communication regulations.

This information is offered in good faith. Each user of this material needs to evaluate the conditions of use and design the appropriate protective mechanisms to prevent employee exposures, property damage or release to the environment. Procter & Gamble assumed no responsibility for injury to the recipient or third persons, or for any damage to any property resulting from misuse of the product.

### Section 3: Hazards Identification



Health	1
Fire	0
Reactivity	0
Personal Protection	B

**Potential Acute Health Effects:**

Slightly hazardous in case of skin contact (irritant). Non-irritating to the eyes. Non-hazardous in case of ingestion.

**Potential Chronic Health Effects:**

CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to lungs. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

## Material Safety Data Sheet

### Aluminum MSDS

#### Section 1: Chemical Product and Company Identification

#### Section 2: Composition and Information on Ingredients

**Composition:**

Name	CAS #	% by Weight
Aluminum	7429-90-5	100

**Toxicological Data on Ingredients:** Aluminum LD50: Not available. LC50: Not available.

#### Section 4: First Aid Measures

**Eye Contact:**



**Product Name:** Aluminum

**Catalog Codes:** SLA4735, SLA2389, SLA3895, SLA1549,  
SLA3055, SLA4558, SLA2212, SLA3715

**CAS#:** 7429-90-5

**RTECS:** BD0330000

**TSCA:** TSCA 8(b) inventory: Aluminum

**CI#:** Not applicable.

**Synonym:** Aluminum metal pellets; Aluminum metal sheet; Aluminum metal shot; Aluminum metal wire  
**International CHEMTREC, call:** 1-703-527-3887

**Chemical Name:** Aluminum

**Chemical Formula:** Al

**Contact Information:**

**Sciencelab.com, Inc.**

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: [ScienceLab.com](http://ScienceLab.com)

**CHEMTREC (24HR Emergency Telephone), call:**  
1-800-424-9300

**For non-emergency assistance, call:** 1-281-441-4400

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

**Skin Contact:** Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

**Serious Skin Contact:** Not available.

**Inhalation:**

### Section 5: Fire and Explosion Data

**Flammability of the Product:** Non-flammable.

**Auto-Ignition Temperature:** Not available.

**Flash Points:** Not available.

**Flammable Limits:** Not available.

**Products of Combustion:** Some metallic oxides.

**Fire Hazards in Presence of Various Substances:** Not available.

**Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

**Fire Fighting Media and Instructions:**

SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

**Special Remarks on Fire Hazards:** Not available.

**Special Remarks on Explosion Hazards:** Not available.

### Section 6: Accidental Release Measures

**Small Spill:**

Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

**Large Spill:**

Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

### Section 7: Handling and Storage

**Precautions:**

Do not ingest. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, acids, alkalis.

**Storage:** Keep container tightly closed. Keep container in a cool, well-ventilated area. Moisture sensitive.

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

**Serious Inhalation:** Not available.

**Ingestion:**

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

**Serious Ingestion:** Not available.

## Section 8: Exposure Controls/Personal Protection

### **Engineering Controls:**

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal Protection:** Safety glasses. Lab coat. Gloves.

**Personal Protection in Case of a Large Spill:** Safety glasses. Lab coat. Gloves.

### **Exposure Limits:**

TWA: 5 (mg(Al)/m) from ACGIH (TLV) [United States] Inhalation (pyro powders, welding fumes) TWA: 10 (mg(Al)/m) from ACGIH (TLV) [United States] Inhalation (metal dust) Consult local authorities for acceptable exposure limits.

## Section 9: Physical and Chemical Properties

## Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Incompatible materials, exposure to moist air or water.

**Incompatibility with various substances:** Reactive with oxidizing agents, acids, alkalis.

**Corrosivity:** Not available.

**Physical state and appearance:** Solid.

**Odor:** Odorless.

**Taste:** Not available.

**Molecular Weight:** 26.98

g/mole **Color:** Silver-white

**pH (1% soln/water):** Not applicable.

**Boiling Point:** 2327°C (4220.6°F)

**Melting Point:** 660°C (1220°F)

**Critical Temperature:** Not available.

**Specific Gravity:** Density: 2.7

(Water = 1)

**Vapor Pressure:** Not applicable.

**Vapor Density:** Not available.

**Volatility:** Not available.

**Odor Threshold:** Not available.

**Water/Oil Dist. Coeff.:** Not available.

**Ionicity (in Water):** Not available.

**Dispersion Properties:** Not available.

**Solubility:**

Insoluble in cold water, hot water. Soluble in alkalis, Sulfuric acid, Hydrochloric acid. Insoluble in concentrated Nitric Acid, hot Acetic acid.

**Special Remarks on Reactivity:**

Moisture sensitive. Aluminum reacts vigorously with Sodium Hydroxide. Aluminum is also incompatible with strong oxidizers, acids, chromic anhydride, iodine, carbon disulfide, methyl chloride, and halogenated hydrocarbons, acid chlorides, ammonium nitrate, ammonium persulfate, antimony, arsenic oxides, barium bromate, barium chlorate, barium iodate, metal

## Section 12: Ecological Information

**Ecotoxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The products of degradation are less toxic than the product itself.

**Special Remarks on the Products of Biodegradation:** Not available.

salts

**Special Remarks on Corrosivity:**

In moist air, oxide film forms which protects metal from corrosion. Aluminum is strongly electropositive so that it corrodes rapidly in contact with other metals.

**Polymerization:** Will not occur.

### Section 11: Toxicological Information

**Routes of Entry:** Not available.

**Toxicity to Animals:** Not available

**Chronic Effects on Humans:** Not available.

**Other Toxic Effects on Humans:**

Slightly hazardous in case of skin contact (irritant). Non-hazardous in case of ingestion. Non-hazardous in case of inhalation.

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:** Not available.

**Special Remarks on other Toxic Effects on Humans:**

Acute Potential Health Effects: Skin: Exposure to aluminum may cause skin irritation. Eyes: Not expected to be a hazard unless aluminum dust particles are present. Exposure to aluminum dust may cause eye irritation by mechanical action. Aluminum particles deposited in the eye are generally innocuous. Inhalation: Not expected to be an inhalation hazard unless it is heated or if aluminum dust is present. If heated or in dust form, it may cause respiratory tract irritation. Heating Aluminum can release Aluminum Oxide fumes and cause fume metal fever when inhaled. This is a flu-like illness with symptoms of metallic taste, fever, chills, aches, chest tightness, and cough. Ingestion: Acute aluminum toxicity is unlikely. Chronic Potential Health Effects: Skin: Contact dermatitis occurs rarely after aluminum exposure. Most cases of aluminum toxicity in humans are in one of two categories: patients with chronic renal failure, or people exposed to aluminum fumes or dust in the workplace. The main source of aluminum in people with chronic renal failure was in the high aluminum content of the water for the dialysate used for dialysis in the 1970's. Even though this problem was recognized and corrected, aluminum toxicity continues to occur in some individuals with renal who chronically ingest aluminum-containing phosphate binders or antacids. Inhalation: Chronic exposure to aluminum dust may cause dyspnea, cough, asthma, chronic obstructive lung disease, pulmonary fibrosis, pneumothorax, pneumoconiosis, encephalopathy, weakness, incoordination and epileptiform seizures and other neurological symptoms similar to that described for chronic ingestion. Hepatic necrosis is also a reported effect of exposure to airborne particulates carrying aluminum. Ingestion: Chronic ingestion of aluminum may cause Aluminum Related Bone Disease or aluminum-induced Osteomalacia with fracturing Osteodystrophy, microcytic anemia, weakness, fatigue, visual and auditory hallucinations, memory loss, speech and language impairment (dysarthria, stuttering, stammering, anomia, hypofluency, aphasia and eventually, mutism), epileptic seizures (focal or grand mal), motor disturbance (tremors, myoclonic jerks, ataxia, convulsions, asterixis, motor apraxia, muscle fatigue), and dementia (personality changes, altered mood, depression, diminished alertness, lethargy, 'clouding of the sensorium', intellectual deterioration, obtundation, coma), and altered EEG.

### Section 16: Other Information

**References:**

**Section 13: Disposal Considerations**

**Waste Disposal:**

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

**Section 14: Transport Information**

**DOT Classification:** Not a DOT controlled material (United States).

**Identification:** Not applicable.

**Special Provisions for Transport:** Not applicable.

**Section 15: Other Regulatory Information**

**Federal and State Regulations:**

California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found. California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found. Connecticut hazardous material survey.: Aluminum Illinois toxic substances disclosure to employee act: Aluminum Rhode Island RTK hazardous substances: Aluminum Pennsylvania RTK: Aluminum Minnesota: Aluminum Massachusetts RTK: Aluminum New Jersey: Aluminum New Jersey spill list: Aluminum California Director's List of Hazardous Substances: Aluminum TSCA 8(b) inventory: Aluminum SARA 313 toxic chemical notification and release reporting: Aluminum

**Other Regulations:**

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

**Other Classifications:**

**WHMIS (Canada):** Not controlled under WHMIS (Canada).

**DSCL (EEC):****HMIS (U.S.A.):**

**Health Hazard:** 1

**Fire Hazard:** 0

**Reactivity:** 0

**Personal Protection:** B

**National Fire Protection Association (U.S.A.):**

**Health:** 1

**Flammability:** 1

**Reactivity:** 0

**Specific**

**hazard:**

**Protective Equipment:**

Gloves. Lab coat. Not applicable. Safety glasses.



-Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. -Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec. -SAX, N.I. Dangerous Properties of Industrial Materials. Toronto, Van Nostrand Reinold, 6e ed. 1984. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Guide de la loi et du règlement sur le transport des marchandises dangereuses au Canada. Centre de conformité international Ltée. 1986. 037 Waste manifest or notification not required.

**Other Special Considerations:** Not available.

**Created:** 10/09/2005 03:39 PM

**Last Updated:** 05/21/2013 12:00 PM

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**MATERIAL SAFETY DATA SHEET**

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**ProX Rocket Motor Reload Kits & Fuel Grains**

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**1.0 PRODUCT / COMPANY IDENTIFICATION**

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**Product Name:** Pro24, Pro29, Pro38, Pro54, Pro75, and Pro98 Rocket Motor Reload Kits  
**Synonyms:** Rocket Motor  
**Proper Shipping Name:** Articles, Explosive, N.O.S. (Ammonium Perchlorate)  
**Part Numbers:** Reload kits: P24R-Y-#G-XX, P29R-Y-#G-XX, P38R-Y-#G-XX,  
P54R-Y-#G-XX, P24R-Y-#GXL-XX, P29R-Y-#GXL-XX,  
P38R-Y-#GXL-XX, P54R-Y-#GXL-XX,  
Propellant grains: P75AC-PG-XX, P98AC-PG-XX, P98AC-MB-PG-XX  
Where: Y = reload type (A = adjustable delay, C = C-slot)  
# = number of grains & XX =  
propellant type

**Product Use:** Solid fuel motor for propelling rockets

**Manufacturer:** Cesaroni Technology Inc.  
P.O. Box 246  
2561 Stouffville Rd.

Gormley, Ont.  
Canada LOH 1G0

**Telephone Numbers:**  
**Product Information:** 1-905-887-2370  
**24 Hour Emergency Telephone Number:** 1-613-996-6666 (CANUTEC)

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**2.0 COMPOSITION / INFORMATION ON INGREDIENTS**

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**Propellant**

Ingredient Name	CAS Number	Percentage
Ammonium Perchlorate .....	7790-98-9	40-85 %
Metal Powders .....		1-45 %
Synthetic Rubber .....		10-30 %

**Black Powder Ignition pellet**

Ingredient Name	CAS Number	Percentage
Potassium Nitrate .....	7757-79-1	70-76 %
Charcoal .....	n/a	8-18 %
Sulphur .....	7704-34-9	9-20 %
Graphite .....	7782-42-5	trace

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**3.0 HAZARDS IDENTIFICATION**

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**Emergency Overview:**

There articles contain cylinders of ammonium perchlorate composite propellant, encased in inert plastic parts. The forward closure also contains a few grams of black powder. ProX Rocket motor reload kits are classified as explosives, and may cause serious injury, including death if used improperly. All explosives are dangerous and must be handled carefully and used following approved safety procedures under the direction of competent, experienced personnel in accordance with all applicable federal, state and local laws and regulations. Avoid inhaling exhaust products.

**General Appearance:**

Cardboard tubes contain various plastic parts. Inside the plastic tube are cylinders of composite propellant (rocket fuel). The forward closure also contains a small quantity of black powder. All parts are odourless solids.

**Potential Health Effects:****Eye:**

Not a likely route of exposure. May cause eye irritation.

**Skin:**

Not a likely route of exposure. Low hazard for usual industrial/hobby handling.

**Ingestion:**

Not a likely route of exposure.

**Inhalation:**

Not a likely route of exposure. May cause respiratory tract irritation. Do not inhale exhaust products.

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**4.0 FIRST AID MEASURES**

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**Eyes:**

Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

**Skin:**

Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.

**Ingestion:**

Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

**Inhalation:**

Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Burns:** Burns can be treated as per normal first aid procedures.

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## 5.0 FIRE FIGHTING MEASURES

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### Extinguishing Media:

In case of fire, use water, dry chemical, chemical foam, or alcohol-resistant foam to contain surrounding fire.

### Exposure Hazards During Fire:

Exposure to extreme heat may cause ignition.

### Combustion Products from Fire:

During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

### Fire Fighting Procedures:

Keep all persons and hazardous materials away. Allow material to burn itself out. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

### Special Instructions / Notes:

These articles burn rapidly and generate a significant flame for a short period of time. Black powder is a deflagrating explosive. It is very sensitive to flame and spark and can also be ignited by friction and impact. When ignited unconfined, it burns with explosive violence and will explode if ignited under even slight confinement. Do not inhale exhaust products.

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## 6.0 ACCIDENTAL RELEASE MEASURES

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### Safeguards (Personnel):

**Spills:** Clean up spills immediately. Replace articles in packaging and boxes and seal securely. Sweep or scoop up using non-sparking tools.

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## 7.0 HANDLING AND STORAGE

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**Handling:** Keep away from heat, sparks and flame. Avoid contamination. Do not get in eyes, on skin or on clothing. Do not taste or swallow. Avoid prolonged or repeated contact with skin. Follow manufacturer's instructions for use.

**Storage:** Store in a cool, dry place away from sources of heat, spark or flame. Keep in shipping packaging when not in use.

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## 8.0 EXPOSURE CONTROLS / PERSONAL PROTECTION

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### Engineering Controls:

Use adequate explosion proof ventilation to keep airborne concentrations low. All equipment and working surfaces must be grounded.

### Personal Protective Equipment:

#### Eyes:

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

#### Skin:

Clothing should be appropriate for handling pyrotechnic substances.  
Clothing should be appropriate for handling pyrotechnic substances.

#### Clothing:

#### Respirators:

A respirator is not typically necessary. Follow the OSHA respirator regulations found in 29CFR1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

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## 9.0 PHYSICAL AND CHEMICAL PROPERTIES

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Physical State: solid  
Appearance: rubber cylinders inside plastic parts

Odour:	none
Odour Threshold:	Not available.
pH:	Not available.
Vapour Pressure:	Not available.
Vapour Density:	Not available.
Viscosity:	Not available.
Evaporation Rate:	Not available.
Boiling Point:	Not available.
Freezing/Melting Point:	Not available.
Coefficient of water/oil distribution:	Not available.
Autoignition Temperature:	280°C
Flash Point:	Not available.
Explosion Limits, lower (LEL):	Not available.
Explosion Limits, upper (UEL):	Not available.
Sensitivity to Mechanical Impact:	unprotected black powder can be ignited by impact
Sensitivity to Static Discharge:	unprotected black powder can be ignited by static discharge
Decomposition Temperature:	> 400°C
Solubility in water:	black powder is soluble in water
Specific Gravity/Density:	black powder = 1.7-2.1 Propellant = not available
Molecular Formula:	Not applicable
Molecular Weight:	Not applicable.

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## 10.0 STABILITY AND REACTIVITY

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### Chemical Stability:

Stable under normal temperatures and pressures.

### Conditions to Avoid:

Heat, static electricity, friction, impact

### Incompatibilities with Other Materials:

Combustible or flammable materials, explosive materials

### Hazardous Products Of Decomposition:

Oxides of nitrogen

### Hazardous Polymerization:

Will not occur.

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## 11.0 TOXICOLOGICAL INFORMATION

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### Routes of Entry:

Skin contact – not likely  
 Skin absorption – not likely  
 Eye contact – not likely  
 Inhalation – not likely  
 Ingestion – not likely

### Effects of Acute Exposure to Product:

No data available

### Effects of Chronic Exposure to Product:

No data available

### Exposure Limits:

Black Powder Pellets

Ingredient Name	CAS Number	OSHA PEL	ACGIH TLV
Potassium Nitrate	7757-79-1	not established	not established
Charcoal	n/a	not established	not established
Sulphur	7704-34-9	not established	not established
Graphite	7782-42-5	2.5 mg/m <sup>3</sup>	15 mmpct (TWA)

Propellant

Ingredient Name	CAS Number	OSHA PEL	ACGIH TLV
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Ammonium Perchlorate metal powder	7790-98-9	not established varies	not established varies
Synthetic Rubber		not established	not established

**Irritancy of the Product:**

No data available

**Sensitization to the Product:**

No data available

**Carcinogenicity:**

Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA

**Reproductive Toxicity:**

No data available

**Teratogenicity:**

No data available

**Mutagenicity:**

No data available

**Toxically Synergistic Products:**

No data available **LD50:**

No data available

**12.0 ECOLOGICAL INFORMATION**

**Environmental Data:**

**Ecotoxicity Data:**

Not determined.

**EcoFaTE Data:**

Not determined.

**13.0 DISPOSAL CONSIDERATIONS**

**Product As Sold:**

Pack firmly in hole in ground with nozzle pointing up. Ignite motor electrically from a safe distance and wait 5 minutes before approaching. Dispose of spent components in inert trash.

**Product Packaging:**

Dispose of used packaging materials in inert trash.

**Special Considerations:**

Consult local regulations about disposal of explosive materials. -----

**14.0 TRANSPORT INFORMATION**

**Shipping Information – Canada**

**TDG Classification:**

Class 1.4 Explosive

**Proper Shipping Name:**

Articles, Explosive, N.O.S. (Model Rocket Motors)

**UN Number:**

0351

**UN Classification Code:**

1.4 C

**Packing Group:**

II

**UN Packing Instruction:**

101

**Shipping Information - USA / IMO**

**Proper Shipping Name:**

Articles, Explosive, N.O.S. (Model Rocket Motors)

**UN Number:**

0351

**UN Classification Code:**

1.4 C

**DOT / IMO Label:**

Class 1 – Explosive – Division 1.4C

**Shipping Information - IATA**

**Proper Shipping Name:** Articles, Explosive, N.O.S. (Model Rocket Motors)  
**UN Number:** 0351  
**UN Classification Code:** 1.4 C  
**IATA Labels:** Class 1 – Explosive – Division 1.4C  
Cargo Aircraft Only

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## 15.0 REGULATORY INFORMATION

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### Canada

This product has been classified according to the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

WHMIS Classification: Not Controlled (explosive)

Domestic Substance List (DSL) Status:  
All ingredients are listed on Canada's DSL List.

Canadian Explosives Classification: Class 7.2.5  
This product is an authorized explosive in Canada.

These products are not considered "Controlled Good" in Canada under the Controlled Goods Regulations.

### United States of America

TSCA Inventory Status:  
All ingredients are listed on the TSCA inventory.

Hazardous Chemical Lists			
CERCLA Hazardous Substance (40 CFR 302.4)			No
SARA Extremely Hazardous Substance (40CFR 355)	No	No	SARA Toxic
Chemical (40CFR 372.65)	No		

### European/International Regulations

The product on this MSDS, or all its components, is included on the following countries' chemical inventories:  
EINECS – European Inventory of Existing Commercial Chemical Substances

### European Labelling in Accordance with EC Directives

Hazard Symbols: Explosive.

Risk Phrases:

**R 2** Risk of explosion by shock, friction, fire or other sources of ignition.  
**R 11** Highly flammable  
**R 44** Risk of explosion if heated under confinement.

Safety Phrases:

**S 1/2** Keep locked up and out of the reach of children.  
**S 8** Keep container dry.  
**S 15** Keep away from heat.  
**S 16** Keep away from sources of ignition -- No smoking.  
**S 17** Keep away from combustible material.  
**S 18** Handle and open container with care.  
**S 33** Take precautionary measures against static discharges. **S 41**  
In case of fire and/or explosion do not breathe fumes.

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## 16.0 OTHER INFORMATION

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MSDS Prepared by: Regulatory Affairs Department  
Cesaroni Technology Inc.  
P.O. Box 246  
2561 Stouffville Rd.

Gormley, ON  
Canada LOH 1G0

Telephone: 905-887-2370 x239  
Fax: 905-887-2375  
Web Sites: [www.cesaronitech.com](http://www.cesaronitech.com)  
[www.Pro38.com](http://www.Pro38.com)

The data in this Material Safety Data Sheet relates only to the specific material or product designated herein and does not relate to use in combination with any other material or in any process.

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.



## Material Safety Data Sheet

PRODUCT IDENTIFICATION	
Product Name	BLACK POWDER
Trade Names and Synonyms	N/A
Manufacturer/Distributor	GOEX, Inc. (Doyline, LA) & various international sources
Transportation Emergency	800-255-3924 (24 hrs — <b>CHEM • TEL</b> )

## PREVENTION OF ACCIDENTS IN THE USE OF EXPLOSIVES

The prevention of accidents in the use of explosives is a result of careful planning and observance of the best known practices. The explosives user must remember that he is dealing with a powerful force and that various devices and methods have been developed to assist him in directing this force. He should realize that this force, if misdirected, may either kill or injure both him and his fellow workers.

## WARNING

**All explosives are dangerous** and must be carefully handled and used following approved safety procedures either by or under the direction of competent, experienced persons in accordance with all applicable federal, state, and local laws, regulations, or ordinances. If you have any questions or

doubts as to how to use any explosive product, **DO NOT USE IT** before consulting with your supervisor, or the manufacturer, if you do not have a supervisor. If your supervisor has any questions or doubts, he should consult the manufacturer before use.

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HAZARDOUS COMPONENTS				
Material or Component	%	CAS No.	TLV	PEL
Potassium nitrate <sup>1</sup>	70-76	007757-79-1	NE	NE
Sodium nitrate <sup>1</sup>	70-74	007631-99-4	NE	NE
Charcoal	8-18	N/A	NE	NE
Sulfur	9-20	007704-34-9	NE	NE
Graphite <sup>2</sup>	Trace	007782-42-5	15 mppct (TWA)	2.5 mg/m <sup>3</sup>
N/A = Not assigned    NE = Not established				

<sup>1</sup> Black Powder contains either potassium nitrate *or* sodium nitrate in the percentages indicated. Black powder **does not contain both.** <sup>2</sup>

Not contained in all grades of black powder.

PHYSICAL DATA	
Boiling Point	N/A
Vapor Pressure	N/A
Vapor Density	N/A
Solubility in Water	Good
Specific Gravity	1.70 - 1.82 (mercury method) ® 1.92 - 2.08 (pycnometer)
PH	6.0 - 8.0
Evaporation Rate	N/A
Appearance and Odor	Black granular powder. No odor detectable.

<b>HAZARDOUS REACTIVITY</b>
-----------------------------



<b>Instability</b>	Keep away from heat, sparks, and open flame. Avoid impact, friction, and static electricity.
<b>Incompatibility</b>	When dry, black powder is compatible with most metals; however, it is hygroscopic, and when wet, attracts all common metals except stainless steel.  Black powder must be tested for compatibility with any material not specified in the production/procurement package with which they may come in contact. Materials include other explosives, solvents, adhesives, metals, plastics, paints, cleaning compounds, floor and table coverings, packing materials, and other similar materials, situations, and equipment.
<b>Hazardous decomposition</b>	Detonation produces hazardous overpressures and fragments (if confined). Gases produced may be toxic if exposed in areas with inadequate ventilation.
<b>Polymerization</b>	Polymerization will not occur.

<b>FIRE AND EXPLOSION DATA</b>	
<b>Flashpoint</b>	Not applicable
<b>Auto ignition temperature</b>	Approx. 464°C (867°F)
<b>Explosive temperature (5 sec)</b>	Ignites @ approx. 427°C (801°F)
<b>Extinguishing media</b>	Water
<b>Special fire fighting procedures</b>	<b>ALL EXPLOSIVES: DO NOT FIGHT EXPLOSIVES FIRES.</b> Try to keep fire from reaching explosives. Isolate area. Guard against intruders.  Division 1.1 Explosives (heavily encased): Evacuate the area for 5000 feet (1 mile) if explosives are heavily encased.  Division 1.1 Explosives (not heavily encased): Evacuate the area for 2500 feet (½ mile) if explosives are not heavily encased.  Division 1.1 Explosives (all): Consult the <i>2000 Emergency Response Guidebook, Guide 112</i> for further details.
<b>Unusual fire and explosion hazards</b>	Black powder is a deflagrating explosive. It is very sensitive to flame and spark and can also be ignited by friction and impact. When ignited unconfined, it burns with explosive violence and will explode if ignited under even slight confinement.

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Issued 12/08/93 Revised 12/12/05

<b>HEALTH HAZARDS</b>	
<b>General</b>	Black powder is a Division 1.1 Explosive, and detonation may cause severe physical injury, including death. All explosives are dangerous and must be handled carefully and used following approved safety procedures under the direction of competent, experienced persons in accordance with all applicable federal, state, and local laws, regulations, and ordinances.
<b>Carcinogenicity</b>	None of the components of Black powder are listed as a carcinogen by NTP, IARC, or OSHA.

<b>FIRST AID</b>	
<b>Inhalation</b>	<i>Not a likely route of exposure.</i> If inhaled, remove to fresh air. If not breathing, give artificial respiration, preferably by mouth-to-mouth. If breathing is difficult, give oxygen. Seek prompt medical attention.
<b>Eye and skin contact</b>	<i>Not a likely route of exposure.</i> Flush eyes with water. Wash skin with soap and water.
<b>Ingestion</b>	<i>Not a likely route of exposure.</i> If ingested, induce vomiting immediately by giving two glasses of water and sticking finger down throat.
<b>Injury from detonation</b>	Seek prompt medical attention.

