

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name Supplemental Raft Accessories Kits; Slide/Raft Survival Kits

Trade Names

Model	Part No.	Model	Part No.	Model	Part No.	Model	Part No.
Life Raft Kit	R0184-()	Life Raft Kit	R1649-()	Life Raft Kit	R2009-()	Life Raft Kit	R1858-101
Life Raft Kit	R1232-()	Life Raft Kit	R1663-()	Life Raft Kit	R1559-101	Base Kit-4	S3053-101
Life Raft Kit	R1329-()	Life Raft Kit	R1708-()	Life Raft Kit	R1675-101	Renewal Kit-2	S3051-()
Life Raft Kit	R1417-()	Life Raft Kit	R1770-()	Life Raft Kit	R1724-101	Renewal Kit-4	S3054-101
Life Raft Kit	R1470-()	Life Raft Kit	R1841-()	Life Raft Kit	R1812-101		
Life Raft Kit	R1515-()	Life Raft Kit	R1843-()	Life Raft Kit	R1815-101		
Life Raft Kit	R1639-()	Life Raft Kit	R1910-()	Life Raft Kit	R1844-101		

Company Eastern Aero Marine
 5502 NW 37th Avenue
 Miami, Florida 33142

Telephone (800) 255-3924

Fax (305) 637-8632

Emergency Phone Number (813) 248-0585

2. HAZARDS IDENTIFICATION

- Pyrotechnic Signaling Device (flares) including Signaling Devices, Hand.
- Matches, Strike Anywhere.
- Lithium Batteries, contained in equipment.
- Sterno Candle (gelled alcohol, canned cooking fuel).
- Flammable Solids, Organic.
- Ration, Heating Fuel, Compressed.

Symbol(s) or pictogram(s) Refer to supplier's Safety Data Sheets for specific information on components.

Hazard statement(s) Refer to supplier's Safety Data Sheets for specific information on components.

Precautionary statement(s) Refer to supplier's Safety Data Sheets for specific information on components.

Hazards not otherwise classified Refer to supplier's Safety Data Sheets for specific information on components.

3. COMPOSITION/INFORMATION ON INGREDIENTS

N/A. Refer to supplier's Safety Data Sheets for specific information on components.

4. FIRST AID MEASURES

Inhalation Provide patient with fresh air and seek medical advice.

Skin Contact Do not use solvents. Wash with soap and water.

Eye Contact Irrigate thoroughly with water and seek medical advice.

Ingestion Get medical aid immediately.

5. FIREFIGHTING MEASURES

Suitable Extinguishing Media	Large volumes of water. Sand.
Specific Hazards From Combustion	Refer to supplier's Safety Data Sheets for specific information on components.
Personal Protection	Use air-ventilated full mask and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

Hazardous materials are contained in sealed units within packed kits. Spills should pose no threat if sealed units are not breached. Refer to supplier's Safety Data Sheets for specific information on components.

7. HANDLING AND STORAGE

These units should be stored in a cool dry area, away from danger of sparks, heat or flames. Refer to supplier's Safety Data Sheets for specific information on components.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Refer to supplier's Safety Data Sheets for specific information on components.

9. PHYSICAL AND CHEMICAL PROPERTIES

Refer to supplier's Safety Data Sheets for specific information on components.

10. STABILITY AND REACTIVITY

Kits are stable if stored in the original package in cool and dry conditions. Do not subject kits to high temperatures or excessively humid conditions. Refer to supplier's Safety Data Sheets for specific information on components.

11. TOXICOLOGICAL INFORMATION

N/A. Refer to supplier's Safety Data Sheets for specific information on components.

12. ECOLOGICAL INFORMATION

N/A. Refer to supplier's Safety Data Sheets for specific information on components.

13. DISPOSAL CONSIDERATIONS

Refer to supplier's Safety Data Sheets for specific disposal information of components. Other solid portions of the kits may be disposed of as domestic waste in accordance with local laws and regulations.