<b>SPILL OR LEAK PROCEDURES</b>	
<b>Spill/leak response</b>	Use appropriate personal protective equipment. Isolate area and remove sources of friction, impact, heat, low level electrical current, electrostatic or RF energy. Only competent, experienced persons should be involved in cleanup procedures.  Carefully pick up spills with non-sparking and non-static producing tools.

<b>Waste disposal</b>	Desensitize by diluting in water. Open train burning, by qualified personnel, may be used for disposal of small unconfined quantities. Dispose of in compliance with federal regulations under the authority of the <i>Resource Conservation and Recovery Act</i> (40 CFR Parts 260-271).
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<b>SPECIAL PROTECTION INFORMATION</b>	
<b>Ventilation</b>	Use only with adequate ventilation.
<b>Respiratory</b>	None
<b>Eye</b>	None
<b>Gloves</b>	Impervious rubber gloves.
<b>Other</b>	Metal-free <i>and</i> non-static producing clothes

<b>SPECIAL PRECAUTIONS</b>
<ul style="list-style-type: none"> <li>Ⓢ Keep away from friction, impact, and heat. Do not consume food, drink, or tobacco in areas where they may become contaminated with these materials.</li> <li>Ⓢ Contaminated equipment must be thoroughly water cleaned before attempting repairs.</li> <li>Ⓢ Use only non-spark producing tools.</li> <li>Ⓢ No smoking.</li> </ul>

<b>STORAGE CONDITIONS</b>
Store in a cool, dry place in accordance with the requirements of <i>Subpart K, ATF: Explosives Law and Regulations</i> (27 CFR 55.201-55.219).

<b>SHIPPING INFORMATION</b>		
<b>Proper shipping name</b>	Black powder	
<b>Hazard class</b>	1.1D	
<b>UN Number</b>	UN0027	
<b>DOT Label &amp; Placard</b>	DOT Label	EXPLOSIVE 1.1D
	DOT Placard	EXPLOSIVES 1.1
<b>Alternate shipping information</b>	Limited quantities of black powder may be transported as "Black powder for small arms", NA0027, class 4.1 pursuant to U.S. Department of Transportation authorization EX-8712212.	

The information contained in this Material Safety Data Sheet is based upon available data and believed to be correct; however, as such has been obtained from various sources, including the manufacturer and independent laboratories, it is given without warranty or representation that it is complete, accurate, and can be relied upon. OWEN COMPLIANCE SERVICES, INC. has not attempted to conceal in any manner the deleterious aspects of the product listed herein, but makes no warranty as to such. Further, OWEN COMPLIANCE SERVICES, INC. cannot anticipate nor control the many situations in which the product or this information may be used; there is no guarantee that the health and safety precautions suggested will be proper under all conditions. It is the sole responsibility of each user of the product to determine and comply with the requirements of all applicable laws and regulations regarding its use. This information is given solely for the purposes of safety to persons and property. Any other use of this information is expressly prohibited.

**For further information contact:** David W. Boston, President *OWEN COMPLIANCE SERVICES, INC.*  
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**MSDS prepared by:** David W. Boston  
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MSDS-BP PAGE 2-4  
of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

Issued 12/08/93 Revised 12/03/03

## SECTION: 1. Product and company identification

### 1.1. Product identifier

Product form : Mixture

Other means of identification : Cabon Monoxide 0.1 PPM -8.72% in balance Air

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

Use of the substance/mixture : Industrial use. Use as directed.

### 1.3. Details of the supplier of the safety data sheet

Praxair, Inc.  
39 Old Ridgebury Road

Danbury, CT 06810-5113 - USA  
T 1-800-772-9247 (1-800-PRAXAIR) - F  
1-716-879-2146 [www.praxair.com](http://www.praxair.com)

#### 1.4. Emergency telephone number

Emergency number : Onsite Emergency: 1-800-645-4633

CHEMTREC, 24hr/day 7days/week — Within USA: 1-800-424-9300, Outside USA: 001-703527-3887  
(collect calls accepted, Contract 17729)

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

#### Classification (GHS-US)

Compressed gas H280

### 2.2. Label elements

#### GHS-US labeling

Hazard pictograms (GHS-US)



GHS04

Signal word (GHS-US)

: WARNING

Hazard statements (GHS-US)

: H280 - CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED

Precautionary statements (GHS-US)

: CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F). P271+P403 - Use and store only outdoors or in a well-ventilated place.

### 2.3. Other hazards

Other hazards not contributing to the classification

: Chemical asphyxiant. Exposure to low concentrations for extended periods may result in dizziness or unconsciousness, and may lead to death.

### 2.4. Unknown acute toxicity (GHS US)

No data available

## SECTION 3: Composition/information on ingredients

### 3.1. Substance

Not applicable

### 3.2. Mixture

Name	Product identifier	%
Nitrogen	(CAS No) 7727-37-9	72.102072 - 78.99
Oxygen	(CAS No) 7782-44-7	19.177928 - 21.01

EN (English US)

SDS ID: P-18-0016

1/9

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Name	Product identifier	%
Carbon monoxide	(CAS No) 630-08-0	0.0001 - 8.72

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

- First-aid measures after inhalation : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped. Immediately remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, qualified personnel may give oxygen. Call a physician.
- First-aid measures after skin contact : Adverse effects not expected from this product.
- First-aid measures after eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. Contact an ophthalmologist immediately.
- First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

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

No additional information available

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

Obtain medical assistance.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.

### 5.2. Special hazards arising from the substance or mixture

Reactivity : No reactivity hazard other than the effects described in sub-sections below.

### 5.3. Advice for firefighters

Firefighting instructions : Evacuate all personnel from the danger area. Use self-contained breathing apparatus (SCBA) and protective clothing. Immediately cool containers with water from maximum distance. Stop flow of gas if safe to do so, while continuing cooling water spray. Remove ignition sources if safe to do so. Remove containers from area of fire if safe to do so. On-site fire brigades must comply with OSHA 29 CFR 1910.156 and applicable standards under 29 CFR 1910 Subpart L—Fire Protection.

Protection during firefighting : Compressed gas: asphyxiant. Suffocation hazard by lack of oxygen.

Special protective equipment for fire fighters : Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.

Specific methods : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas containers to rupture. Cool endangered containers with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.

Stop flow of product if safe to do so.

Use water spray or fog to knock down fire fumes if possible.

Other information : Containers are equipped with a pressure relief device. (Exceptions may exist where authorized by DOT.).

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

General measures : Wear self-contained breathing apparatus when entering area unless atmosphere is proven to

be safe. Ensure adequate air ventilation. Evacuate area. Try to stop release. Monitor concentration of released product.

#### 6.1.1. For non-emergency personnel

No additional information available

#### 6.1.2. For emergency responders

No additional information available

## 6.2. Environmental precautions

Try to stop release. Prevent waste from contaminating the surrounding environment. Prevent soil and water pollution. Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.

## 6.3. Methods and material for containment and cleaning up

No additional information available

## 6.4. Reference to other sections

See also sections 8 and 13.

# SECTION 7: Handling and storage

## 7.1. Precautions for safe handling

Precautions for safe handling : Wear leather safety gloves and safety shoes when handling cylinders. Protect cylinders from

physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g., wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents. For other precautions in using this product, see section 16.

## 7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in a cool, well-ventilated place. Store and use with adequate ventilation. Store only

where temperature will not exceed 125°F (52°C). Firmly secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand. Store full and

empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods.

**OTHER PRECAUTIONS FOR HANDLING, STORAGE, AND USE:** When handling product under pressure, use piping and equipment adequately designed to withstand the pressures to be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Gases can cause rapid suffocation because of oxygen deficiency; store and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit.

### 7.3. Specific end use(s)

None.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

<b>Carbon monoxide (630-08-0)</b>		
ACGIH	ACGIH TLV-TWA (ppm)	25 ppm
USA OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	55 mg/m <sup>3</sup>
USA OSHA	OSHA PEL (TWA) (ppm)	50 ppm
<b>Nitrogen (7727-37-9)</b>		
ACGIH	Not established	
USA OSHA	Not established	
<b>Oxygen (7782-44-7)</b>		
ACGIH	Not established	
USA OSHA	Not established	

### 8.2. Exposure controls



Appropriate engineering controls	: Provide adequate general and local exhaust ventilation. Alarm detectors should be used when toxic gases may be released. Product to be handled in a closed system and under strictly controlled conditions. Preferably use only permanent leak-tight installations (e.g. welded pipes). Ensure exposure is below occupational exposure limits (where available).
Eye protection	: Wear safety glasses with side shields. Wear safety glasses when handling cylinders; vaporproof goggles and a face shield during cylinder changeout or whenever contact with product is possible. Select eye protection in accordance with OSHA 29 CFR 1910.133.
Skin and body protection	: Wear metatarsal shoes and work gloves for cylinder handling, and protective clothing where needed. Wear appropriate chemical gloves during cylinder changeout or wherever contact with product is possible. Select per OSHA 29 CFR 1910.132, 1910.136, and 1910.138.
Respiratory protection	: When workplace conditions warrant respirator use, follow a respiratory protection program that meets OSHA 29 CFR 1910.134, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable). Use an air-supplied or air-purifying cartridge if the action level is exceeded. Ensure that the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure (e.g., an organic vapor cartridge). For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).  Gas filters may be used if all surrounding conditions e.g. type and concentration of the contaminant(s) and duration of use are known.  Use gas filters and full face mask, where exposure limits may be exceeded for a short-term period, e.g. connecting or disconnecting containers.  Consult respiratory device supplier's product information for the selection of the appropriate device.  Gas filters do not protect against oxygen deficiency.  Keep self contained breathing apparatus readily available for emergency use.  Self contained breathing apparatus is recommended, where unknown exposure may be expected, e.g. during maintenance activities on installation systems.  Self contained breathing apparatus (SCBA) or positive pressure airline with mask are to be used in oxygen-deficient atmospheres.
Thermal hazard protection	: Wear cold insulating gloves when transfilling or breaking transfer connections.
Environmental exposure controls	: Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.
Other information	: Wear leather safety gloves and safety shoes when handling cylinders.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state : Gas

Color : Colorless

Odor : No data available

Odor threshold : No data available

pH : Not applicable.

Relative evaporation rate (butyl acetate=1) : No data available

Relative evaporation rate (ether=1) : Not applicable.

Melting point : No data available

Freezing point : No data available

Boiling point : No data available

Flash point : No data available

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Flammability (solid, gas) : No data available

Vapor pressure : Not applicable.

Relative vapor density at 20 °C : No data available

Relative density : No data available

Solubility : Water: No data available

Log Pow : Not applicable.

Log Kow : Not applicable.

Viscosity, kinematic : Not applicable.

Viscosity, dynamic : Not applicable.

Explosive properties : Not applicable.

Oxidizing properties : None.

Explosion limits : No data available

## 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

No reactivity hazard other than the effects described in sub-sections below.

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

None.

### 10.4. Conditions to avoid

None.

### 10.5. Incompatible materials

None.

### 10.6. Hazardous decomposition products

None.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity : Not classified

<b>Carbon monoxide (630-08-0)</b>	
LC50 inhalation rat (ppm)	1807 ppm/4h

ATE US (gases)	1807.000 ppmV/4h
----------------	------------------

Skin corrosion/irritation : Not classified  
pH: Not applicable.

Serious eye damage/irritation : Not classified  
pH: Not applicable.

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure)  
: Not classified

Aspiration hazard : Not classified

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general : No ecological damage caused by this product.

### 12.2. Persistence and degradability

<b>Mixture of Carbon monoxide and Air</b>	
Persistence and degradability	No ecological damage caused by this product.
<b>Nitrogen (7727-37-9)</b>	
Persistence and degradability	No ecological damage caused by this product.
<b>Oxygen (7782-44-7)</b>	
Persistence and degradability	No ecological damage caused by this product.

### 12.3. Bioaccumulative potential

<b>Mixture of Carbon monoxide and Air</b>	
Log Pow	Not applicable.
Log Kow	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.

<b>Carbon monoxide (630-08-0)</b>	
Log Kow	Not applicable.

<b>Nitrogen (7727-37-9)</b>	
Log Pow	Not applicable.
Log Kow	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.

<b>Oxygen (7782-44-7)</b>	
Log Pow	Not applicable.
Log Kow	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.

#### 12.4. Mobility in soil

<b>Mixture of Carbon monoxide and Air</b>	
Mobility in soil	No data available.

<b>Carbon monoxide (630-08-0)</b>	
Mobility in soil	No data available.

<b>Nitrogen (7727-37-9)</b>	
Mobility in soil	No data available.
Ecology - soil	No ecological damage caused by this product.

<b>Oxygen (7782-44-7)</b>	
Mobility in soil	No data available.
Ecology - soil	No ecological damage caused by this product.

#### 12.5. Other adverse effects

Effect on ozone layer : None.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Waste treatment methods	: Must not be discharged to atmosphere. Do not attempt to dispose of residual or unused quantities. Return container to supplier.
Waste disposal recommendations	: Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements. Do not attempt to dispose of residual or unused quantities. Return container to supplier.

## SECTION 14: Transport information

In accordance with DOT

Transport document description	: UN1956 Compressed gas, n.o.s.
UN-No.(DOT)	: UN1956
Proper Shipping Name (DOT)	: Compressed gas, n.o.s.
Hazard labels (DOT)	: 2.2 - Non-flammable gas



DOT Symbols

G - Identifies proper shipping name (PSN) requiring the addition of technical name(s) in parentheses following the PSN.

### Additional information

Other information	: No supplementary information available.
Special transport precautions	: Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers: - Ensure there is adequate ventilation. - Ensure that containers are firmly secured. - Ensure cylinder valve is closed and not leaking. - Ensure valve outlet cap nut or plug (where provided) is correctly fitted. - Ensure valve protection device (where provided) is correctly fitted.

### Transport by sea

UN-No. (IMDG)	: 1956
Proper Shipping Name (IMDG)	: COMPRESSED GAS, N.O.S.
Class (IMDG)	: 2.2 - Non-flammable, non-toxic gases

### Air transport UN-

No.(IATA)	: 1956
Proper Shipping Name (IATA)	: COMPRESSED GAS, N.O.S.

Class (IATA) : 2

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

No additional information available

### 15.2. International regulations

#### CANADA

##### Carbon monoxide (630-08-0)

Listed on the Canadian DSL (Domestic Substances List)

##### Nitrogen (7727-37-9)

Listed on the Canadian DSL (Domestic Substances List)

##### Oxygen (7782-44-7)

Listed on the Canadian DSL (Domestic Substances List)

### EU-Regulations

#### 15.2.2. National regulations

No additional information available

### 15. US State

#### Mixture of Carbon monoxide and

U.S.- California Proposition 65 Carcinogens	N
U.S.- California Proposition 65 Developmental Toxicity	N
U.S.- California Proposition 65 Reproductive Toxicity Femal	N
U.S.- California Proposition 65 Reproductive Toxicity Mal	N

**Carbon monoxide (630-08-0)**

U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significance risk level (NSRL)
No	Yes	No	No	

**Nitrogen (7727-37-9)**

U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significance risk level (NSRL)
No	No	No	No	

**Oxygen (7782-44-7)**

U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significance risk level (NSRL)
No	No	No	No	

**Carbon monoxide (630-08-0)**

U.S. - Massachusetts - Right To Know List  
 U.S. - New Jersey - Right to Know Hazardous Substance List  
 U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List  
 U.S. - Pennsylvania - RTK (Right to Know) List

**Nitrogen (7727-37-9)**

U.S. - Massachusetts - Right To Know List  
 U.S. - New Jersey - Right to Know Hazardous Substance List  
 U.S. - Pennsylvania - RTK (Right to Know) List

**Oxygen (7782-44-7)**

U.S. - Massachusetts - Right To Know List  
 U.S. - New Jersey - Right to Know Hazardous Substance List  
 U.S. - Pennsylvania - RTK (Right to Know) List



## SECTION 16: Other information

### Other information

: When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture.

Consult an industrial hygienist or other trained person when you evaluate the end product. Before using any plastics, confirm their compatibility with this product.

Praxair asks users of this product to study this SDS and become aware of the product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this SDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

The opinions expressed herein are those of qualified experts within Praxair, Inc. We believe that the information contained herein is current as of the date of this Safety Data Sheet. Since the use of this information and the conditions of use are not within the control of Praxair, Inc., it is the user's obligation to determine the conditions of safe use of the product.

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SDS US (GHS HazCom 2012) - PDI

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*

# MATERIAL SAFETY DATA SHEET

## West System Inc.

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** ..... WEST SYSTEM® 105 Epoxy Resin  
**PRODUCT CODE:** ..... 105  
**CHEMICAL FAMILY:** ..... Epoxy Resin.  
**CHEMICAL NAME:**.....  
Bisphenol A based epoxy resin. **FORMULA:**  
..... Not applicable.

**MANUFACTURER:**

West System Inc.  
102 Patterson Ave.

(U.S.)

Bay City, MI 48706, U.S.A.

Phone: 866-937-8797 or 989-684-7286

www.westsystem.com

**EMERGENCY TELEPHONE NUMBERS:**

Transportation

CHEMTREC: ..... 800-424-9300

703-527-3887 (International)

Non-transportation

Poison Hotline: ..... 800-222-1222

### 2. HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

WARNING May cause skin irritation. May cause eye irritation. May cause allergic reaction. Clear, viscous liquid with mild odor.

**PRIMARY ROUTE(S) OF ENTRY:** ..... Skin contact.

**POTENTIAL HEALTH EFFECTS:**

**ACUTE INHALATION:** ..... If product is heated, vapors generated can cause headache, nausea, dizziness and possible respiratory irritation if inhaled in high concentrations.

**CHRONIC INHALATION:** ..... Repeated exposure to high vapor concentrations may cause irritation of pre-existing lung allergies and increase the chance of developing allergy symptoms to this product.

**ACUTE SKIN CONTACT:** ..... May cause allergic skin response in certain individuals. May cause moderate irritation to the skin such as redness and itching.

**CHRONIC SKIN CONTACT:** ..... May cause sensitization in susceptible individuals. May cause moderate irritation to the skin.

**EYE CONTACT:** ..... May cause irritation.

**INGESTION:** ..... Low acute oral toxicity.

**SYMPTOMS OF OVEREXPOSURE:** ..... Possible sensitization and subsequent allergic reactions usually seen as redness and rashes.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** ..... Pre-existing skin and respiratory disorders may be aggravated by exposure to this product. Pre-existing lung and skin allergies may increase the chance of developing allergic symptoms to this product.

**3. COMPOSITION/INFORMATION ON HAZARDOUS INGREDIENTS**

<b><u>INGREDIENT NAME</u></b>	<b><u>CAS #</u></b>	<b><u>CONCENTRATION (%)</u></b>
Propane, 2,2-bis[p-(2,3-epoxypropoxy)phenyl]-, polymers	25085-99-8	60-100
Benzyl alcohol	100-51-6	10-30
Phenol-formaldehyde polymer glycidyl ether	28064-14-4	1-10

**4. FIRST AID MEASURES**

**FIRST AID FOR EYES** ..... Flush immediately with water for at least 15 minutes. Consult a physician.

**FIRST AID FOR SKIN** ..... Remove contaminated clothing. Wipe excess from skin. Apply waterless skin cleaner and then wash with soap and water. Consult a physician if effects occur.

**FIRST AID FOR INHALATION**..... Remove to fresh air if effects occur.

**FIRST AID FOR INGESTION** ..... No acute adverse health effects expected from amounts ingested under normal conditions of use. Seek medical attention if a significant amount is ingested.

MSDS #105

Last Revised: 26APR13

## 5. FIRE FIGHTING MEASURES

**FLASH POINT:** ..... >200°F (Tag Closed Cup)

**EXTINGUISHING MEDIA:** ..... Foam, carbon dioxide (CO<sub>2</sub>), dry chemical.

**SPECIAL FIRE FIGHTING PROCEDURES:** ..... Wear a self-contained breathing apparatus and complete full-body personal protective equipment. Closed containers may rupture (due to buildup of pressure) when exposed to extreme heat.

**FIRE AND EXPLOSION HAZARDS:** ..... During a fire, smoke may contain the original materials in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include, but are not limited to:  
phenolics, carbon monoxide, carbon dioxide.

## 6. ACCIDENTAL RELEASE MEASURES

**SPILL OR LEAK PROCEDURES:** ..... Stop leak without additional risk. Dike and absorb with inert material (*e.g.*, sand) and collect in a suitable, closed container. Warm, soapy water or non-flammable, safe solvent may be used to clean residual.

## 7. HANDLING AND STORAGE

**STORAGE TEMPERATURE (min./max.):** ..... 40°F (4°C) / 120°F (49°C)

**STORAGE:** ..... Store in cool, dry place. Store in tightly sealed containers to prevent moisture absorption and loss of volatiles. Excessive heat over long periods of time will degrade the resin.

**HANDLING PRECAUTIONS:** ..... Avoid prolonged or repeated skin contact. Wash thoroughly after handling. Launder contaminated clothing before reuse. Avoid inhalation of vapors from heated product. Precautionary steps should be taken when curing product in large quantities. When mixed with epoxy curing agents this product causes an exothermic, which in large masses, can produce enough heat to damage or ignite surrounding materials and emit fumes and vapors that vary widely in composition and toxicity.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**EYE PROTECTION GUIDELINES:** ..... Safety glasses with side shields or chemical splash goggles.

**SKIN PROTECTION GUIDELINES:** ..... Wear liquid-proof, chemical resistant gloves (nitrile-butyl rubber, neoprene, butyl rubber or natural rubber) and full body-covering clothing.

**RESPIRATORY/VENTILATION GUIDELINES:** ..... Good room ventilation is usually adequate for most operations. Wear a NIOSH/MSHA approved respirator with an organic vapor cartridge whenever exposure to vapor in concentrations above applicable limits is likely.

Note: West System, Inc. has conducted an air sampling study using this product or similarly formulated products. The results indicate that the components sampled for (epichlorohydrin, benzyl alcohol) were either so low that they were not detected at all or they were significantly below OSHA's permissible exposure levels.

**ADDITIONAL PROTECTIVE MEASURES:** ..... Practice good caution and personal cleanliness to avoid skin and eye contact. Avoid skin contact when removing gloves and other protective equipment. Wash thoroughly after handling. Generally speaking, working cleanly and following basic precautionary measures will greatly minimize the potential for harmful exposure to this product under normal use conditions.

**OCCUPATIONAL EXPOSURE LIMITS:** ..... Not established for product as whole. Refer to OSHA's Permissible Exposure Level (PEL) or the ACGIH Guidelines for information on specific ingredients.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**PHYSICAL FORM:** ..... Liquid.

**COLOR:** ..... Clear.

**ODOR:** ..... Mild.  
**BOILING POINT:** ..... > 400°F

**MELTING POINT/FREEZE POINT:**  
..... No data.

**VISCOSITY:**  
.....  
..... 1000 (cP) **pH:**  
.....

..... No data.

**SOLUBILITY IN WATER:** ..... Slight.

**SPECIFIC GRAVITY:** ..... 1.15

**BULK DENSITY:**  
..... 9.6

(pounds/gallon) **VAPOR PRESSURE:**  
..... < 1 mmHg

@ 20°C.

**VAPOR DENSITY:** ..... Heavier than air.

**% VOLATILE BY WEIGHT:** ..... ASTM D 2369-07 was used to determine the Volatile Content of mixed epoxy resin and hardener. Refer to the hardener's MSDS for information about the total volatile content of the resin/hardener system.

## 10. STABILITY AND REACTIVITY

### STABILITY:

.....  
..... Stable.

**HAZARDOUS POLYMERIZATION:** ..... Will not occur by itself, but a mass of more than one pound of product plus an aliphatic amine will cause irreversible polymerization with significant heat buildup.

**INCOMPATIBILITIES:** ..... Strong acids, bases, amines and mercaptans can cause polymerization.

**DECOMPOSITION PRODUCTS:** ..... Carbon monoxide, carbon dioxide and phenolics may be produced during uncontrolled exothermic reactions or when otherwise heated to decomposition.

## 11. TOXICOLOGICAL INFORMATION

No specific oral, inhalation or dermal toxicology data is known for this product. Specific toxicology information for a bisphenol-A based epoxy resin present in this product is indicated below:

Oral: .....

LD<sub>50</sub> >5000 mg/kg (rats) Inhalation:

..... No Data.

Dermal: ..... LD<sub>50</sub> = 20,000 mg/kg (skin absorption in rabbits)

TERATOLOGY: .....Diglycidyl ether bisphenol-A (DGEBPA) did not cause birth defects or other adverse effects on the fetus when pregnant rabbits were exposed by skin contact, the most likely route of exposure, or when pregnant rats or rabbits were exposed orally.

REPRODUCTIVE EFFECTS: .....DGEBPA, in animal studies, has been shown not to interfere with reproduction.

MUTAGENICITY: .....DGEBPA in animal mutagenicity studies were negative. In vitro mutagenicity tests were negative in some cases and positive in others.

CARCINOGENICITY:

NTP ..... Product not listed.

IARC

.....

.... Product not listed. OSHA

.....

... Product not listed.

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA, NTP or IARC.

Many studies have been conducted to assess the potential carcinogenicity of diglycidyl ether of bisphenol-A. Although some weak evidence of carcinogenicity has been reported in animals, when all of the data are considered, the weight of evidence does not show that DGEBPA is carcinogenic. Indeed, the most recent review of the available data by the International Agency for Research on Cancer (IARC) has concluded that DGEBPA is not classified as a carcinogen.

Epichlorohydrin, an impurity in this product (<5 ppm) has been reported to produce cancer in laboratory animals and to produce mutagenic changes in bacteria and cultured human cells. It has been established by the International Agency for Research on Cancer (IARC) as a probable human carcinogen (Group 2A) based on the following conclusions: human evidence – inadequate; animal evidence – sufficient. It has been classified as an anticipated human carcinogen by the National Toxicology Program (NTP). Note: It is unlikely that normal use of this product would result in measurable exposure concentrations to this substance.

## 12. ECOLOGICAL INFORMATION

In the non-cured liquid form this product may cause long-term harm if released to the environment. Prevent entry into sewers and natural waters.

### Movement and Partitioning:

Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Kow between 3 and 5).

### Degradation and Transformation:

Theoretical oxygen demand is calculated to be 2.35 p/p. 20-day biochemical oxygen demand is <2.5%.

### Ecotoxicology:

Material is moderately toxic to aquatic organisms on an acute basis. LC50/EC50 between 1 and 10 mg/L in most sensitive species.

## 13. DISPOSAL CONSIDERATIONS

**WASTE DISPOSAL METHOD:** ..... Evaluation of this product using RCRA criteria shows that it is not a hazardous waste, either by listing or characteristics, in its purchased form. It is the responsibility of the user to determine proper disposal methods.

Incinerate, recycle (fuel blending) or reclaim may be preferred methods when conducted in accordance with federal, state and local regulations.

## 14. TRANSPORTATION INFORMATION

### DOT Non-Bulk

SHIPPING NAME: ..... Not regulated.

TECHNICAL SHIPPING NAME: ..... Not applicable.

HAZARD CLASS:

..... Not

applicable. U.N./N.A.

NUMBER:.....

Not applicable. PACKING GROUP:

..... Not

applicable.

### IMDG

SHIPPING NAME: ..... Environmentally hazardous substance, liquid, n.o.s.

TECHNICAL SHIPPING NAME: ..... Epoxy Resin.

HAZARD CLASS: ..... Class 9.



U.N. NUMBER:

.....

UN3082. PACKING GROUP:

..... PG

III.

EmS Number: ..... F-A, S-F

MARINE POLLUTANT ..... Yes

**ICAO/IATA**

SHIPPING NAME: ..... Environmentally

hazardous substance, liquid, n.o.s.

TECHNICAL SHIPPING NAME: ..... Epoxy Resin.

HAZARD CLASS: ..... Class 9.

U.N. NUMBER:

.....

UN3082. PACKING GROUP:

..... PG

III.

MARINE POLLUTANT: ..... Yes

**15. REGULATORY INFORMATION**

**OSHA STATUS:** ..... Irritant.

**TSCA STATUS:** ..... All components are listed on TSCA inventory or otherwise comply with TSCA requirements.

**Canada WHMIS Classification:** ..... D2B - Toxic material causing other toxic effects.

**CEPA Chemical Inventory Status:** ..... All components are listed or are otherwise compliant with CEPA requirements.

**SARA TITLE III:**

**SECTION 313 TOXIC CHEMICALS** ..... None (de minimus).

**STATE REGULATORY INFORMATION:**

The following chemicals are specifically listed or otherwise regulated by individual states. For details on your regulatory requirements you should contact the appropriate agency in your state.

**COMPONENT NAME**

**/CAS NUMBER**

**CONCENTRATION**

**STATE**

**CODE**

Epichlorohydrin

106-89-8

< 5ppm

<sup>1</sup>CA

Benzyl alcohol

100-51-6

MA, PA, NJ

1. These substances are known to the state of California to cause cancer or reproductive harm, or both.

**16. OTHER INFORMATION**

**REASON FOR ISSUE:**..... Changes made in Section 14 and 15.  
**PREPARED BY:** ..... G. M. House  
**APPROVED BY:** ..... G. M. House  
**TITLE:** ..... Health, Safety & Environmental Manager  
**APPROVAL DATE:** ..... April 26, 2013  
**SUPERSEDES DATE:** ..... March 9,  
**2012 MSDS NUMBER:** ..... 105-13a

This information is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of West System Inc. The data on this sheet is related only to the specific material designated herein. West System Inc. assumes no legal responsibility for use or reliance upon these data.

Document-E-761 Fiberglass Prepreg-MSDS-NA-1051



**Material Safety Data Sheet**  
**E-761/E-761LT EPOXY FIBERGLASS PREPREG**

**Section 1 : Company and Product Identification**

Park Aerospace Technologies Corp.

MSDSrequest@parkelectro.com

486 North Oliver Road, Building Z, Newton City/County Airport Emergency Phone 1-316-283-6500

Newton, KS 67114 USA

8AM-5PM CST Monday-Friday

**Product Name:** E- 761 Aluminized Fiberglass Prepreg, E-761 Fiberglass Prepreg, E-761LT Fiberglass Prepreg, E-761LT Aluminized Fiberglass Prepreg

**Product Description:** Epoxy impregnated aluminized fiberglass fabric

## Section 2 : Hazardous Ingredients

Chemical Name	CAS #	Wt. %	OSHA PEL	ACGIH TLV	SARA 313 YES / NO
Epoxy Resin Blend	25068-38-6, Proprietary	20-36	NE	NE	No
Alumina Borosilicate Fiberglass Fabric (E-glass)	65997-17-3	45-70	15 mg/M <sup>3</sup>	15 mg/M <sup>3</sup>	No
Tetrabromobisphenol A	79-94-7	2.0-4.0	15 mg/M <sup>3</sup>	10 mg/M <sup>3</sup>	No
Substituted urea	Proprietary	1.0-3.0	NE	NE	No
Acetone	67-64-1	<1.0	1000 ppm	500 ppm	No
Dimethyl Formamide	68-12-2	<1.0	10 ppm	10 ppm	Yes
Antimony Trioxide	1309-64-4	0.5-1.5	0.5 mg/M <sup>3</sup>	NE	Yes
2-Butanone (Methyl Ethyl Ketone)	78-93-3	<1.0	200 ppm	200 ppm	No

NE= Not Established

## Section 3 : Hazards Identification (Effects of Exposure)

The following section describes the possible consequences of exposure to the resins, dusts, and solvent vapors associated with the processing of this material.

**This material is a “health hazard” and/or “physical hazard” as determined when reviewed according to the requirements of the Occupational Safety and Health Administration 29 CFR 1910.1200 “Hazardous Communication” Standard.**

**WARNING! Causes eye, skin and respiratory tract irritation. May cause allergic respiratory and skin reaction. Inhalation of solvent vapor can cause central nervous system (CNS) effects. Contains Antimony (III) oxide which may cause cancer. Contains N,N-Dimethylformamide which is considered to be a potent liver toxin, and may also affect the kidneys, blood, and cardiovascular system. Contains N,N-Dimethylformamide which is considered to be a teratogen.**

### SIGNS AND SYMPTOMS OF EXPOSURE

**Resin Dust and Fiberglass:**

Dizziness

Coma

Vomiting

Rapid Breathing

Nausea	☺ Coughing	Chills	Rapid Heart Rate
Vision Impairment	Headaches	Fever	Muscle Spasms
☺ Rash	☺ Itching	Other	_____
<b>Solvents/Solvent Vapor:</b>			
☺ Dizziness	Coma	Vomiting	Rapid Breathing
☺ Nausea	☺ Coughing	Chills	Rapid Heart Rate
Vision Impairment	☺ Headaches	Fever	Muscle Spasms
Rash	Itching	Other	_____

<b>MEDICAL CONDITIONS AGGRAVATED BY THIS MATERIAL</b>
---

Although these airborne dusts and solvents do not effect most individuals, certain individuals with skin sensitization, contact dermatitis, or asthma may experience reactions if exposed.

NOTE TO PHYSICIANS: None

### Section 4: First Aid Measures

	Eyes	Skin	Inhalation	Ingestion
Flush with running water for 15 minutes	☺	☺		
Remove to fresh air			☺	
Administer oxygen				
Seek immediate medical attention				☺
Seek medical attention if symptoms persist	☺	☺	☺	
Induce vomiting				
Administer carbon slurry or sodium bicarbonate				

Other First Aid Measures: If skin rash occurs, follow the 15 minute rinse with a mild soap and water wash to mechanically remove any fiberglass fibers. Dispose of any contaminated clothing.

NOTES TO PHYSICIAN: None

### Section 5: Fire Fighting Measures

<b>Flash Point</b>	<u>NA</u> °F	<b>Extinguishing Media:</b>	NA
<b>Lower Explosion Limit %</b>	<u>NA</u> %	☺ Foam	☺ Water ☺ CO <sub>2</sub>
<b>Upper Explosion Limit %</b>	<u>NA</u> %	☺ Halon	☺ Dry Chemical

**NFPA 704 Ratings:** Health Flammability  
Reactivity

0

**Hazardous Products of Decomposition:**

⊕ Nitrous Oxides   ⊕ Carbon Monoxide   Vinyl Chloride   Sulfurous Oxides   ⊕  
 Aldehydes   Hydrogen Cyanide   ⊕ Various Acids   Other

**Special Fire Fighting Procedures:**

Fire fighting should only be performed by professionals trained and equipped to handle hazardous materials incidents.

**Other Fire/Explosion Hazard Data:**

Sudden releases of hot organic vapors or mists from process equipment operating at elevated temperature and pressure, or sudden ingress of air into vacuum equipment containing these vapors, may result in ignitions without the presence of an obvious ignition source. Therefore, published “autoignition” or “ignition” temperature values cannot always be used as safe operating temperatures in chemical processes without proper analysis of the actual process conditions. As with all products, it is the responsibility of the user to thoroughly evaluate their process and to establish and maintain safe process parameters.

**Section 6: Accidental Release Measures****Spill and Leak Procedures:**

Spills or leaks are not expected to occur.

**Personal Precautions:**

Use rubber gloves when handling prepreg materials.

**Precautions to Protect The Environment:**

Not Applicable.

**Methods For Collection:**

Not Applicable.

**Section 7: Handling and Storage****Storage and Handling:**

Rolls of prepreg can be very heavy. Safe handling requires the use of automated material handling equipment. Protective gloves should be worn when handling sheets of prepreg materials.

**Waste Disposal:**

Always follow all local, state and federal regulations when disposing of waste materials.

## Section 8: Exposure Controls / Personal Protection

Although the following control measures will control atmospheric contamination in most manufacturing processes, it is your responsibility as the user of this product to determine the atmospheric concentrations of the various contaminants at your worksite and take whatever additional precautions may be necessary to keep the concentrations below the established exposure limits.

### Ventilation:

- ⌘ Area, general - This is important during the sheeting and lamination processes.
- ⌘ Local - Use engineering controls such as enclosures, exhaust ventilation, and dust collection systems wherever possible to keep airborne concentrations of vapors, dust fibers below established exposure limits.

### Personal Protective Equipment Required:

- ⌘ **Gloves and or sleeves**  
Prepreg materials contain small amounts of solvents which can cause skin sensitization. Gloves and/or sleeves may be required by workers with sensitive skin or contact dermatitis. It is recommended that any skin area that may come in regular contact with this material be protected with gloves, sleeves or other appropriate barrier material at all times.
- ⌘ **Apron**  
Although usually not required, it should be noted that fibers or dust from the material may irritate the skin due to mechanical action of fibers. Individuals sensitive to these fibers should wear an apron.
- ⌘ **Respiratory Protection**  
Respiratory protection may be required to prevent overexposure to both the dusts and the solvent vapors. Refer to the chemical ingredients section and follow appropriate industrial hygiene practices to determine if the levels of contaminants are high enough to require respiratory protection.
- ⌘ **Eye Protection**  
Although not a corrosive material, fibers and trace amounts of severe eye irritants are present in this prepreg material. Depending on the level of dust and vapors generated while processing the material, safety glasses or goggles should be worn at all times.

## Section 9: Physical and Chemical Properties

<b>Color</b>	<u>neutral</u>	<b>Odor</b>	<u>Slight Ketone</u>
<b>Melting Point</b>	<u>130-250</u> °F	<b>Percent Volatile</b> (prepreg)	<u>&lt;2.0</u> %
<b>Flash Point</b>	<u>NA</u> °F		

**Boiling Point**      NA °F

**Vapor Density**      NA

**Specific Gravity**      1.85

**Vapor Pressure**      NA mmHg

Other Physical or Chemical Properties: Semisolid sheet

**Section 10: Stability and Reactivity**

**Reactivity:**      Ⓜ Stable      Reactive

**Physical Hazards:**      Pyrophoric      Explosive      Compressed Gas  
Oxidizer      Water Reactive      Other: \_\_\_\_\_

**Avoid contact with:**

Strong Acids      Strong Bases      Oxidizers      Flammable Liquids  
Water      Most Metals      Oils and Greases  
Other      Ⓜ Excessive Temperatures \_\_\_\_\_

**Hazardous Polymerization:**

Ⓜ Will Occur      Will not occur

Hazardous polymerization of B-staged prepreg will not occur under normal storage and handling conditions. However, like all resinous materials, if processed under extreme conditions, (extreme heat rise or cure temperature) resin materials such as this product are capable of undergoing hazardous polymerization which results in exothermic decomposition. The products of this decomposition are listed in the fire and explosion data section.

As with all products, it is the responsibility of the user to thoroughly evaluate their process and to establish and maintain safe process parameters. Refer to the following section as an initial guide.

**Process Conditions to Avoid:**

- 1.) Extreme heat rise conditions.

## Section 11: Toxicological Information

**PRIMARY ROUTES OF ENTRY**

**EFFECTS ON TARGET ORGANS**

	<u>Contribution to Overall Exposure</u>			<u>ACUTE CHRONIC</u>		
	<u>Significant</u>	<u>Minor Not Likely</u>		<u>Irritant</u>	<u>Corrosive</u>	<u>Toxin</u>
<b>Inhalation</b>	☺		<b>Eyes</b>	☺		
<b>Skin Absorption</b>	☺		<b>Skin</b>	☺		
<b>Eye Contact</b>		☺	<b>Upper Respiratory Tract</b>	☺		
<b>Ingestion</b>	<b>Other:</b>	☺	<b>Lower Respiratory Tract</b>			☺
			<b>Central Nervous System</b>			☺
			<b>Liver</b>			
			<b>Kidney</b>			☺
			<b>Heart</b>			☺
			<b>Gastrointestinal</b>			☺
			<b>Other Organ(s)</b>			
			<b>Blood</b>			

**CARCINOGENICITY AND REPRODUCTIVITY STUDIES**

	<u>Human</u>		<u>Animal</u>		<b>Not Listed</b>
	<b>Known</b>	<b>Suspect</b>	<b>Known</b>	<b>Suspect</b>	
<b>Carcinogen (OSHA)</b>					☺
<b>Carcinogen (NTP)</b>					☺
<b>Carcinogen (IARC)</b>		☺			
<b>Mutagen</b>					☺
<b>Teratogen</b>		☺			
<b>Reproductive Toxin</b>		☺			

This product contains antimony trioxide, which is a suspect carcinogen. This product contains N,N-

Dimethylformamide, a suspect teratogen and reproductive toxin. This product also contains solvents which have various known health effects including cancer. General toxicity information about primary and residual components in the prepreg is listed below. Additional information can be obtained from conventional chemical data resources.

**ACUTE TOXICITY**

<b>Ingredient</b>	<b>LD50 Oral (rat)</b>	<b>LC50 Inhalation (rat/mouse)</b>	<b>LD50 Dermal (rabbit/guinea pig)</b>
<b>Tetrabromobisphenol A</b>	<b>&gt;5,000 mg/kg</b>	<b>≥0.5 mg/L/4 hr (rat)</b>	<b>&gt;2,000 mg/kg (rabbit)</b>
<b>2-Butanone</b>	<b>2,737 mg/kg</b>	<b>32,000 mg/m<sup>3</sup>/4 hr (mouse)</b>	<b>6,480 mg/kg (rabbit)</b>



N,N,-Dimethylformamide	2,800 mg/kg	9 mg/L/4 hr (rat)	1,500 mg/kg (rabbit)
Antimony Oxide	>34,600 mg/kg	NR	NR
Acetone	5,800 mg/kg	50,100 mg/m <sup>3</sup> /8 hr (rat)	7,426 mg/kg (guinea pig)
BisA Epoxy Resin	>5,000 mg/kg	NR	NR
Substituted Urea	6,400 mg/kg	NR	4,700 mg/kg (rabbit)

**Fibrous Glass:** This product contains fibrous glass. Although early studies showed possible links between fibrous glass and cancer, current research indicates no links with human cancer. Glass wool, which differs from fibrous glass in its morphology, continues to be evaluated as a possible human carcinogen by IRAC.

## Section 12: Ecological Information

Ingredient	Acute LC50 Carp	Acute LC50 Zebra Fish	Acute LC50 Daphnia magna	Acute LC50 Fathead Minnow	NOEC Green Algae
Tetrabromobisphenol A	0.71 mg/l/96 hr	NR	>1.8 mg/l/48 hr	NR	5.6 mg/l/96 hr
2-Butanone	NR	NR	520 mg/l/48 hr	3,130 mg/l/96 hr	NR
Dimethylformamide	NR	NR	NR	10,600 mg/l/96 hr	NR
Antimony Oxide	NR	>1000 mg/l/96 hr	NR	NR	NR
Reaction product: Bisphenol A (epichlorohydrin)	NR	1.5 mg/l/96 hr*	NR	NR	NR
Substituted Urea	NR	610 mg/l*	NR	NR	NR

Contains less than 4% Tetrabromobisphenol A, which is toxic to aquatic organisms and is not readily biodegradable in soil and water. Contains less than 20% Bisphenol A epoxy resin(s) categorized as toxic to aquatic organisms with long term adverse effects. Contains less than 3% Substituted Urea which is toxic to aquatic organisms with long term adverse effects.

\*Testing reported does not identify fish species.

## Section 13: Disposal Considerations

Dispose in accordance with federal, state, and local regulations.

## Section 14: Transport Information

### DOT Road Shipment Information:

This product is not regulated by the U.S. Department of Transportation (49 CFR 172.101).

## Section 15: Regulatory Information

### UNITED STATES

#### SARA 311/312 Information

Immediate (acute) health hazard, Delayed (chronic) health hazard.

#### SARA 313 Information

Any ingredient marked "Yes" in the SARA 313 column of the Hazardous Ingredients section of this MSDS is a toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. Components marked "No" in the SARA 313 column are either not subject to the reporting requirements or do not exceed the *de minimis* amount subject to reporting. **Toxic**

#### Substances Control Act (TSCA)

All ingredients in this product are included on, or exempted from, listing on this list.

**Massachusetts RTK substances:** Acetone (67-64-1); Ethyl methyl ketone (78-93-3); N,N-Dimethylformamide (6812-2); Antimony trioxide (1309-64-4).

**New Jersey RTK hazardous substances:** Poly(Bisphenol A-co-epichlorohydrin), glycidyl end-capped (25036-25-3);

2,2',6,6'-Tetrabromo-4,4'-isopropylidenediphenol (79-94-7); Acetone (67-64-1); Ethyl methyl ketone (78-93-3); N,N-Dimethylformamide (68-12-2); Antimony trioxide (1309-64-4); Epoxy Resin (NJ Registry Number 299433000015739P).

**Pennsylvania TRK hazardous substances:** Poly(Bisphenol A-co-epichlorohydrin), glycidyl end-capped (25036-253); 2,2',6,6'-Tetrabromo-4,4'-isopropylidenediphenol (79-94-7); Acetone (67-64-1); Ethyl methyl ketone (78-93-3); N,N-Dimethylformamide (68-12-2); Antimony trioxide (1309-64-4); Epoxy Resin (Confidential).

**California Prop. 65: WARNING:** This product contains chemicals known to the State of California to cause cancer, birth defects, and/or reproductive harm: Antimony trioxide (1309-64-4)

### CANADA

#### WHMIS (Workers Hazardous Material Information System):

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulation (CPR) and the MSDS contains all the information required by CPR.

Class D-2A: Material causing other toxic effects (very toxic)

Class D-2B: Material causing other toxic effects (toxic)

#### CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)

All reportable chemical substances are listed on the DSL or otherwise comply with CEPA new substances notification requirements.

### **NATIONAL POLLUTANT RELEASE INVENTORY (NPRI)**

This product contains the following chemicals subject to the reporting requirements of the Canadian Environmental Protection Act (CEPA), subsection 16 (1), NPRI.

Antimony Trioxide	1309-64-4	0.5-1.5%
Methyl Ethyl Ketone	78-93-3	<1.0%
Dimethylformamide	68-12-2	<1.0% <b>DOMESTIC</b>

### **SUBSTANCE LIST (INVENTORY):**

This product is considered an article and is exempt from the reporting requirements for the Domestic Substance List in accordance with subsection 3 of CEPA.

## **Section 16: Other Information**

The information and recommendations contained in this Material Safety Data Sheet are supplied pursuant to the Occupational Safety and Health Administration's Hazard Communication Standard as promulgated under 29 CFR 1910.1200 and the United States Environmental Protection Agency's Supplier Notification Rule as promulgated under 40 CFR 372.45.

This document is intended only as a guide to the appropriate precautionary handling of the material by a person trained in the proper procedures of safe chemical handling. Park Aerospace Technologies Corp. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy.

No representations or warranties, either express or implied, of merchantability, fitness for a particular purpose, or of any nature are made with respect to the product(s) or information contained in this Material Safety Data Sheet.

Chemical additions, processing or otherwise altering this material may make the safety information presented above incomplete, inaccurate or otherwise inappropriate.

The user is responsible for determining the precautions and dangers of this chemical for his or her particular application. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user.

Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its use and disposal of this product comply with federal, state or provincial, and local laws. The buyer or user assumes all risks associated with the use, misuse or disposal of this product.

As new documented safety information becomes available, Park Aerospace Technologies Corp. will revise this Material Safety Data Sheet and forward an updated copy to all current customers.

The information listed above does not include all state, federal, and international regulations. The regulatory information supplied may change from time to time. It is the user's responsibility to keep advised of all applicable regulatory requirements.

**Last Updated** ..... December 5, 2013      **Prepared**  
**by**.....Antonios Tontisakis **Updated by**.....A. Small

Update Oct. 21, 2013: Update logo, PATC address and contact, Section 2 corrected CAS # for E-glass, Section 11 STOT and CMR additional data, and wording changes in Section 12, 13, 14, and 16.

Update Nov. 20, 2013: Update phone number, update ingredient ratios to reflect formula more accurately, add Section 3 wording, modify Section 9, 10, 11, and 14. Add data to Section 11 and 12. Update regulatory information in Section 15.

Update Dec. 5, 2013: Add E761LT to product description. Change ranges to reflect formula better.

**Primary route(s) of exposure :** Inhalation, skin contact, eye contact, ingestion.

**Effects of overexposure :**

**Inhalation :** Irritation of respiratory tract. Prolonged inhalation may lead to loss of appetite, mucous membrane irritation, drowsiness, dizziness and/or lightheadedness, headache, uncoordination, nausea, vomiting, coughing, central nervous system depression, intoxication, difficulty of breathing, allergic response, severe lung irritation or damage, liver damage, kidney damage, convulsions, loss of consciousness, asphyxiation. Possible sensitization to respiratory tract.

**Skin contact :** Irritation of skin. Prolonged or repeated contact can cause dermatitis, defatting. Skin contact may result in dermal absorption of component(s) of this product which may cause drowsiness, dizziness and/or lightheadedness, central nervous system depression.

**Eye contact :** Irritation of eyes. Prolonged or repeated contact can cause conjunctivitis, corneal injury. **Ingestion :** Ingestion may cause lung inflammation and damage due to aspiration of material into lungs, mouth and throat irritation, mucous membrane irritation, drowsiness, dizziness and/or lightheadedness, headache, uncoordination, nausea, vomiting, diarrhea, gastro-intestinal disturbances, central nervous system depression, difficulty of breathing, liver damage, kidney damage, convulsions, loss of consciousness.

**Medical conditions aggravated by exposure :** Eye, skin, respiratory disorders, asthma-like conditions.

## FIRST-AID MEASURES (ANSI Section 4)

**Inhalation :** Remove to fresh air. Restore and support continued breathing. Get emergency medical attention. Have trained person give oxygen if necessary. Get medical help for any breathing difficulty. Remove to fresh air if inhalation causes eye watering, headaches, dizziness, or other discomfort.

**Skin contact :** Wash thoroughly with soap and water. If any product remains, gently rub petroleum jelly, vegetable or mineral/baby oil onto skin. Repeated applications may be needed. Remove contaminated clothing. Wash contaminated clothing before re-use.

**Eye contact :** Flush immediately with large amounts of water, especially under lids for at least 15 minutes. If irritation or other effects persist, obtain medical treatment.

**Ingestion :** If swallowed, obtain medical treatment immediately.



# MATERIAL SAFETY DATA SHEET

## HAZARDS IDENTIFICATION

(ANSI Section 3)

### FIRE-FIGHTING MEASURES

(ANSI Section 5)

**Fire extinguishing media :** Dry chemical or foam water fog. Carbon dioxide. Closed containers may explode when exposed to extreme heat or fire. Vapors are heavier than air and may travel long distances to a source of ignition and flash back. Vapors can form explosive mixtures in air at elevated temperatures. May decompose under fire conditions emitting irritant and/or toxic gases.

**Fire fighting procedures :** Water may be used to cool and protect exposed containers. Firefighters should use full protective clothing, eye protection, and self-contained breathing apparatus.

**Hazardous decomposition or combustion products :** Carbon monoxide, carbon dioxide, oxides of nitrogen, oxides of sulfur, toxic gases, acrylic monomers.

### ACCIDENTAL RELEASE MEASURES (ANSI Section

**Steps to be taken in case material is released or spilled :** Comply with all health and environmental regulations. Eliminate all sources of ignition. Use non-sparking tools.

Evacuate all unnecessary personnel. Place collected material in container. Spilled material is extremely slippery. Complete personal equipment must be used during cleanup. Large spills - shut off leak so. Dike and contain spill. Pump to storage or salvage vessels. to pick up excess residue. Keep salvageable material and rinse sewers and water courses. Small spills - use absorbent to pick up dispose of properly.

### HANDLING AND STORAGE (ANSI Section 7)

**Handling and storage :** Store below 100f (38c). Keep away from heat, open flame.

**Other precautions :** Use only with adequate ventilation. Do not Keep out of reach of children. Avoid contact with skin and eyes, of vapors. Wash hands thoroughly after handling, especially before smoking. Keep containers tightly closed and upright when not in conditions which result in formation of inhalable particles such as abrading (sanding) painted surfaces. If such conditions cannot be appropriate respiratory protection as directed under exposure controls/personal protection. Empty containers may contain residues. Ground equipment when transferring to prevent of static charge.

### EXPOSURE CONTROLS/PERSONAL PROTECTION

**Respiratory protection :** Control environmental concentrations applicable exposure standards when using this material. When protection is determined to be necessary, use a NIOSH/MSHA z94.4) Approved elastomeric sealing- surface facepiece respirator organic vapor cartridges and paint spray (dust/mist) prefilters.