14. TRANSPORT INFORMATION

UN Number	UN3072
UN Proper Shipping Name	Life Saving Appliance, Not Self-Inflating
Transport Hazard Class(es)	
Packing Group	

15. REGULATORY INFORMATION

N/A. Refer to supplier's Safety Data Sheets for specific information on components.

16. OTHER INFORMATION

Revision Level Original
Other Supplier's Safety Data Sheets can be found on our website at www.eamworldwide.com/technical-data/

SAFETY DATA SHEET

1. Product and Company Identification

12 Ga HP (High Performance) Red Aerial Signal

Orion Safety Products
 3157 North 500 West
 Peru, IN 46970

Use: Marine emergency signal

Phone Number: US 1-800-851-5260

Intl (11) 1-765-472-4375

EMERGENCY CHEMTREC 1-800-424-9300

2. Hazards Identification

Emergency Overview



Danger

GHS Classifications	
Explosive	Division 1.4
Acute Toxicity	Category 5
Skin Corrosion / Irritation	Product- Category 1A
	Contents - Category 2
Serious Eye Damage / Irritation	Product-Category 1
	Contents - Category 2B

Hazard Statements:

Fire or projection hazard
 Causes severe skin burns and eye damage (product when burning)
 Causes skin irritation (contents)
 Harmful if inhaled.
 Causes eye irritation (contents)

Precautionary Statements:

Keep out of reach of children.
 Keep away from heat/sparks/open flames/hot surfaces. - no smoking.
 Keep/Store away from combustible materials.
 Protect from moisture; avoid long term immersion in water
 Keep cool. Protect from sunlight.
 Do not expose long term to temperatures exceeding 180°F
 Avoid breathing dust/smoke
 Avoid release to the environment.(contents)
 Use only outdoors.
 Wear eye protection.
 Do not dismantle.
 In case of fire: use water deluge. Do not use dry powder or foam extinguishers!

NFPA Rating

Flammability 2
 Health 2
 Reactivity 1

HMIS Rating

Flammability 1
 Health 3
 Physical Hazard 1

3. Composition / Information on Ingredients

Component	CAS #	EINCS #	%age
Strontium Nitrate	10042-76-9	233-131-9	<50%
Magnesium	7439-95-4	231-104-6	<50%
Strontium Peroxide	1314-18-7	215-224-6	<30%
Black Powder	Mixture	None	<30%
Polyvinyl Chloride	9002-86-2	none	<20%
Dextrin	9004-53-9	232-675-4	<20%
Primer <i>(contains small amount of lead styphnate which is sealed under normal conditions)</i>	n/a	n/a	n/a

4. First Aid Measures

Inhalation If fumes from ignition or contents are inhaled, remove to fresh air. If not breathing, give artificial respiration and get medical aid.

Skin For burns, cool with water and bandage appropriately. If contents are contacted, wash with area with soap and water for 15 minutes. Remove contaminated clothing and wash before reuse. Get medical aid if burned or irritation occurs.

Eyes If burned, cover eye and get medical help immediately. If contents get into eye, flush with plenty of water for at least 15 minutes, occasionally lifting the up and lower lids. Remove contact lenses if easily possible Get medical aid immediately.

Ingestion Get medical aid immediately.

5. Firefighting Measures

Extinguishing Media Water Deluge

Unsuitable Extinguishing Media Foam and dry chemical extinguishers and suffocation are ineffective

Protective Equipment and Precautions for Firefighters Wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode. Prevent further propagation of fire by spraying unburnt nearby product with water. Combat fire from a sheltered position.

Specific Hazards Arising from the Chemical Only use outdoors. Use copious amounts of water to extinguish fire. Using small quantities of water on contents / broken shells can cause auto / re-ignition as contents contain magnesium. Use of water on a magnesium fire will generate hydrogen gas that may cause an explosion. Irritating fumes. Flaming projectiles may be ejected during a fire. Trace amounts of lead vapor may be produced (from ignition primer) in a fire situation.