Akzo Nobel Paints 15885 Sprague Road Strongsville, Ohio 44136

GLIDDEN OIL GLOSS TRIM AND DOOR PAINT

6) applicable Ventilate area. proper protective if safe to do Use absorbent water out of residue and sparks and take internally. and breathing eating or use. Avoid spraying or avoided, use hazardous accumulation below respiratory (Canadian outfitted with Determine the

EMERGENCY TELEPHONE

GL3XX

proper level of protection by conducting appropriate air monitoring. Consult 29CFR1910.134 For selection of respirators (Canadian z94.4).

**Ventilation :** Provide dilution ventilation or local exhaust to prevent build-up of vapors. Use explosionproof equipment.

**Personal protective equipment :** Eye wash, safety shower, safety glasses or goggles. Impervious gloves, impervious clothing.

## STABILITY AND REACTIVITY (ANSI Section 10)

**Under normal conditions :** Stable can form explosive peroxides on long standing in air. See section 5 fire fighting measures

**Materials to avoid :** Oxidizers, acids, reducing agents, bases, halogens, mineral acids. Nitrates.

**Conditions to avoid :** Elevated temperatures, contact with oxidizing agent, sparks, open flame, ignition sources.

**Hazardous polymerization :** Will not occur

## TOXICOLOGICAL INFORMATION (ANSI Section 11)

**Supplemental health information :** Contains a chemical that may be absorbed through skin.

Notice - reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal. Contains iron oxide, repeated or prolonged exposure to iron oxide dust may cause siderosis, a benign pneumoconiosis. Other effects of overexposure may include toxicity to liver, kidney, lungs.

**Carcinogenicity :** Stoddard solvent iic has been shown to cause kidney tumors in male rats in a national toxicology program (NTP) study. These tumors were associated with a specific

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The information contained herein is based on data available at the time of preparation of this data sheet which Akzo I However, no warranty is expressed or implied regarding the accuracy of this data. Akzo Nobel Paints shall not be respon or of any product, method or apparatus mentioned and you must make your own determination of its suitability and con protection of the environment, and the health and safety of your employees and the users of this material. Complies with OSHA hazard communication standard 29CFR1910.1200.

protein, alpha- 2umicroglobulin. Because humans do not produce this protein stoddard solvent iic has not been classified as a human carcinogen. Decomposition of diarylide pigments at temperatures above 392f (200c) can produce trace amounts of monazo dyes, which can then decompose to produce aromatic amines. As the temperature increases into the 464-572f (240-300c), trace quantities of 3,3'-dichlorobenzidine (3,3'-dcb) can be detected. The national toxicology program (NTP) has classified 3,3'-dcb as a known human carcinogen. The international agency for research on cancer (IARC) has classified 3,3'-dcb as a possible human carcinogen (group 2b: sufficient animal data, inadequate human data). The international agency for research on cancer (IARC) has classified carbon black as possibly carcinogenic to humans (group 2b) based on sufficient evidence in animals and inadequate evidence in humans. The international agency for research on cancer (IARC) has evaluated ethylbenzene and classified it as a possible human carcinogen (group 2b)

based on sufficient evidence for carcinogenicity in experimental animals, but inadequate evidence for cancer in exposed humans. In a 2 year inhalation study conducted by the national toxicology program (NTP), ethylbenzene vapor at 750 ppm produced kidney and testicular tumors in rats and lung and liver tumors in mice. Genetic toxicity studies showed no genotoxic effects. The relevance of these results to humans is not known. The international agency for research on cancer

(IARC) has classified cobalt and certain cobalt compounds as possibly carcinogenic to humans (group 2b). Injection of metallic cobalt, cobalt alloys, and certain cobalt compounds has resulted in the development of localized tumors in laboratory animals. In a 2-year inhalation bioassay conducted by the national toxicology program (NTP), ethylene glycol butyl ether (egbe) caused an increased incidence of liver tumors in male mice and forestomach tumors in female mice exposed to 250 ppm, the highest concentration tested with mice. In rats, an increased incidence of tumors affecting the adrenal gland was seen in females exposed at 125 ppm only. This finding was not statistically significant. No increased incidence of any tumor type was seen in male rats exposed to the highest test concentration of 125ppm. The relevance of these findings to humans is unclear. In a lifetime inhalation study, exposure to 250 mg/m<sup>3</sup> titanium dioxide resulted in the development of lung tumors in rats. These tumors occurred only at dust levels that overwhelmed the animals' lung clearance mechanisms and were different from common human lung tumors in both type and location. The relevance of these findings to humans is unknown but questionable. The international agency for research on cancer (IARC) has classified titanium dioxide as possibly carcinogenic to humans (group 2b) based on inadequate evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals. Contains methyl ethyl ketoxime (meko). In a lifetime, inhalation study, liver carcinomas were observed in rodents exposed to meko. The relevance to humans is unknown.

## Physical Data (ANSI Sections 1, 9, and 14)

**Reproductive effects :** High exposures to xylene in some animal studies, often at maternally toxic levels, have affected embryo/fetal development. The significance of this finding to humans is not known.

**Mutagenicity :** No mutagenic effects are anticipated

**Teratogenicity :** No teratogenic effects are anticipated

## ECOLOGICAL INFORMATION (ANSI Section 12)

No ecological testing has been done by akzo nobel paints llc on this product as a whole.

## DISPOSAL CONSIDERATIONS (ANSI Section 13)

**Waste disposal :** Dispose in accordance with all applicable regulations. Avoid discharge to natural waters.

## REGULATORY INFORMATION (ANSI Section 15)

As of the date of this MSDS, all of the components in this product are listed (or are otherwise exempt from listing) on the TSCA inventory. This product has been classified in accordance with the hazard criteria of the CPR (controlled products regulations) and the MSDS contains all the information required by the CPR.



Product Code	Description	Wt. / Gal.	VOC gr. / ltr.	% Volatile by Volume	Flash Point	Boiling Range	HMS	DOT, proper shipping name
GL 300	glidden oil gloss trim & door paint white	9.22	404.02	51.60	105 f	266-417	320	UN1263,paint,combustible liquid,PGIII
GL 301	glidden oil gloss trim & door paint deepest black	7.64	446.24	56.47	105 f	266-417	*320	UN1263,paint,combustible liquid,PGIII
GL 302	glidden oil gloss trim & door paint national red	7.84	454.59	56.51	105 f	266-417	*320	UN1263,paint,combustible liquid,PGIII
GL 303	glidden oil gloss trim & door paint antique white	9.26	393.19	50.10	105 f	266-417	320	UN1263,paint,combustible liquid,PGIII
GL 304	glidden oil gloss trim & door paint linen canvas	9.27	393.16	50.07	105 f	266-417	320	UN1263,paint,combustible liquid,PGIII
GL 305	glidden oil gloss trim & door paint classic red	7.80	450.30	56.05	105 f	266-417	*320	UN1263,paint,combustible liquid,PGIII
GL 306	glidden oil gloss trim & door paint traditional brown	7.90	452.52	56.91	105 f	266-417	*320	UN1263,paint,combustible liquid,PGIII
GL 307	glidden oil gloss trim & door paint rich navy	7.81	446.95	56.31	105 f	266-417	*320	UN1263,paint,combustible liquid,PGIII

## Ingredients Product Codes with % by Weight (ANSI Section 2)

Chemical Name	Common Name	CAS. No.	GL 300	GL 301	GL 302	GL 303	GL 304	GL 305	GL 306	GL 307
benzene, ethyl-	ethylbenzene	100-41-4	.1-1.0	.1-1.0	.1-1.0	.1-1.0	.1-1.0	.1-1.0	.1-1.0	.1-1.0
quino(2,3-b)acridine-7,14-dione, 5,12-dihydro-	quinacridone red	1047-16-1			1-5			1-5		
benzene, 1,3-dimethyl-	1,3-dimethylbenzene	108-38-3	.1-1.0	.1-1.0	.1-1.0	.1-1.0	.1-1.0	.1-1.0	.1-1.0	.1-1.0
2-propanol, 1-methoxy-, acetate	propylene glycol monomethyl ether	108-65-6		1-5	5-10			5-10	1-5	1-5
ethanol, 2-butoxy-	2-butoxyethanol	111-76-2		.1-1.0	.1-1.0			.1-1.0	.1-1.0	.1-1.0
benzene, dimethyl-	xylene	1330-20-7	.1-1.0	.1-1.0	.1-1.0	.1-1.0	.1-1.0	.1-1.0	.1-1.0	.1-1.0
iron oxide	iron oxide	1332-37-2			1-5				1-5	

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## Ingredients (Continued) Product Codes with % by Weight (ANSI Section 2)

Chemical Name	Common Name	CAS. No.	GL 300	GL 301	GL 302	GL 303	GL 304	GL 305	GL 306	GL 307
carbon black	carbon black	1333-86-4		1-5					.1-1.0	.1-1.0
titanium oxide	titanium dioxide	13463-67-7	20-30		.1-1.0	20-30	20-30	.1-1.0	1-5	1-5
neodecanoic acid, cobalt salt	cobalt neodecanoate	27253-31-2		.1-1.0	.1-1.0			.1-1.0	.1-1.0	.1-1.0
c.i. pigment yellow 42	yellow iron oxide	51274-00-1							1-5	
ethanol	ethyl alcohol	64-17-5	.1-1.0			.1-1.0	.1-1.0			
solvent naphtha (petroleum), medium aliphatic	medium aliphatic solvent naphtha	64742-88-7	10-20	10-20	5-10	5-10	5-10	5-10	10-20	10-20
fatty acid, c18-unsaturated, dimers, polymers with ethylenediamine, pentaerythritol, phthalic	alkyd resin	68604-95-5	20-30	30-40	20-30	20-30	20-30	20-30	20-30	20-30

anhydride and tall-oil fatty acids										
fatty acids, c9-c13-neo-, cobalt salts	fatty acids, c9-c13-neo-, cobalt salts	68955-83-9		.1-1.0	.1-1.0			.1-1.0	.1-1.0	.1-1.0
stoddard solvent	mineral spirits	8052-41-3	20-30	30-40	20-30	20-30	20-30	30-40	20-30	30-40
benzene,1,2,4-trimethyl-	pseudocumene	95-63-6		.1-1.0	.1-1.0			.1-1.0	.1-1.0	.1-1.0
acrylic resin	acrylic resin	Sup. Conf.						1-5		
trade secret	trade secret	Sup. Conf.		1-5					1-5	1-5
long oil alkyd resin	long oil alkyd resin	Sup. Conf.	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20

## Chemical Hazard Data (ANSI Sections 2, 8, 11, and 15)

Common Name	CAS. No.	ACGIH-TLV				OSHA-PEL		
		8-Hour TWA	STEL	C	S	8-Hour TWA	STEL	C
ethylbenzene	100-41-4	100 ppm	125 ppm	not est.	not est.	100 ppm	not est.	not est.
quinacridone red	1047-16-1	not est.	not est.	not est.	not est.	not est.	not est.	not est.
1,3-dimethylbenzene	108-38-3	100 ppm	150 ppm	not est.	not est.	100 ppm	not est.	not est.
propylene glycol monomethyl ether	108-65-6	not est.	not est.	not est.	not est.	not est.	not est.	not est.
2-butoxyethanol	111-76-2	20 ppm	not est.	not est.	not est.	50 ppm	not est.	not est.
xylene	1330-20-7	100 ppm	150 ppm	not est.	not est.	100 ppm	not est.	not est.
iron oxide	1332-37-2	5 mg/m3	not est.	not est.	not est.	10 mg/m3	not est.	not est.
carbon black	1333-86-4	3 mg/m3	not est.	not est.	not est.	3.5 mg/m3	not est.	not est.
titanium dioxide	13463-67-7	10 mg/m3	not est.	not est.	not est.	10 mg/m3	not est.	not est.
cobalt neodecanoate	27253-31-2	not est.	not est.	not est.	not est.	not est.	not est.	not est.
yellow iron oxide	51274-00-1	5 mg/m3	not est.	not est.	not est.	10 mg/m3	not est.	not est.
medium aliphatic solvent naphtha	64742-88-7	100 ppm	not est.	not est.	not est.	500 x ppm	not est.	not est.
fatty acids, c9-c13-neo-, cobalt salts	68955-83-9	not est.	not est.	not est.	not est.	not est.	not est.	not est.
mineral spirits	8052-41-3	100 ppm	not est.	not est.	not est.	500 ppm	not est.	not est.
trade secret	Sup. Conf.	not est.	not est.	not est.	not est.	not est.	not est.	not est.

**Footnotes:**

C=Ceiling - Concentration that S=Skin - Additional exposure, n/a=not applicable ppm=parts per million S2=Sara Section 302 EHS P=Pollutant, S=Severe

Pollutant should not be exceeded, over and above airborne exposure, not est.=not established mg/m3=milligrams per cubic meter S3=Sara Section 313

Chemical Carcinogenicity Listed By: even instantaneously. may result from skin absorption. CC=CERCLA Chemical Sup Conf=Supplier Confidential

S.R.Std.=Supplier Recommended Standard N=NTP, I=IARC, O=OSHA, y=yes, n=no

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# SAFETY DATA SHEET

## 1. Identification

**Product identifier** ISOPROPYL ALCOHOL

**Other means of identification**

**Product code** 817

**Synonym(s)** ISOPROPANOL \* 2-PROPANOL

**Recommended use** professional, scientific and technical activities: other professional, scientific and technical activities **Recommended restrictions** None known.

**Manufacturer/Importer/Supplier/Distributor information**

**Company name** GFS Chemicals, Inc.

**Address** P.O. Box 245

Powell

OH

43065

US

**Telephone**

Phone

740-881-5501

Toll Free

800-858-9682

Fax

740-881-5989

**Website**

www.gfschemicals.com

**E-mail**

service@gfschemicals.com

**Emergency phone number**

Emergency Assistance

Chemtrec 800-424-9300

## 2. Hazard(s) identification

**Physical hazards**

Flammable liquids

Category 2

**Health hazards**

Serious eye damage/eye irritation

Category 2A

Reproductive toxicity

Category 2

system, kidney, systemic toxicity)

Specific target organ toxicity, single exposure

Category 1 (central nervous

irritation

Specific target organ toxicity, single exposure

Category 3 respiratory tract

exposure

Specific target organ toxicity, single exposure

Category 3 narcotic effects

Specific target organ toxicity, repeated

Category 2 (blood vessel, liver, spleen)

**OSHA hazard(s)**

Not classified.

**Label elements**



**Signal word**

Danger

**Hazard statement** Highly flammable liquid and vapor. Causes serious eye irritation. May cause respiratory irritation. May cause drowsiness or dizziness. Suspected of damaging fertility or the unborn child. Causes damage to organs (central nervous system, kidney, systemic toxicity). May cause damage to organs (blood vessel, liver, spleen) through prolonged or repeated exposure.

**Precautionary statement**

**Prevention**

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Use only outdoors or in a well-ventilated area. Keep container tightly closed. Use explosion-proof electrical/ventilating/lighting equipment. Ground/bond container and receiving equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection.

**Response**

In case of fire: Use appropriate media for extinction. Eliminate all ignition sources if safe to do so. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If exposed or concerned: Get medical advice/attention. Call a POISON CENTER or doctor/physician if you feel unwell. If eye irritation persists: Get medical advice/attention.

**Storage**

Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up.

**Disposal**

Dispose of contents/container to an approved incineration plant.

**Hazard(s) not otherwise classified (HNOC)**

Static accumulating flammable liquid

**Supplemental information**

**Hazard statement**

Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion.

**Precautionary statement**

**Prevention**

Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Ground/bond container and receiving equipment. These alone may be insufficient to remove static electricity.

### 3. Composition/information on ingredients

**Substances**

Chemical name	Common name and synonyms	CAS number	%
ISOPROPYL ALCOHOL	ISOPROPANOL 2- PROPANOL	67-63-0	100

**Hazardous components**

\*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

## 4. First-aid measures

<b>Inhalation</b>	Move to fresh air. Call a POISON CENTER or doctor/physician if you feel unwell.
<b>Skin contact</b>	Take off immediately all contaminated clothing. Rinse skin with water/shower. Get medical attention if irritation develops and persists.
<b>Eye contact</b>	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
<b>Ingestion</b>	Rinse mouth. Do not use mouth-to-mouth method if victim ingested the substance. If ingestion of a large amount does occur, call a poison control center immediately.
<b>Most important symptoms/effects, acute and delayed</b>	Irritation of eyes and mucous membranes. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea. Narcosis. Decrease in motor functions. Behavioral changes. Edema. Liver enlargement. Jaundice. Proteinuria. Prolonged exposure may cause chronic effects.
<b>Indication of immediate medical attention and special treatment needed</b>	Provide general supportive measures and treat symptomatically.
<b>General information</b>	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. IF exposed or concerned: Get medical advice/attention.

## 5. Fire-fighting measures

<b>Suitable extinguishing media</b>	Water fog. Carbon dioxide (CO <sub>2</sub> ). Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only. Alcohol resistant foam. Powder. Water.
<b>Unsuitable extinguishing media</b>	Do not use water jet as an extinguisher, as this will spread the fire.
<b>Specific hazards arising from the chemical</b>	This product is a poor conductor of electricity and can become electrostatically charged. If sufficient charge is accumulated, ignition of flammable mixtures can occur. To reduce potential for static discharge, use proper bonding and grounding procedures. This liquid may accumulate static electricity when filling properly grounded containers. Static electricity accumulation may be significantly increased by the presence of small quantities of water or other contaminants. By heating and fire, harmful vapors/gases may be formed.
<b>Special protective equipment and precautions for firefighters</b>	Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Structural firefighters protective clothing will only provide limited protection.
<b>Fire-fighting equipment/instructions</b>	In case of fire and/or explosion do not breathe fumes. Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk.
<b>Specific methods</b>	In the event of fire and/or explosion do not breathe fumes. Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Use standard firefighting procedures and consider the hazards of other involved materials. Move container from fire area if it can be done without risk.

## 6. Accidental release measures

<b>Personal precautions, protective equipment and emergency procedures</b>	Remove all possible sources of ignition in the surrounding area. Use appropriate containment to avoid environmental contamination. Transfer by mechanical means such as vacuum truck to a salvage tank or other suitable container for recovery or safe disposal. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep unnecessary personnel away. Local authorities should be advised if significant spillages cannot be contained. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering them. Wear appropriate personal protective equipment.
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**Methods and materials for containment and cleaning up**

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Should not be released into the environment. This product is miscible in water. Prevent entry into waterways, sewers, basements or confined areas.

Large Spills: Stop leak if you can do so without risk. Move the cylinder to a safe and open area if the leak is irreparable. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Clean contaminated surface thoroughly. After removal flush contaminated area thoroughly with water. Following product recovery, flush area with water. Prevent entry into waterways, sewer, basements or confined areas. Clean up in accordance with all applicable regulations.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills in original containers for re-use. For waste disposal, see section 13 of the MSDS.

**Environmental precautions**

Avoid discharge into drains, water courses or onto the ground. Use appropriate containment to avoid environmental contamination. Prevent further leakage or spillage if safe to do so. Do not contaminate water.

**7. Handling and storage**

**Precautions for safe handling**

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Vapors may form explosive mixtures with air. Minimize fire risks from flammable and combustible materials (including combustible dust and static accumulating liquids) or dangerous reactions with incompatible materials. Handling operations that can promote accumulation of static charges include but are not limited to: mixing, filtering, pumping at high flow rates, splash filling, creating mists or sprays, tank and container filling, tank cleaning, sampling, gauging, switch loading, vacuum truck operations. For additional information on equipment bonding and grounding, refer to the Canadian Electrical Code in Canada, (CSA C22.1), or the American Petroleum Institute (API) Recommended Practice 2003, "Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents" or National Fire Protection Association (NFPA) 77, "Recommended Practice on Static Electricity" or National Fire Protection Association (NFPA) 70, "National Electrical Code". DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Do not breathe mist or vapor. Avoid contact with eyes. Avoid contact during pregnancy/while nursing. Use personal protective equipment as required. Avoid prolonged exposure. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Avoid release to the environment.

**Conditions for safe storage, including any incompatibilities**

Store locked up. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in cool place. Eliminate sources of ignition. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Store in a well-ventilated place. Keep container tightly closed. Keep in an area equipped with sprinklers. Keep out of the reach of children. Store in a cool, dry place out of direct sunlight.

**8. Exposure controls/personal protection**

**Occupational exposure limits**

**US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)**

Material	Type	Value
ISOPROPYL ALCOHOL (CAS 67-63-0)	PEL	980 mg/m3

**US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)**

Material	Type	Value
		400 ppm

#### US. ACGIH Threshold Limit Values

Material	Type	Value
ISOPROPYL ALCOHOL (CAS 67-63-0)	STEL	400 ppm
	TWA	200 ppm

#### US. NIOSH: Pocket Guide to Chemical Hazards

Material	Type	Value
ISOPROPYL ALCOHOL (CAS 67-63-0)	STEL	1225 mg/m <sup>3</sup>
		500 ppm
	TWA	980 mg/m <sup>3</sup>
		400 ppm

#### Biological limit values

##### US. ACGIH. BEIs. Biological Exposure Indices

Material	Value	Determinant	Specimen	Sampling Time
ISOPROPYL ALCOHOL (CAS 67-63-0)	40 mg/l	Acetone	Urine	*

\* - For sampling details, please see the source document.

**Appropriate engineering controls** Explosion-proof general and local exhaust ventilation. Provide eyewash station.

#### Individual protection measures, such as personal protective equipment

<b>Eye/face protection</b>	Chemical goggles are recommended.
<b>Skin protection</b>	
<b>Hand protection</b>	Wear protective gloves.
<b>Other</b>	Wear appropriate chemical resistant clothing. Wear protective gloves.
<b>Respiratory protection</b>	In case of insufficient ventilation, wear suitable respiratory equipment.
<b>Thermal hazards</b>	Not available.

**General hygiene considerations** When using, do not eat, drink or smoke. Avoid contact with eyes. Wash hands before breaks and immediately after handling the product. Handle in accordance with good industrial hygiene and safety practice.

## 9. Physical and chemical properties

<b>Appearance</b>	Clear.
<b>Physical state</b>	Liquid.
<b>Form</b>	Liquid.
<b>Color</b>	Colorless.
<b>Odor</b>	Alcoholic.
<b>Odor threshold</b>	Not available.
<b>pH</b>	Not available.
<b>Melting point/freezing point</b>	-127.3 °F (-88.5 °C)
<b>Initial boiling point and boiling range</b>	180.5 °F (82.5 °C) 101.325 kPa
<b>Flash point</b>	53.60 °F (12.00 °C) Closed Cup
	75.00 °F (23.89 °C) Open Cup
<b>Evaporation rate</b>	Not available.
<b>Flammability (solid, gas)</b>	Not applicable.

### Upper/lower flammability or explosive limits

**Flammability limit - lower** 2.5 (%)

**Flammability limit - upper** 12 (%)

**Explosive limit - lower (%)** Not available.

**Explosive limit - upper (%)** Not available.

**Vapor pressure** 6.053 kPa at 25 °C

**Vapor density** 2.1

**Relative density** Not available.

**Solubility(ies)** Miscible

**Partition coefficient (n-octanol/water)** 0.1

**Auto-ignition temperature** 750.2 °F (399 °C)

**Decomposition temperature** When heated to decomp, emits acrid smoke and fumes.

**Viscosity** Not available.

### Other information

**Density** 0.78 g/cm<sup>3</sup> estimated

**Dynamic viscosity** 2.1 mPa.s

**Dynamic viscosity temperature** 77 °F (25 °C)

**Flammability class** Flammable IB estimated

**Flash point class** Flammable IB

**Heat of combustion (NFPA 30B)** 27.4 kJ/g

**Molecular formula** C<sub>3</sub>H<sub>8</sub>O

**Molecular weight** 60.10 g/mol

**Percent volatile** 100 %

**Specific gravity** 0.785 at 20 °C

**VOC (Weight %)** 100 %

## 10. Stability and reactivity

**Reactivity** Not available.

**Chemical stability** Stable at normal conditions. Risk of ignition.

**Possibility of hazardous reactions** Hazardous polymerization does not occur.

**Conditions to avoid** Heat, flames and sparks. Avoid temperatures exceeding the flash point.

**Incompatible materials** Strong oxidizing agents. Isocyanates. Acids. Chlorine.

**Hazardous decomposition products** May include oxides of carbon.

## 11. Toxicological information

### Information on likely routes of exposure

**Ingestion** Not available.

**Inhalation** Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea. May cause



irritation to the respiratory system.

**Skin contact** Due to lack of data the classification is not possible.

**Eye contact** Causes serious eye irritation.

**Symptoms related to the physical, chemical and toxicological characteristics** Narcosis. Edema. Liver enlargement. Jaundice. Proteinuria. Behavioral changes. Decrease in motor functions. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

**Information on toxicological effects**

**Acute toxicity**

Product	Species	Test Results
ISOPROPYL ALCOHOL (CAS 67-63-0)		
<b>Acute</b>		
<b>Dermal</b>		
LD50	Rabbit	5030 - 7900 mg/kg 12800 mg/kg

Product	Species	Test Results
<b>Oral</b>		
LD50	Dog	4797 mg/kg
	Mouse	3600 mg/kg
		4.5 g/kg
	Rabbit	8000 mg/kg
		6410 mg/kg
		5.03 g/kg
	Rat	4700 - 5800 mg/kg
		5045 mg/kg
		4.7 g/kg
<b>Other</b>		
LD50	Mouse	1509 mg/kg
	Rat	1099 mg/kg

\* Estimates for product may be based on additional component data not shown.

**Skin corrosion/irritation** Based on available data, the classification criteria are not met.

**Serious eye damage/eye irritation** Causes serious eye irritation.

**Respiratory sensitization** Due to lack of data the classification is not possible.

**Skin sensitization** Due to lack of data the classification is not possible.

**Germ cell mutagenicity** Based on available data, the classification criteria are not met.

**Carcinogenicity** This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

**Reproductive toxicity** Suspected of damaging fertility or the unborn child.

**Specific target organ toxicity - single exposure** Respiratory tract irritation. Narcotic effects. Causes damage to organs (central nervous system, kidney, systemic toxicity).

**Specific target organ toxicity - repeated exposure** May cause damage to organs (blood vessel, liver, spleen) through prolonged or repeated exposure.

**Aspiration hazard** Due to lack of data the classification is not possible.

**Chronic effects** Prolonged inhalation may be harmful. May cause damage to organs through prolonged or repeated exposure.

## 12. Ecological information

**Ecotoxicity** Contains a substance which causes risk of hazardous effects to the environment.

Product	Species	Test Results
ISOPROPYL ALCOHOL (CAS 67-63-0)		
<b>Aquatic</b>		
Fish	LC50 Bluegill ( <i>Lepomis macrochirus</i> )	> 1400 mg/l, 96 hours

\* Estimates for product may be based on additional component data not shown.

**Persistence and degradability** No data is available on the degradability of this product.

**Bioaccumulative potential** Not available.

**Partition coefficient n-octanol / water (log Kow)**  
0.05

**Mobility in soil** Not available. **Other**

**adverse effects** Not available.

## 13. Disposal considerations

**Disposal instructions** Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Incinerate the material under controlled conditions in an approved incinerator. Do not incinerate sealed containers. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. If discarded, this product is considered a RCRA ignitable waste, D001. Dispose of contents/container in accordance with local/regional/national/international regulations.

**Local disposal regulations** Not available.

**Hazardous waste code** D001: Waste Flammable material with a flash point <140 F

**Waste from residues / unused products** Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

**Contaminated packaging** Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

## 14. Transport information

### DOT

<b>UN number</b>	UN1219
<b>UN proper shipping name</b>	Isopropanol or Isopropyl alcohol
<b>Transport hazard class(es)</b>	3
<b>Subsidiary class(es)</b>	Not available.
<b>Packing group</b>	II
<b>Special precautions for user</b>	Read safety instructions, SDS and emergency procedures before handling.
<b>Labels required</b>	3
<b>Special provisions</b>	IB2, T4, TP1

**Packaging exceptions** 4b, 150  
**Packaging non bulk** 202  
**Packaging bulk** 242

**IATA**

**UN number** UN1219  
**UN proper shipping name** Isopropanol  
**Transport hazard class(es)** 3  
**Subsidiary class(es)**  
**Packaging group** II  
**Environmental hazards** No  
**Labels required** Not available.  
**ERG Code** 3L  
**Special precautions for user** Not available.

**IMDG**

**UN number** UN1219  
**UN proper shipping name** ISOPROPANOL  
**Transport hazard class(es)** 3  
**Subsidiary class(es)**  
**Packaging group** II  
**Environmental hazards**  
**Marine pollutant** No  
**Labels required** Not available.  
**EmS** F-E, S-D  
**Special precautions for user** Not available.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** No information available.  
**DOT**



**IATA; IMDG**



## 15. Regulatory information

**US federal regulations** CERCLA/SARA Hazardous Substances - Not applicable.

All components are on the U.S. EPA TSCA

Inventory List. **TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

Not regulated.

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

Not on regulatory list.

**CERCLA Hazardous Substance List (40 CFR 302.4)**

Not listed.

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

**Hazard categories** Immediate Hazard -  
Yes  
Delayed Hazard - Yes  
Fire Hazard - Yes  
Pressure Hazard - No  
Reactivity Hazard - No

**SARA 302 Extremely hazardous substance**

No

**SARA 311/312 Hazardous chemical**

No

**Other federal regulations**

**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

Not regulated.

**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40**

**CFR 68.130)** Not regulated.

**Safe Drinking Water Act** Not regulated. (SDWA)

**Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number**

Not listed.

**Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))**

Not regulated.

**DEA Exempt Chemical Mixtures Code Number**

Not regulated.

**Food and Drug Administration (FDA)** Not regulated.

**US state regulations**

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

**US. Massachusetts RTK - Substance List**

ISOPROPYL ALCOHOL (CAS 67-63-0)

**US. New Jersey Worker and Community Right-to-Know Act**

Not regulated.

**US. Pennsylvania RTK - Hazardous Substances**

ISOPROPYL ALCOHOL

(CAS 67-63-0) **US. Rhode**

**Island RTK**

ISOPROPYL ALCOHOL (CAS 67-63-0)

## US. California Proposition 65

### US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Not listed.

#### International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

\*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s)

## 16. Other information, including date of preparation or last revision

**Issue date** June-05-2013

**Version #** 01

**Further information** Not available.

**Disclaimer** The information in the sheet was written based on the best knowledge and experience currently available. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**Revision Information** Product and Company Identification: Product and Company Identification  
Hazards Identification: Shared US and Canadian Categories  
Composition / Information on Ingredients: Disclosure Overrides  
Transport Information: Proper Shipping Name/Packing Group



## Product Safety Data Sheet (PSDS)

The battery products referenced in this PSDS document are consumer products. Batteries are considered "articles" under the Global Harmonized System and are exempted from the GHS labeling and SDS classification criteria. This PSDS document is provided as service in response to requests for information on battery use, safety and regulatory compliance.

## SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** DURACELL LITHIUM MANGANESE DIOXIDE BATTERIES AND CELLS

**Product Identification:** Lithium Manganese Dioxide

**Cells – Duracell Designations:**

CR-V3; DL1/3N; DL123(DL123A; DL2/3A); DL223 (DL223A); DL2CR2; PL123; DL245; PX28L; DL1604

**Product Use:** Energy Source

**PSDS Date of Preparation:** April 20, 2009 **Reaffirmed:** 4/08/2011; 6/10/11; 7/7/2011; **Updated:** August 15, 2013 **Document ID:** Lithium Batteries-NA

#### **Company Identification**

US Office

Duracell, a P&G business  
Berkshire Corporate Park  
14 Research Drive  
Bethel, CT USA 06401  
(203) 796-4000

Canadian Office

Duracell, a P&G business  
4711 Yonge Street  
Toronto, Ontario  
Canada M2N 6K8  
(416) 730-4711

## **SECTION 2: HAZARDS IDENTIFICATION**

**Physical Appearance:** Small cylindrical batteries

### **EMERGENCY OVERVIEW**

CAUTION: Battery can explode or leak if heated, disassembled, shorted, recharged, exposed to fire or high temperature or inserted incorrectly. Keep in original package until ready to use. Do not carry batteries loose in your pocket or purse. Keep batteries away from children. If swallowed, consult a physician at once. For information on treatment, call the NATIONAL BUTTON BATTERY INGESTION HOTLINE collect, day or night, at (202) 6253333. Under certain misuse conditions and by abusively opening the battery, exposed lithium can react with water or moisture in the air causing potential thermal burns or fire.

#### **Potential Health Effects:**

The chemicals and metals in this product are contained in a sealed can. Exposure to the contents will not occur unless the battery leaks, is exposed to high temperatures or is mechanically, physically, or electrically abused.

**Eye Contact:** Contact with battery contents may cause irritation.

**Skin Contact:** Contact with battery contents may cause irritation.

**Inhalation:** Inhalation of vapors or fumes released due to heat or a large number of leaking batteries may cause respiratory and eye irritation.

**Ingestion:** Swallowing is not anticipated for larger batteries due to battery size. Smaller batteries may be swallowed. If battery is swallowed, seek immediate medical advice. Batteries lodged in the esophagus should be removed

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immediately since leakage, caustic burns and perforation can occur as soon as two hours after ingestion. Irritation to the internal/external mouth areas, may occur following exposure to a leaking battery. Do not give ipecac.

### SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Amount
Manganese Dioxide	1313-13-9	15-45%
1,2-Dimethoxyethane	110-71-4	5-10%
Propylene Carbonate	108-32-7	1-10%
Lithium	7439-93-2	1-5%
Lithium Trifluoromethane Sulfonate	33454-82-9	0-5%
Carbon Black	1333-86-4	0-5%
Ethylene Carbonate	96-49-1	0-5%
Graphite	7782-42-5	0-5%

### SECTION 4: FIRST AID MEASURES

**Eye Contact:** If battery is leaking and material contacts the eye, flush thoroughly with copious amounts of running water for 30 minutes. Seek immediate medical attention.

**Skin Contact:** If battery is leaking and material contacts the skin, remove any contaminated clothing and flush exposed skin with copious amounts of running water for at least 15 minutes. If irritation, injury or pain persists, seek medical attention.

**Inhaled:** If battery is leaking, contents may be irritating to respiratory passages. Move to fresh air. If irritation persists, seek medical attention.

**Swallowed:** If battery is swallowed seek immediate medical advice. Batteries lodged in the esophagus should be removed immediately since leakage, caustic burns and perforation can occur as soon as two hours after ingestion. If mouth area irritation or burning has occurred, rinse the mouth and surrounding area with tepid water for at least 15 minutes. Do not give ipecac.

**Note to Physician:** Published reports recommend removal from the esophagus be done endoscopically (under direct visualization). Batteries beyond the esophagus need not be

retrieved unless there are signs of injury to the GI tract or a large diameter battery fails to pass the pylorus. If asymptomatic, follow-up x-rays are necessary only to confirm the passage of larger batteries. Confirmation by stool inspection is preferable under most circumstances. For information on treatment, telephone (202) 625-3333 collect, day or night. Potential leakage of dimethoxyethane, propylene carbonate and lithium trifluoromethane sulfonate. Dimethoxyethane rapidly evaporates. Do not give ipecac.

## SECTION 5: FIRE FIGHTING MEASURES

**Fire and Explosion Hazards:** Batteries may burst and release hazardous decomposition products when exposed to a fire situation.

**Extinguishing Media:** Use dry chemical, alcohol foam, water or carbon dioxide as appropriate for the surrounding fire. For incipient fires, carbon dioxide extinguishers are more effective than water.

**Special Fire Fighting Procedures:** Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing. Fight fire from a distance or protected area. Cool fire exposed batteries to prevent rupture. Use caution when handling fire-exposed containers (batteries may explode in heat of fire).

**Hazardous Combustion Products:** Thermal degradation may produce hazardous fumes of lithium and manganese; hydrofluoric acid, oxides of carbon and sulfur and other toxic by-products.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

Notify safety personnel of large spills. Irritating vapors and flammable may be released from leaking or ruptured batteries. Eliminate all ignition sources. Evacuate the area and allow the vapors to dissipate. Clean-up personnel should wear appropriate protective clothing to avoid eye and skin contact and inhalation of vapors or fumes. Increase ventilation. Carefully collect batteries and place in an appropriate container for disposal. Remove spilled liquid with absorbent and contain for disposal.

## SECTION 7: HANDLING AND STORAGE

Avoid mechanical or electrical abuse. DO NOT short circuit or install incorrectly. Batteries may explode, pyrolyze or vent if disassembled, crushed, recharged or exposed to high temperatures. Install batteries in accordance with equipment instructions. Replace all batteries in equipment at the same time. Do not carry batteries loose in a pocket or bag.

**Storage:** Store batteries in a dry place at normal room temperature.



## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

The following occupational exposure limits are provided for informational purposes. No exposure to the battery components should occur during normal consumer use.

Chemical Name	Exposure Limits
Manganese Dioxide	5 mg/m <sup>3</sup> Ceiling OSHA PEL 0.2 mg/m <sup>3</sup> TWA ACGIH TLV
1,2-Dimethoxyethane	None Established
Propylene Carbonate	2 mg/m <sup>3</sup> Ceiling ACGIH TLV
Lithium	None Established
Lithium Trifluoromethane Sulfonate	None Established
Carbon Black	3.5 mg/m <sup>3</sup> TWA OSHA PEL/ACGIH TLV
Ethylene Carbonate	None Established
Graphite (natural-non-fibrous)	15 mppcf TWA OSHA PEL 2 mg/m <sup>3</sup> TWA (respirable dust) ACGIH TLV
Graphite (synthetic non-fibrous)	5 mg/m <sup>3</sup> TWA (respirable dust), 15 mg/m <sup>3</sup> TWA (total dust) OSHA PEL 2 mg/m <sup>3</sup> TWA (respirable dust) ACGIH TLV

**Ventilation:** No special ventilation is needed for normal use.

**Respiratory Protection:** None required for normal use.

**Skin Protection:** None required for normal use. Use butyl rubber gloves when handling leaking batteries.

**Eye Protection:** None required for normal use. Wear safety goggles when handling leaking batteries.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

**Appearance and Odor:** Small cylindrical batteries. Contents dark in color.

**Specific Gravity:** Not applicable

**Water Solubility:** Insoluble

**Vapor Pressure:** Not applicable

**Vapor Density:** Not applicable

**Boiling Point:** Not applicable

**Melting Point:** Not applicable

**Flash Point:** 29°F (-2°C) (1,2-Dimethoxyethane)

**Autoignition Point:** Not applicable

## SECTION 10: STABILITY AND REACTIVITY

**Stability:** This product is stable.

**Incompatibility/Conditions to Avoid:** Contents are incompatible with strong oxidizing agents. Do not heat, crush, disassemble, short circuit or recharge.

**Hazardous Decomposition Products:** Thermal decomposition may produce hazardous fumes of lithium and manganese; hydrofluoric acid, oxides of carbon and sulfur and other toxic by-products.

**Hazardous Polymerization:** Will not occur

## SECTION 11: TOXICOLOGICAL INFORMATION

### **Acute Toxicity Data:**

Manganese Dioxide: LD50 oral rat >3478 mg/kg

1,2-Dimethoxyethane: LDLo oral rat 1000 mg/kg, LCLo inhalation rat 63 g/m<sup>3</sup>/6 hr

Propylene Carbonate: LD50 oral rat 29100 uL/kg; LD50 dermal rabbit >20 mL/kg; LC50 inhalation rat >5 g/m<sup>3</sup>

Ethylene Carbonate: LD50 oral rat 10,000 mg/kg; LD50 dermal rabbit >3000 mg/kg  
Lithium Trifluoromethane Sulfonate: LD50 oral rat 1250-1500 mg/kg

**Chronic Effects:** The chemicals in this product are contained in a sealed can and exposure does not occur during normal handling and use. No chronic effects would be expected from handling a leaking battery.

**Target Organs:** Skin, eyes and respiratory system.

**Carcinogenicity:** Carbon Black is classified by IARC as Possibly Carcinogenic to Humans (Group 2B). None of the other components of this product are listed as carcinogens by ACGIH, IARC, NTP or OSHA.

<b>SECTION 12: ECOLOGICAL INFORMATION</b>
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No ecotoxicity data is available. This product is not expected to present an environmental hazard.

## SECTION 13: DISPOSAL INFORMATION

Disposal should be in accordance with Federal, state/provincial and local regulations. Large quantities of open batteries should be treated as hazardous waste. Do not incinerate except for disposal in a controlled incinerator.

Some communities offer recycling or collection of batteries – contact your local government for disposal practices in your area.

## SECTION 14: TRANSPORT INFORMATION

### **Emergency Phone Number:**

**CHEMTREC 24-Hour Emergency Response Hotline  
+703-527-3887 (United States of America)**

**DURACELL lithium metal batteries are produced and delivered in accordance to IATA 54<sup>th</sup> Edition Regulations. Persons who prepare or offer lithium batteries for transport are required by regulation to be trained and certified.** The information provided below is for informational purposes only.

<b>DURACELL Primary Lithium Metal Batteries</b>
<b>UN3090</b> Primary lithium batteries <b>UN3091</b> Primary lithium batteries with or in equipment
<b>UN 38.3: DURACELL</b> certifies that all of its lithium batteries meet the requirements of the UN Manual of Tests and Criteria, Part III subsection 38.3. If you assemble these batteries into larger battery packs, it is recommended that you perform the UN Tests to ensure the requirements are met prior to shipment.
<b>US DOT:</b> Special Provision 29, 188, 189, 190, A54, A55, A100, A101, A103, A104
<b>Air Transport (IATA/ICAO):</b> Packing Instruction 968-970
<b>Marine/Water Transport (IMDG):</b> Special Provision 188, 230, 310, 957
<b>ADR:</b> Special Provisions: 188, 230, 310, 957

**DOT** - Except for personal use, the shipment of lithium batteries aboard passenger aircraft is not allowed. Airline passengers may have non-rechargeable lithium batteries for their equipment and a reasonable amount of spare non-rechargeable lithium batteries for their equipment in their carry-on luggage – **NOT** in their checked baggage. For more information, air travelers should consult the US Department of Transportation (DOT) Safety Travel web site at <http://safetravel.dot.gov>.

Shipping packages containing non-rechargeable lithium batteries must be labeled, regardless of size or number of batteries, with the following statement: “PRIMARY LITHIUM BATTERIES – FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT.”

Effective January 1, 2013, new ICAO/IATA regulations for air shipments require a reduced package size quantity and the use of new labels. For more information visit the IATA website: <http://www.iata.org/whatwedo/cargo/dgr/Pages/lithium-batteries.aspx>

**The transportation of lithium metal batteries is regulated as UN3090 by ICAO, IATA, IMO and US DOT.** DURACELL lithium manganese dioxide batteries cells and batteries are not subject to the other provisions of the Dangerous Goods regulations as long as they are packaged and marked in accordance with the ICAO regulations. The gram weight of lithium metal in Duracell lithium manganese dioxide batteries and cells is:

Catalog Number	Total Lithium Content	Type
DL 1/3N	.06 g	Cell
DL 123	.55 g	Cell
DL 223	1.1 g	Battery
PL 123	.55 g	Cell
PX 28 L	.12 g	Battery
CR-V3	1.4 g	Battery
DL CR2	.26 g	Cell
DL 245	1.1 g	Battery
DL1604	0.9g	Battery

## SECTION 15: REGULATORY INFORMATION

### United States

**OSHA Status:** While the finished product(s) is considered an article and not covered by the OSHA Hazard Communication Standard, 29 CFR 1910.1200, this PSDS contains valuable information critical to the safe handling and proper use of the product".

**EPA TSCA Status:** All intentionally-added components of this product are listed on the US TSCA Inventory.

**SARA 313/302/304/311/312 chemicals:** Manganese compounds 15-45%

**California:** This product has been evaluated and does not require warning labeling under California Proposition 65.

### State Right-to-Know and CERCLA:

The following ingredients present in the finished product are listed on state right-to-know lists or state worker exposure lists

Ingredient	CAS #	Level	CERCLA RQ	State				
				IL	MA	NJ	PA	RI
Manganese Dioxide	1313-13-9	15-45%	None	Y	Y	N	Y	Y
1,2-Dimethoxyethane	110-71-4	5-10%	None	Y	Y	Y	Y	N
Propylene Carbonate	108-32-7	1-10%	None	Y	Y	Y	Y	Y
Lithium	7439-93-2	1-5%	None	Y	Y	Y	Y	Y
Carbon Black	1333-86-4	0-5%	None	Y	Y	Y	Y	Y

Lithium Trifluoromethane Sulfonate	33454-82-9	0-5%	None	N	N	N	N	N
Ethylene Carbonate	96-49-1	0-5%	None	Y	Y	N	Y	Y
Graphite	7782-42-5 7440-44-0	0-5%	None	Y	Y	N	Y	Y

**Canada** All intentionally-added components of this product are listed on the Canadian DSL. This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and this PSDS contains all information required by the Controlled Products Regulations.

## SECTION 16: OTHER INFORMATION


**P&G Hazard Rating:** Health: 0      Fire: 0      Reactivity: 0

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Data supplied is for use only in connection with occupational safety and health.

**DISCLAIMER:** This PSDS is intended to provide a brief summary of our knowledge and guidance regarding the use of this material. The information contained here has been compiled from sources considered by the P&G Company and its affiliates to be dependable and is accurate to the best of the Company's knowledge. It is not meant to be an all-inclusive document on worldwide hazard communication regulations.

This information is offered in good faith. Each user of this material needs to evaluate the conditions of use and design the appropriate protective mechanisms to prevent employee exposures, property damage or release to the environment. The P&G Company and its affiliates assume no responsibility for injury to the recipient or third persons, or for any damage to any property resulting from misuse of the product.

		<b><i>MATERIAL SAFETY DATA SHEET</i></b>	
<i>Doc. No : MSDS / 01</i>	<i>Revision : 0</i>	<i>Page 1 Of 3</i>	<i>Issue date 03.08.2011</i>

### 1. Identification of Product and Company

Product name : POWDER FREE NITRILE EXAMINATION GLOVES

Main Use : Medical Activities and Industrial use except surgery.

Manufacturer : Mydent International  
80 Suffolk Court  
Hauppauge, NY 11788

Telephone : 631.434.3190

Fax : 631.434.7750

### 2. Composition/ Information on Ingredients

Raw materials : Nitrile (Non-Biodegradable)

Chemical : 1) Zinc Dibuthyl Dithiocarbamate (ZDBC)

2) Potassium Hydroxide (KOH)

3) Sulphur (S)

4) Zinc Oxide (ZnO)

5) Titanium Dioxide (TiO<sup>2</sup>)

6) Hydrated Aluminum Silicate (Bentonite)

### 3. Hazardous Identification

Stability : Stable

Flash Point : N/A

Incompatible Material : None

Extinguishing Media : Foam, Carbon Dioxide & Water  
( In fire, these product may produce a black smoke)

POWDER FREE NITRILE GLOVES

MYDENT INTERNATIONAL



## MATERIAL SAFETY DATA SHEET

Doc. No : MSDS / 01

Revision : 0

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Issue date :12.08.2009

#### 4. Physical Properties

Beading	: Beaded at cuff
Colour	: Farsperse Blue MPL 1375
Finishing	: Finger textured
Powder Coating	: NIL
Boiling Point	: N/A
Vapour Pressure (mm Hg)	: N/A
Vapour Density (air = 1)	: N/A
Specific Gravity (water = 1)	: N/A
Solubility in Water	: Insoluble
% Volatile by Volume	: N/A
Evaporation Rate	: N/A
Viscosity	: N/A

Size	Palm Width (mm)	Length (mm)
X-Small	75 ± 5	240
Small	85 ± 5	240
Medium	95 ± 5	240
Large	106 ± 5	240
X-Large	Min 110	240
Location of Thickness Measurement		Single Wall Thickness (mm)
Finger (at 13mm from the extreme tip)		0.10
Palm (at centre of palm)		0.06
Cuff (at 25mm from cuff end)		0.05
Characteristics	Before Ageing	After Ageing
Tensile Strength (MPa)	Min 14	Min 14
Ultimate Elongation (%)	Min 500	Min 400

POWDER FREE NITRILE GLOVES

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**MATERIAL SAFETY  
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<p><b>5. Handling and Storage</b></p> <p>Handling : No special precautions necessary. Ventilation is not necessary under normal condition.</p> <p>Storage : Keep away from sunlight and heat. Store at room temperature, between 10°C to 40°C.</p>			
<p><b>6. Exposure Controls</b></p> <p>Components used in manufacturing all types of gloves may cause allergic reactions in some users. As with many substances that have the potential of becoming an antigen through extended contact, prolonged contact with latex can result in the sensitization of an individual to latex. If there are any questions about allergic reactions or are a person with a pass history of allergic reactions, consult dermatologist, allergist or immunologist before wearing these gloves.</p>			
<p><b>7. Quality Assurance Conformity</b></p> <p>Conformity: The Powder Free Nitrile Gloves, coloured, are produced to meet the FDA 1000 ml water tight requirements, ASTM D 6319 specifications.</p>			

POWDER FREE NITRILE GLOVES

MYDENT INTERNATIONAL

## FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

MSDS #: 538.00

### Material Safety Data Sheet (MSDS)

Revision Date: November 25, 2002

---

#### Section 1 — Chemical Product and Company Identification

##### Nichrome Wire

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

#### Section 2 — Composition, Information on Ingredients



Nickel (7740-02-0) 60%, Iron (7439-89-6) 24%, Chromium (7440-47-3) 16%,  
Carbon (7440-44-0) 0.1%. CAS#: None Established

### Section 3 — Hazards Identification

Silvery colored wire. Odorless.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-0 Exposure-0  
Storage-0

0 is low hazard, 3 is high hazard

### Section 4 — First Aid Measures

Call a physician, seek medical attention for further treatment, observation and support after first aid. Eye: Immediately flush with fresh water for 15 minutes.

External: Wash with mild soap and water.

Internal: Call a physician or poison control at once.

### Section 5 — Fire Fighting Measures

Not combustible solid.

#### NFPA CODE

None Established

### Section 6 — Accidental Release Measures

Dispose of in school trash.

### Section 7 — Handling and Storage

Flinn Suggested Chemical Storage Pattern: Inorganic #1. Store with metals and metal hydrides.

### Section 8 — Exposure Controls , Personal Protection

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

**FLINN SCIENTIFIC INC.**

**Nichrome Wire**

**"Your Safer Source for Science Supplies"**

**MSDS #: 538.00**

# Material Safety Data Sheet (MSDS)

Revision Date: November 25,

2002

---

## Section 9 — Physical and

**Chemical Properties** Silvery colored wire. Odorless.

---

## Section 10 — Stability and Reactivity

Shelf life: Indefinite.

---

## Section 11 — Toxicological Information

Acute effects: N.A. ORL-RAT LD50: N.A. Chronic effects: N.A. IHL-RAT LC50: N.A.

Target organs: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

## Section 12 — Ecological Information

Data not yet available.

---

## Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

---

## Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

---

## Section 15 — Regulatory Information

Not listed.

---

## Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals.

This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or

completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

**FLINN SCIENTIFIC INC.**

"Your Safer Source for Science Supplies"

*Questions on Chemical Disposal  
or Storage?--Call Flinn*

flinn@flinnsci.com www.flinnsci.com  
P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

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SAFETY DATA SHEET

**Honeywell**

**AEGIS® Nylon 6 Resin**

**000000011527**

Version 2.4

Revision Date 10/17/2014

Print Date 06/27/2015

## SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : AEGIS® Nylon 6 Resin

MSDS Number : 000000011527

Product Use Description : cast processes, injection moulding and extrusion

Manufacturer or supplier's details : Honeywell International Inc.  
101 Columbia Road  
Morristown, NJ 07962-1057

For more information call : 1-866-495-3477  
+1-804-530-6000  
(Monday-Friday, 9:00am-5:00pm)

**In case of emergency call :** **Medical: 1-800-498-5701 or +1-303-389-1414**  
: **Transportation (CHEMTREC): 1-800-424-9300 or +1-703-527-3887**  
:  
: (24 hours/day, 7 days/week)

## SECTION 2. HAZARDS IDENTIFICATION

### Emergency Overview

Form : pellets

Color : natural colour

Odor : slight organic

### Classification of the substance or mixture

Not a hazardous substance or mixture.