Flashpoint Not Applicable **Flammability Limits** Not Applicable **Ignition Temperature** >180F

6. Accidental Release Measures

Personal Precautions
 Do not breathe smoke from use or contents and avoid contact with skin and eyes. Wear flame retardant clothing with long sleeves, dust mask, rubber or nitrile gloves, safety goggles, safety shoes when cleaning up contents. Avoid

Environmental Precautions
 Prevent dispersion of contents on soil and in water. Prevent contents from spreading or entering into drains, ditches, groundwater or rivers by using appropriate barriers.



friction on the released product. Keep away from ignition sources.

Methods for Containment and Clean-up

Use caution when cleaning up spilled product contents. Remove heat, flames, sparks and other sources of ignition. Use non-sparking tools and equipment. Prevent buildup of electrostatic charges by grounding. Clean spills in a manner that does not disperse dust into the air. Do not absorb in sawdust or other combustible absorbents. Pick up spill for recovery or disposal and place in an approved container. Wash away remainder with plenty of water. Collect wash water for approved disposal. Be very careful - magnesium powder may spontaneously ignite in presence of moisture. Magnesium powder reacts with water, producing flammable hydrogen gas.

7. Handling and Storage

Handling Use product only in designated launcher – do not attempt to use in 12 gauge shotgun. Point launcher away from body, other people, animals or combustible products when firing. Wear eye protection during use. Turn face from launcher when firing. Follow instructions on package. Avoid contact with clothing and other combustible materials. Use outdoors only! Do not ignite or launch product inside a vehicle or building. Avoid ingestion and inhalation of smoke and contents. Wash thoroughly after handling. Avoid contact with heat sparks, and flame. Do not disassemble signal.

Storage Store in a dry place away from direct sunlight, heat and incompatible materials. Store away from food and beverages. Store away from flammable materials, sources of heat, flame and sparks. Store at ambient temperature.

8. Exposure Controls / Personal Protection

Exposure Limits	OSHA PEL	ACGIH TLV
Strontium Nitrate	Not Established	Not Established
Magnesium	Not Established	Not Established
Strontium Peroxide	Nuisance dust 15 mg/m ³ .	Nuisance dust 15 mg/m ³ .
Black Powder	Not Established	Not Established
Polyvinyl Chloride	5mg/ml for the respirable portion and 15mg/ml ^l for total dust.	5 and 10mg/ml, respectively
Dextrin	15 mg/m ³ total dust	10 mg/m ³

Engineering Controls Use product outdoors only! When cleaning up contents, use local and/or general exhaust.
Eye / Face Protection Turn face from launcher when firing. Wear safety glasses or goggles during use and when cleaning up spilled contents.
Skin Protection None under normal conditions when using product unless prolonged handling is anticipated. When cleaning up spilled contents, wear impervious protective clothing, including gloves, boots, and a lab coat, apron or coveralls, as appropriate. Wash hands and face before eating, drinking or using tobacco products.
Respiratory Protection None under normal conditions when using product. A particulate respirator (NIOSH t N95 or better filters) may be worn during the cleanup of spilled contents.
General Hygiene Use product outdoors away from combustible products. For cleanup of spilled contents, emergency showers and eye wash stations should be available. Educate and train employees in the safe use and handling of hazardous materials. Maintain good housekeeping and safety practices. Do not let contents accumulate in storage or work areas. Clean spills up promptly.

9. Physical and Chemical Properties

Appearance (color, physical form, shape): Plastic shotgun shell filled with grey material with primer on one end; all materials sealed / enclosed under normal conditions

pH: Not available	Melting Point: Not available	Solubility: Not available
Boiling Point: Not applicable	Freezing Point: Not applicable	Evaporation Rate: Not applicable
Vapor Pressure: Not applicable	Specific Gravity: Not applicable	Vapor Density: Not applicable

10. Stability and Reactivity

Chemical Stability Stable **Possibility of Hazardous Reactions** Hazardous polymerization will not occur.