Precautionary statements : **Prevention:**  
Use personal protective equipment as required.

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**AEGIS® Nylon 6 Resin**

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Hazards not otherwise system. : Product dust may be irritating to eyes, skin and respiratory classified system.

Thermal decomposition can lead to release of irritating gases and vapours.

The molten product can cause serious burns.

**Carcinogenicity**

IARC: Titanium dioxide 13463-67-7  
Group 2B: Possibly carcinogenic to humans

Anatase (TiO<sub>2</sub>) 1317-70-0  
Group 2B: Possibly carcinogenic to humans

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Chemical nature : Mixture

Chemical Name	CAS-No.	Concentration
Nylon 6	25038-54-4	>97.00 %
Titanium dioxide	13463-67-7	0.00 - 2.00 %
Anatase (TiO <sub>2</sub> )	1317-70-0	0.00 - 2.00 %
ε-Caprolactam	105-60-2	<1.00 %

**SECTION 4. FIRST AID MEASURES**

Inhalation : Remove to fresh air. Call a physician if irritation develops or persists.

Skin contact : Wash off immediately with plenty of water. Use a mild soap if

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**AEGIS® Nylon 6 Resin**

**00000011527**

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available. Call a physician if irritation develops or persists. Cool skin rapidly with cold water after contact with hot polymer. Call a physician immediately.

Eye contact : Rinse thoroughly with plenty of water, also under the eyelids. Call a physician if irritation develops or persists.

Ingestion : Unlikely route of exposure. Seek medical advice.

**Notes to physician**

Treatment : Treat symptomatically.

**SECTION 5. FIREFIGHTING MEASURES**

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.  
Water spray  
Foam  
Dry chemical  
Carbon dioxide (CO2)

Specific hazards during : In case of fire hazardous decomposition products may be firefighting produced such as:  
Hydrogen cyanide (hydrocyanic acid)  
Ammonia  
Carbon monoxide

Special protective equipment for firefighters : In the event of fire and/or explosion do not breathe fumes.  
Wear self-contained breathing apparatus and protective suit.

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

Personal precautions : Wear personal protective equipment. Unprotected persons must be kept away.  
Ensure adequate ventilation.

Environmental precautions : Should not be released into the environment.

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Methods for cleaning up : Sweep up or vacuum up spillage and collect in suitable container for disposal.  
Avoid dust formation.



## SECTION 7. HANDLING AND STORAGE

### Handling

Handling : Wear personal protective equipment.  
Heat only in areas with appropriate exhaust ventilation.  
Do not breathe fumes, vapour.  
Provide appropriate exhaust ventilation at machinery and at places where dust can be generated.  
Do not breathe dust.  
Avoid contact with skin and eyes.  
Handle in accordance with good industrial hygiene and safety practice.

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

### Storage

Requirements for storage : Keep containers tightly closed in a dry, cool and well-ventilated areas and containers place.

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Protective measures : Handle in accordance with good industrial hygiene and safety practice.  
Ensure that eyewash stations and safety showers are close to the workstation location.

Engineering measures : Effective exhaust ventilation system  
Use adequate ventilation and/or engineering controls in high temperature processing to prevent exposure to vapours.

Eye protection : Wear as appropriate:  
Safety glasses with side-shields  
Face-shield

Hand protection : When handling hot material, use heat resistant gloves.

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**Honeywell**

**AEGIS® Nylon 6 Resin**

Skin and body protection : Wear heat protective clothing for handling hot material.

Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.

#### Exposure Guidelines

Components	CAS-No.	Value	Control parameters	Update	Basis
Titanium dioxide	13463-67-7	TWA : time weighted average	10 mg/m3	2008	ACGIH:US. ACGIH Threshold Limit Values

Titanium dioxide	13463-67-7	TWA : time weighted average	1 mg/m3	02 2013	ACGIHLIS_P:US. ACGIH Notice of Intended Changes (NIC) to Threshold Limit Values
------------------	------------	--------------------------------------	---------	------------	---

Further information	:	Form of exposure : Respirable fraction.			
---------------------	---	---	--	--	--

Titanium dioxide	13463-67-7	PEL : Permissi ble exposure limit	15 mg/m3	02 2006	OSHA_TRANS:US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
------------------	------------	---	----------	------------	--

Further information	:	Form of exposure : Total dust.			
---------------------	---	--------------------------------	--	--	--

Titanium dioxide	13463-67-7	TWA : time weighted average	10 mg/m3	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)
------------------	------------	--------------------------------------	----------	------	---

Further information	:	Form of exposure : Total dust.			
---------------------	---	--------------------------------	--	--	--

$\epsilon$ -Caprolactam	105-60-2	TWA : time weighted average	5 mg/m3	2008	ACGIH:US. ACGIH Threshold Limit Values
-------------------------	----------	--------------------------------------	---------	------	--

Further information	:	Form of exposure : Inhalable fraction and vapor.			
---------------------	---	--	--	--	--

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ε-Caprolactam	105-60-2	REL : Recomm ended exposure limit (REL):	1 mg/m3 (0.22 ppm)	2005	NIOSH/GUIDE:US. NIOSH: Pocket Guide to Chemical Hazards
---------------	----------	---	-----------------------	------	--

Further information	:	Form of exposure : Vapour
---------------------	---	---------------------------

ε-Caprolactam	105-60-2	STEL : Short term exposure limit	3 mg/m3 (0.66 ppm)	2005	NIOSH/GUIDE:US. NIOSH: Pocket Guide to Chemical Hazards
---------------	----------	--	-----------------------	------	--

Further information	:	Form of exposure : Vapour
---------------------	---	---------------------------

ε-Caprolactam	105-60-2	REL : Recomm ended exposure limit (REL):	1 mg/m3	2005	NIOSH/GUIDE:US. NIOSH: Pocket Guide to Chemical Hazards
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Further information	:	Form of exposure : Dust.
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ε-Caprolactam	105-60-2	STEL : Short term exposure limit	3 mg/m3	2005	NIOSH/GUIDE:US. NIOSH: Pocket Guide to Chemical Hazards
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Further information	:	Form of exposure : Dust.
---------------------	---	--------------------------

ε-Caprolactam	105-60-2	TWA : time weighted average	1 mg/m3	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)
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Further information	:	Form of exposure : Dust.
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ε-Caprolactam	105-60-2	TWA : time weighted average	20 mg/m3 (5 ppm)	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)
Further information	:	Form of exposure : Vapour			

ε-Caprolactam	105-60-2	STEL : Short term exposure limit	3 mg/m3	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)
Further information	:	Form of exposure : Dust.			

ε-Caprolactam	105-60-2	STEL : Short term exposure limit	40 mg/m3 (10 ppm)	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)
Further information	:	Form of exposure : Vapour			

Particulates Not Otherwise Regulated		TWA : time weighted average	10 mg/m3	2008	ACGIH:US. ACGIH Threshold Limit Values
Further information	:	Form of exposure : Inhalable particles.			

Particulates Not Otherwise Regulated		TWA : time weighted average	3 mg/m3	2008	ACGIH:US. ACGIH Threshold Limit Values
Further information	:	Form of exposure : Respirable particles.			

Particulates Not Otherwise Regulated		PEL : Permissi ble exposure limit	15 mg/m3	02 2006	OSHA_TRANS:US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
Further information	:	Form of exposure : Total dust.			

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Particulates No Otherwise Regulated		PEL : Permissi ble exposure limit	5 mg/m3	02 2006	OSHA_TRANS:US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
--	--	---	---------	------------	--

Further information	:	Form of exposure : Respirable fraction.
------------------------	---	---

Particulates No Otherwise Regulated		TWA : time weighted average	15 mg/m3	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)
--	--	--------------------------------------	----------	------	---

Further information	:	Form of exposure : Total dust.
------------------------	---	--------------------------------

Particulates No Otherwise Regulated		TWA : time weighted average	5 mg/m3	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)
--	--	--------------------------------------	---------	------	---

Further information	:	Form of exposure : Respirable fraction.
------------------------	---	---

Particulates No Otherwise Regulated		TWA : time weighted average	15 mg/m3	2000	Z3:US. OSHA Table Z-3 (29 CFR 1910.1000)
--	--	--------------------------------------	----------	------	--

Further information	:	Form of exposure : Total dust.
------------------------	---	--------------------------------

Particulates No Otherwise Regulated		TWA : time weighted average	5 mg/m3	2000	Z3:US. OSHA Table Z-3 (29 CFR 1910.1000)
--	--	--------------------------------------	---------	------	--

Further information	:	Form of exposure : Respirable fraction.
------------------------	---	---

Particulates Not Otherwise Regulated		TWA : time weighted average	50 millions of particles per cubic foot of air	2000	Z3:US. OSHA Table Z-3 (29 CFR 1910.1000)
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Further information	:	Form of exposure : Total dust.
---------------------	---	--------------------------------

Particulates Not Otherwise Regulated		TWA : time weighted average	15 millions of particles per cubic foot of air	2000	Z3:US. OSHA Table Z-3 (29 CFR 1910.1000)
--------------------------------------	--	-----------------------------	--	------	--

Further information	:	Form of exposure : Respirable fraction.
---------------------	---	---

Titanium dioxide	13463-67-7	TWA : time weighted average	10 mg/m3	2008	ACGIH:US. ACGIH Threshold Limit Values
------------------	------------	-----------------------------	----------	------	--

Titanium dioxide	13463-67-7	TWA : time weighted average	1 mg/m3	02 2013	ACGIHLIS_P:US. ACGIH Notice of Intended Changes (NIC) to Threshold Limit Values
------------------	------------	-----------------------------	---------	---------	---

Further information	:	Form of exposure : Respirable fraction.
---------------------	---	---

Titanium dioxide	13463-67-7	PEL : Permissible exposure limit	15 mg/m3	02 2006	OSHA_TRANS:US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
------------------	------------	----------------------------------	----------	---------	--

Further information	:	Form of exposure : Total dust.
---------------------	---	--------------------------------

Titanium dioxide	13463-67-7	TWA : time weighted average	10 mg/m3	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)
------------------	------------	-----------------------------	----------	------	---

Further information	:	Form of exposure : Total dust.
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ε-Caprolactam	105-60-2	TWA : time weighted average	5 mg/m3	2008	ACGIH:US. ACGIH Threshold Limit Values
Further information	:	Form of exposure : Inhalable fraction and vapor.			

ε-Caprolactam	105-60-2	REL : Recomm ended exposure limit (REL):	1 mg/m3 (0.22 ppm)	2005	NIOSH/GUIDE:US. NIOSH: Pocket Guide to Chemical Hazards
Further information	:	Form of exposure : Vapour			

ε-Caprolactam	105-60-2	STEL : Short term exposure limit	3 mg/m3 (0.66 ppm)	2005	NIOSH/GUIDE:US. NIOSH: Pocket Guide to Chemical Hazards
Further information	:	Form of exposure : Vapour			

ε-Caprolactam	105-60-2	REL : Recomm ended exposure limit (REL):	1 mg/m3	2005	NIOSH/GUIDE:US. NIOSH: Pocket Guide to Chemical Hazards
Further information	:	Form of exposure : Dust.			

ε-Caprolactam	105-60-2	STEL : Short term exposure limit	3 mg/m3	2005	NIOSH/GUIDE:US. NIOSH: Pocket Guide to Chemical Hazards
Further information	:	Form of exposure : Dust.			

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ε-Caprolactam	105-60-2	TWA : time weighted average	1 mg/m3	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)
Further information	:	Form of exposure : Dust.			

ε-Caprolactam	105-60-2	TWA : time weighted average	20 mg/m3 (5 ppm)	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)
Further information	:	Form of exposure : Vapour			

ε-Caprolactam	105-60-2	STEL : Short term exposure limit	3 mg/m3	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)
Further information	:	Form of exposure : Dust.			

ε-Caprolactam	105-60-2	STEL : Short term exposure limit	40 mg/m3 (10 ppm)	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)
Further information	:	Form of exposure : Vapour			

Particulates Not Otherwise Regulated		TWA : time weighted average	10 mg/m3	2008	ACGIH:US. ACGIH Threshold Limit Values
Further information	:	Form of exposure : Inhalable particles.			

Particulates Not Otherwise Regulated		TWA : time weighted average	3 mg/m3	2008	ACGIH:US. ACGIH Threshold Limit Values
Further information	:	Form of exposure : Respirable particles.			

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Particulates Not Otherwise Regulated		PEL : Permissible exposure limit	15 mg/m3	02 2006	OSHA_TRANS:US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
Further information	:	Form of exposure : Total dust.			

Particulates Not Otherwise Regulated		PEL : Permissible exposure limit	5 mg/m3	02 2006	OSHA_TRANS:US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
Further information	:	Form of exposure : Respirable fraction.			

Particulates Not Otherwise Regulated		TWA : time weighted average	15 mg/m3	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)
Further information	:	Form of exposure : Total dust.			

Particulates Not Otherwise Regulated		TWA : time weighted average	5 mg/m3	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)
Further information	:	Form of exposure : Respirable fraction.			

Particulates Not Otherwise Regulated		TWA : time weighted average	15 mg/m3	2000	Z3:US. OSHA Table Z-3 (29 CFR 1910.1000)
Further information	:	Form of exposure : Total dust.			

Particulates Not Otherwise Regulated		TWA : time weighted average	5 mg/m3	2000	Z3:US. OSHA Table Z-3 (29 CFR 1910.1000)
Further information	:	Form of exposure : Respirable fraction.			

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information	
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Particulates Not Otherwise Regulated		TWA : time weighted average	50 millions of particles per cubic foot of air	2000	Z3:US. OSHA Table Z-3 (29 CFR 1910.1000)
--------------------------------------	--	-----------------------------	--	------	--

Further information	:	Form of exposure : Total dust.
---------------------	---	--------------------------------

Particulates Not Otherwise Regulated		TWA : time weighted average	15 millions of particles per cubic foot of air	2000	Z3:US. OSHA Table Z-3 (29 CFR 1910.1000)
--------------------------------------	--	-----------------------------	--	------	--

Further information	:	Form of exposure : Respirable fraction.
---------------------	---	---

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

Physical state	: pellets
Color	: natural colour
Odor	: slight organic
pH	: Note: Not applicable
Melting point/freezing point	: 215 °C
Boiling point/boiling range	: Note: Not applicable
Flash point	: Note: not determined
Lower explosion limit	: Note: Not applicable
Upper explosion limit	: Note: Not applicable

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Vapor pressure	: Note: Not applicable
Vapor density	: Note: (Air = 1.0), Not applicable
Density	: 1.13 - 1.15 g/cm <sup>3</sup>
Water solubility	: Note: insoluble
Ignition temperature	: Note: not determined
Decomposition temperature	: Note: No decomposition if used as directed.

#### **SECTION 10. STABILITY AND REACTIVITY**

Chemical stability	: Stable under recommended storage conditions.
Possibility of hazardous reactions	: Hazardous polymerisation does not occur.
Conditions to avoid	: Avoid exposure to temperatures exceeding recommended processing conditions. Honeywell should be contacted if questions arise concerning specific processing conditions.
Incompatible materials to avoid	: Strong acids
Hazardous decomposition products	: Irritant gases/vapours Flammable gases/vapours Carbon monoxide Ammonia Ketones Hydrogen cyanide (hydrocyanic acid) Amines

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## SECTION 11. TOXICOLOGICAL INFORMATION

Acute oral toxicity  
ε-Caprolactam : LD50: 1,475 - 1,876 mg/kg  
Species: Rat

Acute inhalation toxicity : Acute toxicity estimate: > 10 mg/l , dust/mist  
Exposure time: 4 h  
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: > 5,000 mg/kg  
Method: Calculation method

Skin irritation  
ε-Caprolactam : Species: Rabbit  
Exposure time: 24 h Note:  
occluded application Neat  
(dry): slight irritation  
Moistened: negligible

Eye irritation : Note: Resin particles, like other inert materials, are mechanically irritating to eyes.

Repeated dose toxicity  
ε-Caprolactam : Species: Rat  
Application Route: Inhalation  
Exposure time: (13 Weeks)  
NOAEL (No observed adverse effect level): 0.243 mg/l

Genotoxicity in vitro  
ε-Caprolactam : Note: In vitro tests did not show mutagenic effects

Genotoxicity in vivo

# AEGIS® Nylon 6 Resin

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ε-Caprolactam : Note: In vivo tests did not show mutagenic effects

## SECTION 12. ECOLOGICAL INFORMATION

Toxicity to fish  
ε-Caprolactam : static test  
LC50: > 500 mg/l  
Exposure time: 96 h  
Species: Salmo gairdneri

Toxicity to daphnia and other aquatic invertebrates  
ε-Caprolactam : EC50: > 500 mg/l  
Exposure time: 48 h  
Species: Daphnia magna (Water flea)

Toxicity to algae  
ε-Caprolactam : EC50: 130 mg/l  
Exposure time: 72 h  
Species: Algae

### Further information on ecology

Additional ecological : Accumulation in aquatic organisms is unlikely. information Not inherently biodegradable.

Aquatic toxicity is unlikely due to low solubility.

## SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods : Observe all Federal, State, and Local Environmental regulations.

## SECTION 14. TRANSPORT INFORMATION

DOT Not dangerous goods

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**TDG** Not dangerous goods

**IATA** Not dangerous goods

**IMDG** Not dangerous goods



## SECTION 15. REGULATORY INFORMATION

### Inventories

US. Toxic Substances Control Act : On TSCA Inventory

Australia. Industrial (Notification and Assessment) Act : On the inventory, or in compliance with the inventory Chemical

Canada. Canadian Act (CEPA). Domestic Substances List (DSL) : This product contains one or several components listed in the Environmental Protection Canadian NDSL.

Japan. Kashin-Hou Law List : On the inventory, or in compliance with the inventory

Korea. Toxic Chemical (TCCL) List : On the inventory, or in compliance with the inventory Control Law

Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act : On the inventory, or in compliance with the inventory

China. Inventory of Existing Substances : On the inventory, or in compliance with the inventory Chemical

New Zealand. Inventory of Chemicals (NZIoC), published by ERMA New Zealand : On the inventory, or in compliance with the inventory as

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**National regulatory information**

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

**SARA 313 Components** : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

**SARA 311/312 Hazards** : Chronic Health Hazard

**California Prop. 65** : This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

**Massachusetts RTK** : Titanium dioxide 13463-67-7

**New Jersey RTK** : Titanium dioxide 13463-67-7

**Pennsylvania RTK** : Titanium dioxide 13463-67-7

**WHMIS Classification** : Not Rated  
This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

**SECTION 16. OTHER INFORMATION**

	<b>HMIS III</b>	<b>NFPA</b>
Health hazard	: 1*	1
Flammability : 1	1 Physical Hazard	: 0
Instability	:	0

\* - Chronic health hazard

SAFETY DATA SHEET

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Revision Date 10/17/2014

Print Date 06/27/2015

Hazard rating and rating systems (e.g. HMIS® III, NFPA): This information is intended solely for the use of individuals trained in the particular system.

### **Further information**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. Final determination of suitability of any material is the sole responsibility of the user. This information should not constitute a guarantee for any specific product properties.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

Previous Issue Date: 02/25/2013

Prepared by Honeywell Performance Materials and Technologies Product Stewardship Group

## MATERIAL SAFETY DATA SHEET

Print date: 14-Apr-2008

Revision Number: 1

Revision date: 14-Apr-2008

### 1. IDENTIFICATION OF THE SUBSTANCE AND COMPANY

<b>Trade Name:</b>	LEXAN* Sheet
<b>Product ID:</b>	9034 -112
<b>Product Description:</b>	Poly (bisphenol-A-carbonate) [CASRN 111211-39-3 or 103598-772] Sheet
<b>Product Type:</b>	Commercial Product
<b>Recommended use:</b>	May be used as received, processed or thermoformed to produce other articles, or as a component of other industrial products.
<b>Company:</b>	SABIC Innovative Plastics One Plastics Avenue Pittsfield, MA 01201 USA (413) 448-5400 www.sabic-ip.com
<b>Emergency Telephone Number:</b>	800/447-4545
<b>Emergency Transportation/CHEMTREC (24 HOUR):</b>	800/424-9300

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

This product consists primarily of high molecular weight polymers which are not expected to be hazardous.

### 3. HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

- Plastic film or sheet

- Can burn in a fire creating dense toxic smoke.
- Molten plastic can cause severe thermal burns.

- Fumes produced during melt processing may cause eye, skin, and respiratory tract irritation. Severe over-exposure may cause
- Secondary operations, such as grinding, sanding, or sawing can produce dust which may present an explosion or respiratory

hazard.

, headache, chills, ar

**Flammability:** 1

**Reactivity:** 0

#### HMIS Rating

Not likely to cause irritation.

**Skin contact:**

**Health:** 0

Resin particles, like other inert materials, are mechanically irritating to eyes.

**Eye Contact:**

Inhalation unlikely due to physical form.

**Inhalation:**

Ingestion not likely due to physical form.

**Ingestion:**

Processing fumes may cause irritation to the eyes, skin, and respiratory tract. In cases of severe exposure, nausea and headache can also occur. Grease-like processing fumes can condensate on ventilation ductwork, molds, and other surfaces can cause irritation and injury to skin.

#### Chronic Information

**Resin Issues:**

MEDICAL RESTRICTIONS: There are no known health effects aggravated by exposure to this product. However, certain sensitive individuals and individuals with respiratory impairments may be affected by exposure to components of the processing vapors.

**Aggravated Medical Conditions:**

### 4. FIRST AID MEASURES

**Inhalation:**

No specific treatment is necessary since this material is not likely to be hazardous by inhalation. If exposed to excessive levels of dusts or fumes, remove to fresh air and get medical attention if cough or other symptoms develop.

**Skin Contact:**

Wash with water and soap as a precaution. Get medical attention if irritation develops or persists. For hot products, immediately immerse in or flush affected area with large amounts of cold water to dissipate heat. Cover with clean cotton sheeting or gauze and get prompt medical attention.

**Eye Contact:**

Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. If eye irritation persists, consult a specialist.

**Ingestion:**

No hazards which require special first aid measures.

**Precautions:**

Processing fumes inhalation may be irritating to the respiratory tract. If symptoms are experienced remove victim from the source of contamination or move victim to fresh air and obtain medical advice.

## 5. FIRE-FIGHTING MEASURES

**Explosive Limits**

**upper:** Not applicable      **lower:** Not applicable

**Suitable Extinguishing Media:**

Water spray mist or foam.

**Extinguishing media which must not be used for safety reasons:** Carbon dioxide and dry chemical are not recommended because their lack of cooling capacity may permit re-ignition.

**Hazards from Combustion**

**Products:** Fire will produce dense black smoke containing hazardous combustion products, carbon oxides, hydrocarbon fragments

**Special Protective Equipment for Firefighters:** Do not enter fire area without proper protection including self-

contained breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products.

**Specific Hazards:** Take precautionary measures against static discharges. Thermal decomposition can lead to release of irritating gases and

vapors. Dust formed by operations such as cutting or grinding may form an explosive mixture in air.

## 6. ACCIDENTAL RELEASE MEASURES

<b>Clean up:</b>	Gather and store in a closed container pending a recyclability or waste disposal evaluation. See section 8.
<b>Personal Precautions:</b>	Do not flush into surface water or sanitary sewer systems.
<b>Environmental Precautions:</b>	Should not be released into the environment.

## 7. HANDLING AND STORAGE

<b>Handling:</b>	Handle in accordance with good industrial hygiene and safety practice. Provide for appropriate exhaust ventilation and dust collection at machinery. Avoid dust formation. Accumulation of waste films, sheets and/or masking may create a slipping hazard.
<b>Storage:</b>	Keep away from heat and sources of ignition.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>Engineering Measures to Reduce Exposure:</b>	Handle in accordance with good industrial hygiene and safety practice. Processing fume condensate may be hazardous and toxic; remove periodically from exhaust ductwork, and other surfaces using appropriate personal protection.
<b>Hand Protection:</b>	Protective gloves
<b>Eye Protection:</b>	Safety glasses
<b>Respiratory Protection:</b>	When using this product at elevated temperatures, implement engineering systems, administrative controls, and a respiratory protection program (including a respirator program) if processing fumes are not adequately controlled or operators experience symptoms of overexposure. If dust or powder are produced during secondary operations such as sawing or grinding, use a respirator approved for protection from dust.



**Skin and Body Protection:** Long sleeved clothing

**Hygiene Measures:** When using, do not eat, drink or smoke.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Physical State:** Solid

**Appearance:** Sheet or film

**Color:** Various

**Odor:** None or slight

**Melting point/range:** This product does not exhibit a sharp melting point but softens gradually over a wide range of temperatures

**Explosive Limits**

<b>upper:</b>	Not applicable
<b>lower:</b>	Not applicable

## 10. STABILITY AND REACTIVITY

**Stability:** Stable at normal conditions. Hazardous polymerization does not occur.

**Conditions to Avoid:** Do not exceed melt temperature recommendations in product literature.

**Hazardous Decomposition Products:** Processing fumes evolved at recommended processing conditions may include trace levels of hydrocarbon fragments, phenol, alkylphenols, diarylcarbonates.

## 11. TOXICOLOGICAL INFORMATION

### Acute Toxicity:

**LD50/oral/rat:** >5000 mg/kg, estimated  
>2000 mg/kg, estimated

**LD50/dermal/rabbit:**

**Inhalation:** Inhalation unlikely due to physical form.

**Eye Contact:**

Resin particles, like other inert materials, are mechanically irritating to eyes.

Not likely to cause irritation.

**Skin contact:**

Ingestion not likely due to physical form.

**Ingestion:**

No information available

**Chronic Toxicity:**

Not Listed

**IARC:**

**OSHA:**

Not regulated

**NTP:**

Not tested

**Remarks:**

The toxicological data has been taken from products of similar composition

Processing fumes from similar products are not considered toxic. In acute inhalation tests, laboratory rats were exposed to processing fumes at concentrations exaggerating those that would likely occur in workplace situations. No deaths or signs of toxicity, except transient irritancy in some cases, were noted during the 6 hour exposure tests. There were no distinct or consistent treatment related tissue or organ changes noted in gross necropsies.

## 12. ECOLOGICAL INFORMATION

**Other information:**

Ecological damages are not known or expected under normal use.

## 13. DISPOSAL CONSIDERATIONS

**Waste Disposal:**

Recycling is encouraged. Landfill or incinerate in accordance with federal, state and local requirements. Collected processing fume condensates and incineration ash should be tested to determine waste classification.

**US EPA Waste number:**

None

## 14. TRANSPORT INFORMATION

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**Transport Classification:**

Not regulated as hazardous for shipment, unless not below, under current transportation guidelines.

**DOT**

**ADR/RID/ADNR**

**IMDG**

**ICAO**

**IATA-DGR**

**MEXICO**

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**15. REGULATORY INFORMATION**

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**International Inventories:**

These film and sheet products are considered articles and thus exempt from inventory listing.

**CERCLA/SARA 311/312/313:**

This product is a non-hazardous article and therefore not subject to the requirements of Title III of SARA (Emergency Planning and Community Right-To-Know Act).

**Canada:**

**This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.**

**WHMIS hazard class:**

Non-controlled

**California Proposition 65:**

This product does not contain components known to the State of California to cause cancer and/or reproductive effects.

**RoHS EU Directive 2002/95/EC:**

This product complies with RoHS - it does not intentionally contain banned chemicals.

**16. OTHER INFORMATION**

LEXAN\* Sheet is a registered trademark of SABIC Innovative Plastics

**Prepared by:** Product Stewardship & Toxicology

**DISCLAIMER:** This Material Safety Data Sheet [MSDS] information is provided based on the Hazard Communication

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**End of Material Safety Data Sheet**

# Material Safety Data Sheet : Rosin-Core Solder 60/40 Series

RadioShack Cat. No. 64-009 [E]

## 1. Manufacturer Information

Manufacturer Address/Telephone/Fax : Ku Ping Enterprise Co., Ltd.	
TEL : 8862-8201-3987/88/89	No. 5, Lane 302, Hsin-shuh Road,
FAX : 8862-8201-2368-(2388)	Hsin-Chuang City, Taipei Hsien, Taiwan

## 2. Product Ingredients

Chemical Characteristic: Sn60/Pb40 wire, with flux core, no odor			
Hazardous Material Classification and Figure :		G	
CONTAINS LEAD - HARMFUL CONTAINS ROSIN - IRRITANT			
Hazardous Ingredients Name	WT%	C.A.S. Number	Organic Standard
Tin / SN	60-64(see product marking)	7440-31-5	Not Applicable
Lead / PB	36-40(see product marking)	7439-92-1	Not Applicable

## 3. Health Hazard Information

The most hazardous condition: Exposure to flux fumes during use of the product, ingestion of lead metal
Symptoms and effects: Eye irritation, headache, and irritation of the respiratory system

## 4. Emergency First Aid

Different routes of entry : Eyes, Inhalation, Ingestion
Inhalation : Remove person from exposure to fumes and restore breathing if necessary
Skin contact : Wash thoroughly with soap and water
Eye contact : Flush eyes with plenty of water and get medical attention
Ingestion : Induce vomiting and get prompt medical attention
The most serious symptom : Dizziness, nausea from flux fumes
Protective measurements : Flux concentration in air, Measurement of blood lead content.
Medical Conditions : Chemical hypersensitivity, pre-existing conditions of the lungs

## 5. Fire and Explosion Hazard Data

Extinguishing Media : CO <sub>2</sub> Chemical powder, Bubble type Extinguisher, Water
The hazard when extinguishing : Flux in cored wire solder may ignite when the solder melts in a fire.
Special firefighting procedures : Wear self-contained breathing apparatus if this material is in the vicinity of a fire.
Protective measures for firefighting man : None recommended
Hazard rating : Health: 1 Flammability: 2 Reactivity: 0

## 6. Procedures if material is spilled or released

Precautions for person : Wash hands with soap and water after handling solder wire. Do not breathe the fumes during sol
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Precautions for environment : Solder can be reclaimed
Steps to be taken if material is spilled or released : Not applicable, material is metal wire.

### 7. Precautions to be taken in handling and storage

Handling : Avoid breathing smoke/fumes generated during soldering. Wash hands after handling solder metal.
Storage : Store in low humidity area to minimize tarnishing.

### 8. Protective measures against exposure

Material engineering control : Provide adequate exhaust ventilation (general and/or local) if necessary to meet exposure requirements. Local ventilation is preferred to minimize dispersion of smoke/fumes into the work area.		
Control parameters		
Average allowable concentration when 8 hours running TWA	Average allowable concentration when Short-time running STEL	The highest concentration allowed CEILING
Sn : 2.0mg/m <sup>3</sup> ; Pb : 0.05mg/m <sup>3</sup>	Sn : 2mg/m <sup>3</sup> ; Pb : 0.15mg/m <sup>3</sup>	Sn : 58.2mg/m <sup>3</sup> ; Pb : 38.8mg/m <sup>3</sup>
Protective Measures		
Respiratory Protection : When ventilation is not sufficient to remove fumes from the breathing zone, a safety approved respirator should be worn.		
Protective gloves : Usually not required		
Eye protection : When soldering, use goggles or face shield		
Other protective clothing and equipment : None recommended		
Hygienic work practices : Wash hands thoroughly after handling chemicals or solder.		

### 9. Physical and Chemical Data

Material state : Solid	Appearance : Silver-gray metal wire
Color : Silver-gray metal wire	Odor : None
pH : Not applicable	Melting point : 183°C (361°F)
Decomposition temperature : None	Flash Point : Not applicable
Auto-ignition temperature : Not applicable	Exposure limit : Not determined
Vapor pressure : Not applicable	Vapor density : Not applicable
Specific gravity water : 1	Solubility : None in water

### 10. Stability and Reactivity

Stability : Stable under all conditions
Probably hazard effect under special condition : None known
Condition to avoid : Heat, Flame, Wet and soaking
Materials to avoid : Strong acids, strong oxidizing materials
Hazardous decomposition products : When heated to soldering temperatures, the fumes may contain rosin and thermal degradation products such as aliphatic aldehydes and acids.

### 11. Ecological Data

Probable effect to environment : Long term degradation products are possible.
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## 12. Waste Disposal

Waste disposal method : Solder metal can be recycled by reclamation.

## 13. Delivery Information

International delivery regulation : LATA-Dangerous Goods Regulation, Not restricted

UN code : Not regulated

Domestic delivery regulation : None known

Special delivery method and precaution : None known

## 14. Law and Regulation

Conform to regulation : 1. Labor Safety & Sanitary Device Regulation

2. Standards for the density of hazardous materials in labor working environment

3. Identification rules for hazardous and harmful materials

4. Standards for waste disposal treatment and facility requirement

5. Road traffic safety rules

## 15. Additional Information

Reference : MSDS database, CCINFO CD 98-2, NIOSH/OSHA, Occupational Health  
Guidelines for Chemical Hazards, 1981

Prepared by : Tony Yang

Date : 15th Feb 2001

Remark : These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.



# MSDS

## MATERIAL SAFETY DATA SHEET

### PART I *What is the material and what do I need to know in an emergency?*

#### 1. PRODUCT IDENTIFICATION

**TRADE NAME (AS LABELED):** HOMAX STEEL WOOL

**PRODUCT CODES:** 1012159, 10120000, 10121000, 1021100, 10121110, 10121111, 10121112, 10121113, 10121114, 10121152, 10121153, 10121154, 10121155, 10121156, 10121157, 10121158, 10121160, 10121160, 10121161, 10121162, 10121163, 10121164, 10121165, 10121166, 105040, 105041, 105042, 105043, 105044, 105045, 105046, 106600-06, 106600-10-06, 106601-06, 106602-06, 106603-06, 106604-06, 106605-06, 106606-06, 106606-10-06, 106607-06, 106608-06, 106608-10-06

**PRODUCT USE:** Abrasive

**SUPPLIER/MANUFACTURER'S NAME:** HOMAX PRODUCTS, INC.

**ADDRESS:** 200 Westerly Rd.  
Bellingham, WA 98226

**CHEMTREC EMERGENCY NO.:** 1-800-424-9300 (United States)  
1-703-527-3887 (International Collect)

**BUSINESS PHONE:** 1-800-729-9029

**DATE OF PREPARATION:** April, 2011

Note: This product is sold to consumers for household use. This MSDS has been developed to address safety concerns affecting those individuals working in warehouses and other places where large numbers of these containers are stored, as well as those affecting potential users of this product in industrial/occupational settings. All pertinent health, safety and environmental information have been presented in this document, per the requirements of the US Federal OSHA Hazard Communication Standard (29 CFR 1910.1200) and Canadian WHMIS. The language contained in this MSDS treats steel wool as an article; defined by OSHA (29 CFR 1910.1200).



## 2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	% w/w	EXPOSURE LIMITS IN AIR						
			ACGIH-TLV		OSHA-PEL		NIOSH-REL		
			TWA mg/m <sup>3</sup>	STEL mg/m <sup>3</sup>	TWA mg/m <sup>3</sup>	STEL mg/m <sup>3</sup>	TWA mg/m <sup>3</sup>	STEL mg/m <sup>3</sup>	IDLH ppm
Iron	7439-89-6	60 - 100	5	NE	10	NE	5	NE	2500
Water and ingredients present in concentrations of less than 1% (or less than 0.1% if carcinogens)		Balance	The ingredients in the balance of this product do not contribute significant hazards beyond those described in this document. All pertinent health, safety and environmental information has been presented, per the requirements of the US Federal OSHA Hazard Communication Standard (29 CFR 1910.1200) and Canadian WHMIS.						

NE = Not Established. Exposure limits in the air are based on the Iron oxide. See Section 16 for Definitions of Terms Used.

**NOTE (1):** ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-1998 format. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

## 3. HAZARD IDENTIFICATION

### EMERGENCY OVERVIEW:

**PHYSICAL DESCRIPTION:** This product is a fibrous, metallic-gray pad.

**HEALTH HAZARD:** Dust or particles produced by use of this product may cause mild irritation to the eyes and respiratory system.

**FIRE HAZARD:** Direct exposure to an ignition source this product can ignite, and may be difficult to extinguish. **REACTIVITY HAZARD:** This product is stable in dry air, but oxidizes in moist air forming rust. Decomposes when heated.

**ENVIRONMENTAL HAZARD:** This product does not normally present a significant hazard to aquatic or terrestrial life.

**SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE:** The most significant route of occupational

overexposure is contact with skin and eyes. Overexposure is not anticipated to be a significant occurrence in occupational use. The symptoms of overexposure to dust or particles produced by use of this product are as follows:

### 3. HAZARD IDENTIFICATION - Continued

**INHALATION:** Overexposure can cause irritation to the respiratory tract. Symptoms may include coughing and shortness of breath.

**CONTACT WITH SKIN or EYES:** If exposure to dust or particles of steel wool occurs to the eye, it may cause irritation, redness and pain. Deposition of iron particles can leave a “rust ring” or brownish stain on the cornea.

**SKIN ABSORPTION:** This material is not reported to be absorbed through intact skin.

**INGESTION:** Extremely large oral dosages may produce gastrointestinal disturbances. An overdose of iron may cause vomiting, abdominal pain, and shock. In severe cases, toxicity may progress and develop into an increase in acidity in the blood, bluish skin discoloration, fever, and liver damage.

**INJECTION:** Not applicable.

#### Hazardous Materials Identification System (HMIS)

Health	1
Flammability	2
Physical Hazard	1
Protective Equipment	B

See Section 16 for Definition of Ratings

#### HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms.

**ACUTE:** Depending on the duration of contact, overexposures to dust or particles of steel wool can mildly to moderately irritate the eyes and gastrointestinal tract.

**CHRONIC:** Long-term ingestion of greater than 50 to 100 mg of iron per day may result in iron deposition in body tissues. Repeated iron ingestion can produce cardiac toxicity.

**TARGET ORGANS:** Acute: Eyes, gastrointestinal disturbances Chronic: Eyes, liver, gastrointestinal tract, respiratory system, and cardiovascular system.

## PART II What should I do if a hazardous situation occurs?

### 4. FIRST-AID MEASURES

Victims of chemical exposure must be taken for medical attention if any adverse effects occur.

Take a copy of label and MSDS to physician or health professional with victim.

**SKIN EXPOSURE:** If this product contaminates the skin, immediately begin decontamination with running water. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Victim must seek immediate medical attention if any adverse exposure symptoms develop.

**EYE EXPOSURE:** If this product enters the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15

### 5. FIRE-FIGHTING MEASURES

**FLASH POINT** 482 F (250 C)

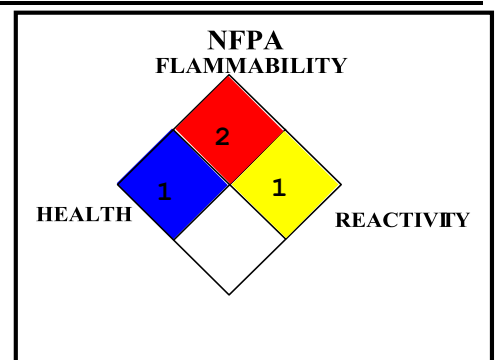
**AUTOIGNITION TEMPERATURE** Not applicable.

**FLAMMABLE LIMITS (in air by volume; %)**

Lower Not applicable Upper Not applicable.

**FIRE EXTINGUISHING MATERIALS** Use class D extinguishing material.

Water Spray NO Carbon Dioxide NO Foam NO



minutes. Victim must seek medical attention.

**INHALATION:** If vapors, mists, or sprays of this product are inhaled, remove victim to fresh air. Victim must seek immediate medical attention if any adverse exposure symptoms develop. If necessary, use artificial respiration to support vital functions.

**INGESTION:** If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. DO NOT INDUCE VOMITING, unless directed by medical personnel. Have victim rinse mouth with water, if conscious. Never induce vomiting or give a diluent (e.g., water) to someone who is unconscious, having convulsions, or unable to swallow. If contaminated individual is convulsing, maintain an open airway and obtain immediate medical attention.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** Persons with pre-existing skin disorders, eye problems, impaired liver, kidney, respiratory or lymphoid system function can be more susceptible to health effects associated with overexposures to this product.

**RECOMMENDATIONS TO PHYSICIANS:** Treat symptoms and eliminate overexposure.

Dry Chemical: NO    Halon: NO    USE: Powdered graphite, salt or limestone.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** High levels of dust may be an OTHER explosion hazard. When involved in a fire, this material may decompose generating dusts, irritating fumes and toxic See Section 16 for definitions of ratings gases (e.g., Iron oxides).

Explosion Sensitivity to Mechanical Impact: Not sensitive under normal conditions.

Explosion Sensitivity to Static Discharge: Not sensitive under normal conditions.

**SPECIAL FIRE-FIGHTING PROCEDURES:** Structural firefighters must wear NIOSH-approved Self-Contained Breathing Apparatus and full protective equipment with full face-piece operated in the pressure demand mode. Incipient fire responders should wear eye protection. Move containers from fire area if it can be done without risk to personnel. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

---

## 6. ACCIDENTAL RELEASE MEASURES

**SPILL AND LEAK RESPONSE:** For clean-up of large quantities of dusts and particles, dampen material prior to clean-up to avoid airborne particulates and wear gloves when handling.

**RESPONSE TO INCIDENTAL RELEASES:** Not applicable.

**RESPONSE TO NON-INCIDENTAL RELEASES:** Not applicable.

**RESPONSE EQUIPMENT AND PROCEDURES:** Use personal protection equipment (PPE) appropriate for industrial location.

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### ***PART III How can I prevent hazardous situations from occurring?***

## 7. HANDLING and STORAGE

**WORK PRACTICES AND HYGIENE PRACTICES:** As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash the pad thoroughly after using this product, as remnants remaining on pad may react with steel wool. Do not eat or drink while using this material. Avoid generating dusts and particulates of this product. Use with adequate ventilation.

**STORAGE AND HANDLING PRACTICES:** Store product in a cool, dry location, away from direct sources of intense heat. Store away from incompatible materials (see Section 10, Stability and Reactivity).

**PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT:**  
Not applicable.

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## 8. EXPOSURE CONTROLS - PERSONAL PROTECTION

**VENTILATION AND ENGINEERING CONTROLS:** Use with adequate ventilation to ensure exposure levels are maintained below the limits provided in Section 2 (Composition and Information on Ingredients).

**RESPIRATORY PROTECTION:** None needed under normal conditions of use. Use NIOSH approved respirators if ventilation is inadequate to control dusts, mists, fumes or vapors. Maintain airborne contaminate concentrations below guidelines listed in Section 2 (Composition and Information on Ingredients). Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres use of a full-face-piece pressure/demand SCBA or a full face-piece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (29 CFR 1910.134).

**EYE PROTECTION:** For consumer use, wearing eye protection (such as splash goggles) is advisable. However, for specific industrial applications, enhanced eye protection can be necessary. Use approved safety goggles or safety glasses, as described in OSHA 29 CFR 1910.133. If necessary, refer to U.S. OSHA 29 CFR 1910.133, or appropriate Canadian standards.

**HAND PROTECTION:** For consumer use, wearing protective gloves is recommended. For specific industrial applications, wear chemical impervious gloves (e.g., Neoprene or Nitrile). If necessary, refer to U.S. OSHA 29 CFR 1910.138 or the appropriate standards of Canada.

**BODY PROTECTION:** For consumer use, no specific body protection is normally needed. For specific industrial applications, body protection is not normally needed. Use body protection appropriate for task (e.g., Tyvek suit, rubber apron). If a hazard of injury to the feet exists due to falling objects, rolling objects, where objects can pierce the soles of the feet or where employee's feet can be exposed to electrical hazards, use foot protection, as described in U.S. OSHA 29 CFR 1910.136.

**HMIS PERSONAL PROTECTIVE EQUIPMENT RATING:** Industrial Use situations: B; Safety glasses and gloves.

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## 9. PHYSICAL and CHEMICAL PROPERTIES

**RELATIVE VAPOR DENSITY (air = 1):** Not available. **EVAPORATION RATE (BuAc =1):**  
Negligible.

**SPECIFIC GRAVITY:** 7.86 @ 20 °C

**MELTING/FREEZING POINT:** 1535 °F (2795 °C)

**SOLUBILITY IN WATER:** Insoluble, can react with water. **BOILING POINT:**  
2795 °F (4982 °C) **VAPOR PRESSURE, mm Hg @ 1787°C:** 1 **pH:**  
Not available.

**ODOR THRESHOLD:** Negligible

**COATING V.O.C.:** Negligible.

**COEFFICIENT OF OIL/WATER DISTRIBUTION (PARTITION COEFFICIENT):** Negligible.

**APPEARANCE, ODOR AND COLOR:** This product is a fibrous, metallic-gray pad.

**HOW TO DETECT THIS SUBSTANCE (warning properties):** The appearance of this product will act as a warning in the event of an accidental release.

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## 10. STABILITY and REACTIVITY

**STABILITY:** Decomposes when heated. Stable in dry air; oxidizes in moist air, forming rust.

**DECOMPOSITION PRODUCTS:** Thermal decomposition of this product may generate dusts, irritating fumes, and toxic gases (e.g., Iron oxides).

**MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE:** This material is not compatible with strong oxidizers, acids, hydrogen peroxide, nitrogen dioxide. May react with acetaldehyde, ammonium peroxydisulfate, chloroformamidinium, chloric acid, ammonium nitrate, halogens, dinitrogen tetraoxide, nitril fluoride, polystyrene, sodium acetylide, potassium dichromate, peroxyformic acid, nitril fluoride or chlorine trifluoride.

**HAZARDOUS POLYMERIZATION:** Will not occur.

**CONDITIONS TO AVOID:** Avoid heat, flame, ignition sources, dusting and incompatible chemicals.

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### **PART IV *Is there any other useful information about this material?***

## 11. TOXICOLOGICAL INFORMATION

**TOXICITY DATA:** There are currently no toxicity data available for this product; the following toxicology information is available for components greater than 1% in concentration.

**The following data are available for iron:**

Intratracheal-Rat TDLo: 450 mg/kg/15W-I: Equivocal tumorigenic agent

Oral-cld TDLo: 77 mg/kg: BAH, Gastrointestinal tract effects, Blood effects

Oral-Rat LD<sub>50</sub>: 30 g/kg

Intraperitoneal-Rabbit, adult LDLo: 20 mg/kg

**SUSPECTED CANCER AGENT:** The following table summarizes the carcinogenicity listing for the components of this product. "NO" indicates that the substance is not considered to be, or suspected to be, a carcinogen by the listed agency.

CHEMICAL	IARC	NTP	NIOSH	OSHA	ACGIH	PROP 65
Iron	3	NO	NO	NO	A4	NO

**Note (1): See section 16 for definition of ratings.**

**IRRITANCY OF PRODUCT:** This product can be mildly irritating to tissue.

**SENSITIZATION TO THE PRODUCT:** The components of this product are not reported to be sensitizers.

**TOXICOLOGICAL SYNERGISTIC PRODUCTS:** None known.

**REPRODUCTIVE TOXICITY INFORMATION:** Listed below is information concerning the effects of this product and its components on the human reproductive system.

**Mutagenicity:** This product is not expected to produce mutagenic effects in humans when used as instructed.

**Embryotoxicity:** This product is not expected to produce embryotoxic effects in humans when used as instructed.

**Teratogenicity:** This product is not reported to cause teratogenic effects in humans when used as instructed.

**Reproductive Toxicity:** This product is not reported to cause reproductive effects in humans when used as instructed.

*A **mutagen** is a chemical that causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An **embryotoxin** is a chemical that causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A **teratogen** is a chemical that causes damage to a developing fetus, but the damage*

does not propagate across generational lines. A reproductive toxin is any substance that interferes in any way with the reproductive process.

**BIOLOGICAL EXPOSURES INDICES (BEIs)**: There currently is no BEI established for any component of this product.

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## 12. ECOLOGICAL INFORMATION

**ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.**

**ENVIRONMENTAL STABILITY**: The following environmental data is available for components of this product:

No data are available for the component of this product.

**EFFECT OF MATERIAL ON PLANTS or ANIMALS**: This product is not anticipated to cause significant effects on terrestrial plants or animals if released in small, consumer-sized volumes. This product may be harmful to animal life if large volumes of it are released into the environment. Refer to Section 11 (Toxicological Information) for specific animal data.

**EFFECT OF CHEMICAL ON AQUATIC LIFE**: This product is not anticipated to cause significant effects on aquatic plants or animals if released in small, consumer-sized volumes. This product may be harmful to contaminated aquatic life (especially if large volumes of it are released into an aquatic environment). The following aquatic toxicity data is available for components of this product: Not available.

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## 13. DISPOSAL CONSIDERATIONS

**PREPARING WASTES FOR DISPOSAL**: **Consumer Waste**: Dispose of according to pertinent state and local household waste and requirements. **Industrial Use**: Waste disposal must be in accordance with appropriate U.S. Federal, State, and local regulations or with regulations of Canada.

**EPA WASTE NUMBER**: Wastes consisting only of this product has no RCRA code; however, the specific RCRA codes depend on the exact nature of the discarded material.

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## 14. TRANSPORTATION INFORMATION

**THIS PRODUCT IS NOT HAZARDOUS PER 49 CFR 172.101, THE U.S. DEPARTMENT OF TRANSPORTATION.**

**PROPER SHIPPING NAME**: Not regulated.

**HAZARD CLASS NUMBER and DESCRIPTION**: Not regulated.

**UN IDENTIFICATION NUMBER**: Not regulated.

**DOT LABEL(S) REQUIRED**: Not regulated.

**PACKAGING GROUP**: Not regulated.

**NORTH AMERICAN RESPONSE GUIDEBOOK NUMBER (2000)**: Not regulated.

**MARINE POLLUTANT**: No component is designated as a DOT Marine Pollutant.

**TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS**: This product is not considered as dangerous goods, per Transport Canada regulations.

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## 15. REGULATORY INFORMATION

**ADDITIONAL U.S. REGULATIONS:**

**EPA REPORTING REQUIREMENTS:** The following reporting requirements are applicable to components of this product:

CHEMICAL	SECTION 302 (40 CFR 355, Appendix A)	SECTION 304 (40 CFR Table 302.4)	SECTION 313 (40 CFR 372.65)
Iron	NO	NO	NO

**U.S. SARA SECTION 311/312 FOR PRODUCT:** Acute health effects; chronic health effects.

**U.S. TSCA INVENTORY STATUS:** The components of this product are listed on the TSCA Inventory.

**OTHER U.S. FEDERAL REGULATIONS:** Not applicable.

**CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65):** This material is not found on either the Proposition 65 Carcinogen List or the Adverse Reproductive Effects List.

**ANSI LABELING (Z129.1):** CAUTION! MAY BE HARMFUL IF SWALLOWED OR INHALED. MAY CAUSE IRRITATION TO EYES AND RESPIRATORY TRACT.

**ANSI LABEL PRECAUTIONS:** Keep away from heat, sparks and flame. Avoid contact with eyes. Avoid breathing dust.

Do not take internally. Avoid contact with skin and clothing. Wash thoroughly after handling.

**ENVIRONMENTAL HAZARDS:** Do not discharge effluent containing this product into streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA.

**ADDITIONAL CANADIAN REGULATIONS:**

**CANADIAN DSL/NDL INVENTORY STATUS:**The components of this product are listed on the DSL Inventory.

**CANADIAN WHMIS SYMBOLS:** Uncontrolled product according to WHMIS classification criteria.

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

## 16. OTHER INFORMATION

**Disclaimer:** As the handling and use of products under user's conditions are beyond our control, no warranty, expressed or implied, including, but not limited to merchantability or fitness for a particular use, is made concerning this product. The user assumes all risk of use or handling whether or not in accordance with any directions or suggestions of the supplier. Seller shall not be liable to purchaser or any other person for loss or damages directly or indirectly arising from the use of our products, from breach of any warranty or from any other cause, the exclusive remedy against the seller being to require replacement or repair of defective goods.

## DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these, which are commonly used, include the following:

**CAS #:** This is the Chemical Abstract Service Number that uniquely identifies each compound.

**ACGIH** - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits.

**TLV** - Threshold Limit Value - an airborne concentration of a substance that represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed



without adverse effect. The duration must be considered, including the 8-hour Time Weighted Average (**TWA**), the 15-minute Short Term Exposure Limit, and the instantaneous Ceiling Level (**C**). Skin absorption effects must also be considered. **OSHA** - U.S. Occupational Safety and Health Administration.