Conditions to Avoid Excessive temperatures, moisture, water, acids, and ignition sources. **Incompatible Materials** Reducing Agents, Organic Materials, Finely Powdered Metals, Acids, Water, Halogens, Hydrogen Fluoride. **Hazardous Decomposition Products** Oxides of Strontium and Nitrogen

11. Toxicology Information

Toxicology	Oral LD50	skin LD50	LC50
Strontium Nitrate	Rat 2750 mg/kg	Not available	Not available
Magnesium	Rat: 230 mg/kg	Not available	Not available
Strontium Peroxide	Not available	Not available	Not available
Black Powder	Not available	Not available	Not available
Polyvinyl Chloride	Not available	Not available	Not available
Dextrin	Not available	Not available	Not available

Acute Dose Effects
 Burning shell can cause severe burns if in contact with body - product burns at an extremely high temperature. Particles from firing may be harmful if inhaled. Contact with contents may cause moderate skin and eye irritation. Inhalation of smoke or contents will cause irritation to the lungs and mucus membrane. Exposure to smoke during use may aggravate asthma if inhaled.

Repeated Dose Effects
 No known chronic effects. Repeated or prolong exposure to this compound is not known to aggravate medical conditions.

Irritation Irritating to the skin and eyes on contact. Inhalation will

Corrosivity May cause eye or skin burns if in contact with burning shell.



cause irritation to the lungs and mucus membrane.

Carcinogenicity	None of the ingredients are listed by NTP, IARC or regulated as a Carcinogen by OSHA	Reproductive Effects	No information found
Genetic Effects	No information found	Neurological Effects	No information found
Developmental Effects	No information found	Sensitization	No information found
Target Organ Effects	Eye, skin and lungs		

12. Ecological Information

Aquatic Toxicity	Persistence / Degradability	Bioaccumulation / Accumulation	Mobility in Environmental Media
Strontium Nitrate: <i>Acute toxicity - Fishes, Carassius auratus, LC100, 9,615 mg/l; Chronic toxicity - Fishes, Gasterosteus aculeatus, LC100, 2,912 mg/l</i>	No information found	No information found	No information found

13. Disposal Considerations (for spills and leakage)

Dispose of contaminated product and materials used in cleaning up spills or leaks in the manner approved for pyrotechnic material. Consult appropriate federal, state, and local regulatory agencies to ascertain proper disposal procedures. Open burning is preferred method of disposal for pyrotechnic materials..

14. Transportation Information

	shipping name	hazard class	ID Number	packing group	EX Number	Reportable Quantities
United States & International	Flares, Aerial	1.4G	UN0403	II	EX-2004110275	none

15. Regulatory Information

US Regulations	TSCA	CERCLA	CWA	CAA	SARA 313	SARA 302	Acute	Chronic	Fire	Reactivity	Pressure
Strontium Nitrate	Yes	No	No	No	No	No	No	No	No	No	No
Magnesium	Yes	No	No	No	No	No	No	No	No	No	No
Strontium Peroxide	Yes	No	No	No	No	No	None	None	None	None	None
Black Powder	Not stated	Not stated	Not stated	Not stated	Not stated	Not stated	Not stated	Not stated	Not stated	Not stated	Not stated
Polyvinyl Chloride	Yes	No	No	No	No	No	Not stated	Not stated	Not stated	Not stated	Not stated

US States	Prop 65	NJ	PA	Canada	WHMIS	DSL	Europe	wgk
Strontium Nitrate	No	1743	No		No results	Yes		2
Magnesium	No	1136	Yes		No results	Yes		nwg
Strontium Peroxide	No	1745	No		No results	Yes		not listed
Black Powder	Not stated	Not stated	Not stated		Not stated	Not stated		Not stated
Polyvinyl Chloride	No	3622	No		No results	Yes		not listed

16. Other Information

Revision Information: March 2015

Risk and Safety Phrases:

R10 Flammable
 R38 Irritating to skin (contents)
 R20 Harmful by inhalation.
 R21 Harmful in contact with skin.
 R22 Harmful if swallowed.
 R34 Causes burns
 R36 Irritating to eyes.
 R37 Irritating to respiratory system.
 S17 Keep away from combustible material
 S16 Keep away from sources of ignition
 S2 Keep out of the reach of children.

S8 Keep container dry.
 S13 Keep away from food, drink and animal foodstuffs.
 S24 Avoid contact with skin.
 S25 Avoid contact with eyes.
 S29 Do not empty into drains.
 S41, In case of fire and / or explosion do not breathe fumes
 S43 In case of fire use water
 S39 Wear eye / face protection.
 S51 Use only in well ventilated areas

Key / Legend:

HMIS: hazardous material identification system
 NFPA: national fire protection association
 CAS: Chemical Abstracts Service number
 EINECS: European inventory of existing chemical substances
 OSHA PEL: occupational safety and health administration permissible exposure limit
 NIOSH TLV: national institute of occupational safety and health Threshold Limit Value
 NTP: National Toxicology Program
 IARC: International Agency for Research on Cancer

TSCA: toxic substance control act - US
 CERCLA: comprehensive environmental response, compensation and liability act - US
 CWA: clean water act - US
 CAA: clean air act - US
 SARA: superfund amendments and reauthorization act - US
 PROP 65: California's Proposition 65 list
 WHMIS: workplace hazardous materials information system - Canada
 DSL: Domestic Substances List - Canada
 WGK: water hazard classes - Germany

Legal Statement:

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Safety Data Sheet

Issued by Atp	Department R&D	Date 24 October 2014	Page no 1 (10)
Product denomination Ikaros Parachute Rocket Red		Document no. SDS Ikaros Parachute Rocket Red	Edition no. 5

Supersedes: Version 4 dated 12 September 2011

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

1.1. Product identifier

Product Name	Ikaros Parachute Rocket Red
Article Nos.	340100 (Order article Nos. 340100, 340170 and 340180)
Chemical name	50 g of propellant composition, 6.5 g of black powder and 95 g of red illuminating composition
Document number	SDS Ikaros Parachute Rocket Red – ed5

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

Use	Distress signal
Uses advised against	None specified

1.3. Details of the supplier of the safety data sheet

Company/Manufacturer	Hansson PyroTech AB / Nammo LIAB AB
Company address	P O Box 154, SE-711 23 Lindesberg, Sweden
E-mail, internet	info@hansson-pyrotech.com www.hansson-pyrotech.com
Telephone number	+46 581 871 00
Telefax number	+46 581 872 51

1.4. Emergency telephone number

Emergency telephone number	+46 581 87 111 (Available 24 hours)
Contact person	Ask for officer on duty at Nammo LIAB AB

SECTION 2 HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Main health hazard	Hazards refer to contents of rocket
Inhalation	May be mildly irritating to respiratory system
Skin contact	May be mildly irritating to skin. Contact with exhaust flame or burning flare can cause severe burns
Eye contact	Irritating to eyes
Ingestion	Harmful if swallowed
Fire and explosive hazards	Risk of explosion by shock, friction, fire or other sources of ignition.
Environmental hazards	Not classified as hazardous to the environment

CLP Classification	DPD Classification
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Explosive Division 1.3 – H203 Acute Toxic Category 4 – H302 Eye Irritant Category 2 – H319 For full wording of Hazard statements see Section 16	Explosive – R2 Harmful –R22-R36 For full wording of Risk phrases see Section 16
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2.2. Label elements

DANGER

Contains: Strontium nitrate and Potassium perchlorate

H203 – Explosive; fire, blast or projection hazard.

H302 – Harmful if swallowed.

H319 – Causes serious eye irritation.



P102 - Keep out of reach of children.

P210 - Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

P501 – Dispose of contents / container to authorised waste disposal facility.

P370+P378 - In case of fire: Use water for extinction.

P309+P311 - If exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.

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

2.3. Other hazards

May be mildly irritating to skin and respiratory system. Contact with exhaust flame or burning flare can cause severe burns.