**PEL** - Permissible Exposure Limit - This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 3533835351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL that was vacated by Court Order.

**IDLH** - Immediately Dangerous to Life and Health - This level represents a concentration from which one can escape within 30-minutes without suffering escapepreventing or permanent injury. **The DFG - MAK** is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (**OSHA**). NIOSH issues exposure guidelines called **Recommended Exposure Levels (RELs)**. When no exposure guidelines are established, an entry of **NE** is made for reference.

#### **HAZARD RATINGS:**

#### **HAZARDOUS MATERIALS IDENTIFICATION**

**SYSTEM:** Health Hazard: **0** (minimal acute or chronic exposure hazard); **1** (slight acute or chronic exposure hazard); **2** (moderate acute or significant chronic exposure hazard); **3** (severe acute exposure hazard; onetime overexposure can cause permanent injury and may be fatal); **4** (extreme acute exposure hazard; onetime overexposure can be fatal). Flammability Hazard: **0** (minimal hazard); **1** (materials that require substantial pre-heating before burning); **2** (combustible liquid or solids; liquids with a flash point of 38-93°C [100-200°F]); **3** (Class IB and IC flammable liquids with flash points below 38°C [100°F]); **4** (Class IA flammable liquids with flash points below 23°C [73°F] and boiling points below 38°C [100°F]). Reactivity Hazard: **0** (normally stable); **1** (material that can become

unstable at elevated temperatures or which can react slightly with water); **2** (materials that are unstable but do not detonate or which can react violently with water); **3** (materials that can detonate when initiated or which can react explosively with water); **4** (materials that can detonate at normal temperatures or pressures).

#### **NATIONAL FIRE PROTECTION ASSOCIATION:**

Health Hazard: **0** (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials); **1** (materials that on exposure under fire conditions could cause irritation or minor residual injury); **2** (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury); **3** (materials that can on short exposure could cause serious temporary or residual injury); **4** (materials that under very short exposure could cause death or major residual injury). Flammability Hazard and Reactivity Hazard: Refer to definitions for "Hazardous Materials Identification System".

#### **FLAMMABILITY LIMITS IN AIR:**

Much of the information related to fire and explosion is derived from the National Fire Protection Association (**NFPA**). Flash Point - Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. Autoignition Temperature: The minimum temperature required to initiate combustion in air with no other source of ignition. LEL - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. UEL - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

#### **TOXICOLOGICAL INFORMATION:**

Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: **LD<sub>50</sub>** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC<sub>50</sub>** - Lethal Concentration (gases) which kills 50% of the exposed animals; **ppm** concentration expressed in parts of material per million parts of air or water; **mg/m<sup>3</sup>** concentration expressed in weight of substance

per volume of air; **mg/kg** quantity of material, by weight, administered to a test subject, based on their body weight in kg. Other measures of toxicity include **TDLo**, the lowest dose to cause a symptom and **TCLo** the lowest concentration to cause a symptom; **TDo**, **LDLo**, **LDo**, **TC**, **TCo**, **LCLo**, and **LCo**, the lowest dose (or concentration) to cause lethal or toxic effects. **BEI** - Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV.

Ecological Information: **EC** is the effect concentration in water. Data from several sources are used to evaluate the cancer-causing potential of the material. The sources and ratings are: **IARC** - the International Agency for Research on Cancer; 1 = Carcinogenic to humans, 2A, 2B = Probably carcinogenic to humans, 3 = Unclassifiable as to carcinogenicity in humans, and 4 = Probably not carcinogenic to humans. **NTP** - the National Toxicology Program; K = Known to be a human carcinogen, and R = Reasonably anticipated to be a human carcinogen. **RTECS** - the Registry of Toxic Effects of Chemical Substances. **OSHA** - Occupational Safety and Health Administration and **CAL/OSHA** - California's subunit of the Occupational Safety and Health Administration; Ca = Carcinogen defined with no further categorization. **ACGIH** - American Conference of Governmental Industrial Hygienists; A1 = Confirmed human carcinogen, A2 = Suspected human carcinogen, A3 = Confirmed animal carcinogen with unknown relevance to humans, A4 = Not classifiable as a human carcinogen, and A5 = Not suspected as a human carcinogen. **NIOSH** - U.S. National Institute for Occupational Safety and Health; Ca = Potential occupational carcinogen, with no further categorization. **EPA** - U.S. Environmental Protection; A = Human carcinogen, B = Probable human carcinogen, C = Possible human carcinogen, D = Not classifiable as to human carcinogenicity, E = Evidence of Noncarcinogenicity for humans, K = Known human

carcinogen, L = Likely to produce cancer in humans, CBD = Cannot be determined, NL = Not likely to be carcinogenic in humans, and I = Data are inadequate for an assessment of human carcinogenic potential.

**REGULATORY INFORMATION:**

This section explains the impact of various laws and regulations on the material. **EPA** is the U.S. Environmental Protection Agency.

**WHMIS** is the

Canadian Workplace Hazardous Materials Information System. **DOT** and **TC** are the U.S. Department of

Transportation and the Transport Canada, respectively.

Superfund Amendments and Reauthorization Act

**(SARA)**; the Canadian Domestic/Non-Domestic

Substances List **(DSL/NDSL)**; the U.S. Toxic

Substance Control Act **(TSCA)**; Marine

Pollutant status according to the **DOT**; the

Comprehensive Environmental Response,

Compensation, and Liability Act **(CERCLA or**

**Superfund)**; and various state regulations.

This section also includes information on the

precautionary warnings that appear on a

material's industrial package label.



HEALTH

1

FLAMMABILITY

1 PERSONAL PRO

**SECTION I – Product and Company Identification**

<b>Identity</b> (As Used on Label and List) EPA Reg. No. N/A <b>Sun X SPF 30 Sunscreen Broad Spectrum Bulk</b>	
<b>Distributed By:</b> CoreTex Products, Inc.	<b>Emergency Telephone Number:</b> 800-255-3924 - 24 Hours
<b>Address</b> (Number, Street, City, State, and ZIP Code) 1850 Sunnyside Ct., Bakersfield, CA. 93308	<b>Telephone Number for Information:</b> 877-684-5774

**Formula No.:** Cor05

Generated: 08/06/14, Revision: A2 , Supersedes Revision A1 , Date Created 08/02/ 12

**SECTION II - Hazardous Ingredients/Identity Information**

<b>Hazardous Components</b> (Specific Chemical Identity, Common Name(s))	<b>CAS No.</b>	<b>OSHA PEL</b>	<b>ACGIH-TLV</b>	<b>Other Limits Recommended</b>	<b>% (Opt.)</b>
N/A	N/A	N/A	N/A	N/A	N/A

TSCA: All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

Any substance listed as hazardous by the States of California, Florida, Illinois, Michigan, New Jersey, Ohio, Pennsylvania or Texas is described above if known present in regulated concentrations.

**SECTION III - Physical/Chemical Characteristics**

<b>Boiling Point</b>	N/A	<b>Specific Gravity (H<sub>2</sub>O = 1) @ 25°C</b>	0.984-1.056
<b>Vapor Pressure (mm-Hg @ 70° F)</b>	N/A	<b>Melting Point</b>	N/A
<b>Vapor Density (AIR = 1)</b>	N/A	<b>Evaporation Rate (Butyl Acetate = 1)</b>	N/A
<b>Solubility in Water</b>	In-Soluble	<b>pH @ 25°C</b>	6.50 – 7.50

**Appearance and Odor –**  
Glossy Lotion, Off-White to Light Yellow. Characteristic odor.

**SECTION IV - Fire and Explosion Hazard**

<b>Flash Point (Method Used)</b> Not Applicable	<b>Flammable Limits</b> No Data	<b>LEL</b> No Data	<b>UEL</b> No Data
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**Extinguishing Media -**

Will not support combustion. All recognized methods acceptable.

**Special Fire Fighting Procedures -** Keep containers cool and vapors down with water spray. Prevent runoff from entering sewers and public waterways. Wear SCBA in chemical fires.

**Unusual Fire and Explosion Hazards -** Will not support combustion.

**SECTION V – Stability and Reactivity**

<b>Stability</b>	<b>Unstable</b>		<b>Conditions to Avoid -</b> Heat, sparks, open flames
	<b>Stable</b>	<b>X</b>	

**Incompatibility (Materials to Avoid) -** None known

**Hazardous Decomposition or Byproducts -**  
None known

<b>Hazardous Polymerization</b>	<b>May Occur</b>		<b>Conditions to Avoid -</b> None known
	<b>Will Not Occur</b>	<b>X</b>	

**SECTION VI - Health Hazard**

<b>Route(s) of Entry</b>	<b>Eyes?</b> No	<b>Inhalation?</b> No	<b>Skin?</b> No	<b>Ingestion?</b> Yes
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**Health Hazards (Acute and Chronic) -**

**Caution:** Not generally considered an occupational hazard

**Signs and Symptoms of Exposure -** Not determined

**Medical Conditions Generally Aggravated by Exposure -** Not determined

**SECTION VII – First Aid Measures**

**Emergency and First Aid Procedures:**

**Eyes** – Customary use. If irritation develops, call a physician. **Skin** - Rinse skin with plenty of water. If irritation develops, call a physician. **Inhalation** – Move person to fresh air. If breathing has stopped, qualified personnel

should administer artificial respiration. **Ingestion** – Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse out mouth and have patient drink several glasses of water. Call a physician.

## SECTION VIII - Precautions for Safe Handling and Use

### Steps to be Taken in Case Material is Released or Spilled -

Caution, slip hazard. Wipe up small spills with an absorbent material. For large spills, pick up with a vacuum or an absorbent material. Place waste in appropriate container for disposal.

**Waste Disposal Method** - Consult local, state, and federal regulations. Do not reuse empty container.

**Precautions to be Taken in Handling and Storing** – In the event of accidental contact with eyes, irrigate with copious amounts of water to exposed area promptly. Store in a cool (under 120 ° F) dry location away from heat. Use with adequate ventilation.

**Other Precautions** - Follow label directions carefully. Keep out of reach of children. Keep container tightly sealed when not in use.

Do not contaminate water, food or feed by use or storage. Do not swallow. Avoid inhaling mist and vapors.

## SECTION IX - Control Measures

**Respiratory Protection (Specify Type)** - Not usually necessary. Use with adequate ventilation. Use NIOSH/MSHA approved respirator if PELs or TLVs are exceeded.

<b>Ventilation</b>	<b>Local Exhaust</b>	Not usually needed	<b>Special</b>	None
	<b>Mechanical (General)</b>	Yes	<b>Other</b>	None

**Protective Gloves** -

splash protection. Not usually necessary.

**Eye Protection** -

Not usually necessary. Wear safety glasses for

**Other Protective Clothing or Equipment** -

Not usually necessary. Avoid direct contact.

**Work/Hygienic Practices** -

Normal. Wash hands after use and before eating, drinking, smoking etc.

## SECTION X – Toxicology Information

No Data Available.

<b>Carcinogenicity:</b> No Data Available.	<b>NTP?</b> No	<b>IARC Monographs?</b> No	<b>OSHA Regulated?</b> No
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## SECTION XI – Ecological Information

No Data Available.

## SECTION XII – Disposal Condition

Dispose of in accordance with local, State and Federal regulations.

**SECTION XIII – Transport Information**

**Land Transport (US DOT)**

This material is not subject to the transportation regulations of DOT, ICAO, IMO, and the ADR.

**SECTION XIV – Regulatory Information**

No Data Available.

**SECTION XV – Other Information**

Do not use if tamper resistant seal has been open

**Company Policy or Disclaimer**

The information and data are offered in good faith as typical values and not as a product specification. We extend No warranty, either expressed or implied, is hereby made. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable. All materials may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

**NO INFORMATION BEYOND THIS POINT**

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8

# 1. PRODUCT AND COMPANY IDENTIFICATION

**GENERAL USE:** Cyanoacrylate adhesive product. **PRODUCT DESCRIPTION:**

## **MANUFACTURER**

Pacer Technology  
3281 E. Guasti Rd., Suite 260  
Ontario, CA 91761

**Emergency Contact:** CHEMTREC

**Emergency Phone:** 800-424-9300

**Alternate Emergency Phone:** 703-527-3887

**Product Stewardship:** 909-987-0550

# 2. HAZARDS IDENTIFICATION

## **GHS**

**CLAS**

**SIFIC**

**ATIO**

**NS**

**Healt**

**h:**

Eye Irritation, Category 2A  
Skin Irritation, Category 2  
Target Organ Toxicity (Single exposure), Category 3  
Skin Sensitization, Category 1

## **GHS LABEL ELEMENTS**



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**SIGNAL WORD:** WARNING

**HAZARD STATEMENTS**

- H315: Causes skin irritation.
- H319: Causes serious eye irritation.
- H317: May cause an allergic skin reaction.
- H335: May cause respiratory irritation.

**PRECAUTIONARY STATEMENT(S)**

**Prevention:**

- P264: Wash skin and hands thoroughly after handling.
- P280: Wear protective gloves/protective clothing/eye protection/face protection.
- P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
- P271: Use only outdoors or in a well-ventilated area.
- P210: Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

**Response:**

- P370: In case of fire: Use dry chemical, foam or carbon dioxide to extinguish.
- 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.
- P313: Get medical advice/attention.
- P302+P352: IF ON SKIN: Wash with plenty of soap and water.
- P333+P313: If skin irritation or rash occurs: Get medical advice/attention.
- P362: Take off contaminated clothing and wash before reuse.
- P304+P340: IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. P312: Call a POISON CENTER or doctor/physician if you feel unwell.

**Storage:**

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

**Disposal:**

7944L5O1: Dispose of in a manner consistent with federal, state, and local regulations.

**3. COMPOSITION / INFORMATION ON INGREDIENTS**

Chemical Name	Wt.%	CA
ETHYL-2-CYANOACRYLATE	85 - 100	70850
Polymethyl methacrylate	10 - 30	90117

**4. FIRST AID MEASURES**

**EYES:** Immediately flush eyes with plenty of water for at least 15 minutes. Get immediate medical attention.

**SKIN:** Wash with soap and water. Peel or roll skin apart.

**INGESTION:** Peel or roll skin apart. Adhesive becomes solid in contact with saliva and may adhere to inside of mouth. Saliva will lift adhesive in 1-2 days. Avoid swallowing solid adhesive after detachment. Not a toxic product.

**INHALATION:** Remove to fresh air. Prolonged or repeated elevated exposure may cause allergic reactions with asthma-like symptoms in sensitive individuals.

**SIGNS AND SYMPTOMS OF OVEREXPOSURE**

**EYES:** Causes serious eye irritation. Will bond eyelids. Will cause excessive tearing.

**SKIN:** Bonds skin in seconds. May cause skin irritation. May cause sensitization by skin contact. Cyanoacrylates generate heat on polymerization, so very large amounts will burn the skin.

**INGESTION:** Adhesive becomes solid in contact with saliva and may adhere to inside of mouth. Saliva will lift adhesive in 1-2 days. Not a toxic product.

**INHALATION:** Prolonged or excessive inhalation may cause respiratory tract irritation.

**ACUTE TOXICITY:** Avoid exposure to vapor concentration in confined areas.

**CHRONIC EFFECTS:** Frequent or prolonged contact may irritate the skin and cause a skin rash (dermatitis).

02/10/2015

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**5. FIRE FIGHTING MEASURES**

**FLAMMABLE CLASS:** Non-flammable.

**GENERAL HAZARD:** Combustible liquid and vapor. Product polymerized to solid by water.

**EXTINGUISHING MEDIA:** Use dry chemical extinguisher or flush with large amounts of water.

**FIRE FIGHTING EQUIPMENT:** As in any fire, wear self-contained breathing apparatus pressure-demand, (MSHA/NIOSH approved or equivalent) and full protective gear.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Combustible by-products of carbon monoxide/dioxide.

## 6. ACCIDENTAL RELEASE MEASURES

**SMALL SPILL:** Polymerize with water. Solid material may be scraped from surface.

**LARGE SPILL:** Polymerize with water. Increase ventilation to area. Solid material may be scraped from surface.

### ENVIRONMENTA

L

### PRECAUTIONS

#### WATER SPILL:

None known.

## 7. HANDLING AND STORAGE

**GENERAL PROCEDURES:** Use with adequate ventilation. Avoid contact with eyes, skin and clothing.

**HANDLING:** Avoid breathing (dust, vapor, mist, gas). Avoid contact with skin, eyes and clothing. Keep container closed when not in use.

**STORAGE:** Store in a cool place in original container and protect from sunlight. Keep away from sources of ignition.

**STORAGE TEMPERATURE:** Ideal storage: 41-50F (5-10C)

**SHELF LIFE:** One year from the date of shipment from Pacer Technology, unless otherwise noted.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE GUIDELINES

OSHA HAZARDOUS COMPONENTS (29 CFR1910.1200)							
		EXPOSURE LIMITS					
		OSHA PEL		ACGIH TLV		SupplierO	
Chemical Name		ppm	mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>	ppm	m
ETHYL-2-CYANOACRYLATE	TWA	[1]	[1]	0.2	1.0	0.2 ppm	

#### OSHA TABLE COMMENTS:

1. NL = Not Listed

**ENGINEERING CONTROLS:** Use only in a well ventilated area. Local exhaust ventilation may be necessary to control any air contaminants to within their TLVs during the use of this product.

### PERSONAL PROTECTIVE EQUIPMENT

**EYES AND FACE:** For normal conditions, wear safety glasses. Where there is reasonable probability of liquid contact, wear splash-proof goggles.

**SKIN:** Use Nitrile gloves and aprons to prevent contact. Do not use PVC, Nylon or Cotton materials.

**RESPIRATORY:** Use only in a well-ventilated area. In case of insufficient ventilation, wear suitable respiratory equipment. Recommended: Full-face NIOSH-approved respirator with organic vapor cartridge.

**WORK HYGIENIC PRACTICES:** Avoid direct contact and breathing vapor. Use with adequate ventilation. Wash hands with soap and water after use.

**OTHER USE PRECAUTIONS:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**PHYSICAL STATE:** Liquid

**ODOR:**

Characteristic odor,  
intensely irritating.

**ODOR**

**THRESHOLD:** Odor

Threshold = 1 ppm

**APPEARANCE: pH:**

Not Applicable.

**PERCENT VOLATILE:** Not Available

**FLASHPOINT AND METHOD:** 86°C (186°F) to 93.4°C (200°F) TAG

**CC FLAMMABLE LIMITS:** Not Available

**AUTOIGNITION**

**TEMPERATURE:** 485°C

(905°F) **VAPOR PRESSURE:**

< 0.2 mm Hg

**VAPOR DENSITY:** Not Available

**BOILING POINT:** > 149°C (300°F)

**FREEZING POINT:** Not Available

**MELTING POINT:** Not Determined

**THERMAL DECOMPOSITION:** Not Available

**SOLUBILITY IN WATER:** Insoluble

**EVAPORATION RATE:** Not Established

**DENSITY:** Not Available

**SPECIFIC GRAVITY:** 1.06 g/mL at 25°C

**VISCOSITY #1:** 25 to 50 Centipoise at 22°C (72°F)

**MOLECULAR WEIGHT:** Not Available

**(VOC):** < 20.000 g/L Per SCAQMD Method 316B.

**COEFF. OIL/WATER:** Partition coefficient (octanol/water): Not applicable.

## 10. STABILITY AND REACTIVITY

**STABLE:** Yes

**HAZARDOUS POLYMERIZATION:** No

**CONDITIONS TO AVOID:** Avoid temperatures above 176° F (80° C), moisture and alkalines.

**POSSIBILITY OF HAZARDOUS REACTIONS:** Possible polymerization reaction in the presence of water, amines, alkalis and alcohols.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Carbon Dioxide, Carbon Monoxide and other toxic or irritating compounds may

form when heated to decomposition. Oxides of nitrogen and probably hydrogen cyanide are also possible.

**INCOMPATIBLE MATERIALS:** Polymerized by water, alcohol, amines, alkaline materials.

**COMMENTS:** REACTIVITY: Rapid exothermic polymerization will occur in the presence of water, amines, alkalis and alcohols.

## 11. TOXICOLOGICAL INFORMATION

### ACUTE

Chemical Name	ORAL LD <sub>50</sub> (rat)	DERMAL LD <sub>50</sub> (rabbit)
ETHYL-2-CYANOACRYLATE	> 5000 mg/kg	> 2000 mg/kg

**DERMAL LD<sub>50</sub>:** > 2000 mg/kg

**Notes:** (Estimated)

**ORAL LD<sub>50</sub>:** > 5000 mg/kg

**Notes:** (Estimated)

**INHALATION LC<sub>50</sub>:** Vapors may be irritating. Recommended TWA 0.2ppm.

**EYE EFFECTS:** Bonds skin and eyes in seconds. Eye irritant.

**SKIN EFFECTS:** Irritating to skin. May cause allergic skin reaction with prolonged contact.

### CARCINOGENICITY

**IARC:** None known.

**NTP:** None known.

**OSHA:** None known.

**SENSITIZATION:** Possible skin sensitizer.

**TARGET ORGANS:**

<u>Ingredient</u>	<b>Health Effect/ Target Organ</b>
Ethyl cyanoacrylate	Irritant, Allergen/ Respiratory, Skin

## 12. ECOLOGICAL INFORMATION

**GENERAL COMMENTS:** None known.

## 13. DISPOSAL CONSIDERATIONS

**DISPOSAL METHOD:** Dispose of following all Local Authority requirements for disposal.

## 14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF  
TRANSPORTATION)

**PROPER SHIPPING**

**NAME:** Not restricted

**ROAD AND RAIL (ADR/RID)**

**PROPER SHIPPING NAME:** Not restricted

**AIR (ICAO/IATA)**

**SHIPPING NAME:** Not regulated (less than 500 mL). AVIATION REGULATED LIQUID, N.O.S. (ETHYL CYANOACRYLATE), UN3334, 9.

**VESSEL (IMO/IMDG)**

**SHIPPING NAME:** Not restricted

**CANADA TRANSPORT OF DANGEROUS GOODS**

**SHIPPING NAME:** Not restricted

**15. REGULATORY INFORMATION**

**UNITED STATES**

**SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT) 311/312 HAZARD**

**CATEGORIES:** Immediate Health, Delayed Health, Fire, Reactive.

**313 REPORTABLE INGREDIENTS:** None above reporting de minimus.

**302/304 EMERGENCY PLANNING**

**EMERGENCY PLAN:** None above reporting de minimus.

**TSCA (TOXIC SUBSTANCE CONTROL ACT)**

Chemical Name	C
ETHYL-2-CYANOACRYLATE	70850
Polymethyl methacrylate	90117

**TSCA STATUS:** All components are listed on or are exempt from listing on the Toxic Substances Control Act.

**CLEAN AIR ACT**

**40 CFR PART 68---RISK MANAGEMENT FOR CHEMICAL ACCIDENT RELEASE**

**PREVENTION:** Not applicable.

**CALIFORNIA PROPOSITION 65:** No California Proposition 65 ingredients are known to be in this product.

**CANADA**

**WHMIS HAZARD SYMBOL AND CLASSIFICATION**



Combustible Toxic  
Liquid  
Class B3 - Combustible, D2B - Irritant.

**Date  
Prepared :**  
10/10/2  
014  
**MSDS  
No :**  
**Date-**  
**R  
e  
v  
i  
s  
e  
d  
:  
2/  
1  
0/  
2  
0  
1  
5  
R  
e  
v  
i  
s  
i  
o  
n  
N  
o  
:  
8**

**WHMIS CLASS:** B3 - combustible, D2B - irritant.

**DOMESTIC SUBSTANCE LIST (INVENTORY):** All components are listed on or are exempt from listing on the Domestic Substances List.

## 16. OTHER INFORMATION

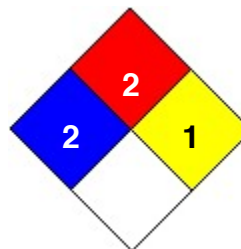
**PREPARED BY:** Mary Robles **Date-Revised:** 2/10/2015

**REVISION SUMMARY:** This MSDS replaces the 10/21/2014 MSDS. Revised: **Section 4:** SIGNS AND SYMPTOMS OF OVEREXPOSURE ( INGESTION, SKIN, SKIN ABSORPTION ).



### HMIS RATING

HEALTH	<input type="checkbox"/>	2
FLAMMABILITY	<input type="checkbox"/>	2
PHYSICAL HAZARD	<input type="checkbox"/>	1
PERSONAL PROTECTION	<input type="checkbox"/>	



### MANUFACTURER DISCLAIMER:

To the best of our knowledge, the information contained herein is accurate. However, Pacer Technology does not assume any liability for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist.

## SAFETY DATA SHEET

Version 6.2  
 Revision Date 06/29/2014  
 Print Date 08/17/2015

**1. PRODUCT AND COMPANY IDENTIFICATION****1.1 Product identifiers**

Product name : Fluorescein sodium salt

Product Number : 46960

Brand : Sigma

CAS-No. : 518-47-8

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

Identified uses : Laboratory chemicals, Manufacture of substances

**1.3 Details of the supplier of the safety data sheet**

Company : Sigma-Aldrich  
 3050 Spruce Street  
 SAINT LOUIS MO 63103  
 USA

Telephone : +1 800-325-5832

Fax : +1 800-325-5052

**1.4 Emergency telephone number**

Emergency Phone # : (314) 778-8555

**2. HAZARDS IDENTIFICATION****2.1 Classification of the substance or mixture**

Not a hazardous substance or mixture.

**2.2 GHS Label elements, including precautionary statements**

Not a hazardous substance or mixture.

**2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none****3. COMPOSITION/INFORMATION ON INGREDIENTS****3.1 Substances**

Synonyms : Acid Yellow 73  
 Uranine

Formula :  $C_{20}H_{10}Na_2O_5$

Molecular Weight : 376.27 g/mol

CAS-No. : 518-47-8

EC-No. : 208-253-0

**Hazardous components**

Component	Classification	Concentration
Disodium 2-(3-oxo-6-oxidoxanthen-9-yl)benzoate		-