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixtures

Hazardous component(s)

Under CLP EC1272/2008

Substances	CAS No.	REACH Registration No.	%	Gram	CLP Hazard Category & H Statements
Strontium nitrate	10042-76-9	01-2120007501-75	31.35	47.5	Oxidising Solid Cat 3 – H272 Acute Toxic Cat 4 – H302 Eye Irritant Cat 2 – H319
Potassium perchlorate	7778-74-7	01-2120021000-89	24.09	36.5	Oxidising Solid Cat 1 – H271 Acute Toxic Cat 4 – H302
Potassium nitrate	7757-79-1	01-2119488224-35	3.17	4.8	Oxidising Solid Cat 3 – H272
Sulphur	7704-34-9	01-2119487295-27	0.46	0.7	Skin Irritant Cat 2 – H315

Also contains -

Magnesium powder stabilised with polymerised linseed oil

Under DPD EC1999/45



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Substances	CAS No.	EC No.	%	Gram	Symbol & Risk phrases
Strontium nitrate	10042-76-9	233-131-9	31.35	47.5	O, Xn: R8-22-36
Potassium perchlorate	7778-74-7	231-912-9	24.09	36.5	O, Xn: R9-22
Potassium nitrate	7757-79-1	231-818-8	3.17	4.8	O, N: R8-50
Sulphur	7704-34-9	231-722-6	0.46	0.7	Xi: R36/37/38 52/53

For full wording of H-statements and R-phrases see Section 16.

SECTION 4 FIRST-AID MEASURES

4.1. Description of first aid measures

After inhalation	Move patient to fresh air.
After skin contact	If burned, wash with plenty of water for at least 20 min.
After eye contact	Keep eyelids apart. Wash with a lot of water. If needed visit physician.
After ingestion	Contact a physician.

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

Contact with exhaust flame or burning flare can cause severe burns. Harmful if swallowed.

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

None other than above.

SECTION 5 FIRE-FIGHTING MEASURES

5.1. Extinguishing media

- Suitable extinguishing media	Use any fire extinguishing media at early stages of fire. Once the product has ignited it cannot be extinguished.
- Not to be used	No restriction.

5.2. Special hazards arising from the substance or mixture

Product is explosive, evolving large quantities of gases and emitting large quantities of heat radiation if involved in fire.

5.3. Advice for fire-fighters

Normal equipment.

SECTION 6 ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	Normal industrial hygiene, use protective gloves.
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6.2. Environmental precautions

Do not let waste reach drains, sewers and bodies of water or leak into ground.

6.3. Methods and material for containment and cleaning up

Collect using non-sparking tools, reuse if undamaged. Otherwise, keep for disposal by experts.

6.4. Reference to other sections

See Sections 8 & 13.

SECTION 7 HANDLING AND STORAGE

7.1. Precautions for safe handling

Avoid dropping the signal on hard surfaces.

7.2. Conditions for safe storage, including any incompatibilities

Storage

Temperature should not exceed +75° C

7.3. Specific end use(s)

Distress signal

SECTION 8 PERSONAL PROTECTION/EXPOSURE CONTROLS

8.1. Control parameters

None set

8.2. Exposure controls

Recommended engineering controls

No fire, sparks or welding close to the items. If cleaning up spillage, use tools which can not strike sparks.

Personal protective equipment

Normally none needed. But in case of spillage:

- Respiratory protection

In case of dust use particle filter mask such as EN143 Type P or EN149 Type FFP-S.

- Hand protection

Leather or similar protective gloves.

- Eye protection

Shatter-proof glasses or goggles.

- Skin protection

Normal industrial hygiene

Specific hygiene measures

No smoking.

Further information

Always check applicability with your supplier of protective equipment.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties



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Appearance	Dark red plastic tube with red plastic lids and orange label
Odour	None
Odour threshold value	Not applicable
pH (concentrated product)	Not applicable
Melting point (°C)	Not determined
Boiling point/range (°C)	Not applicable
Flash point (°C)	Not applicable
Evaporation rate	Not applicable
Flammability	Contents are flammable
Explosive properties	Intrinsically explosive. Contains rocket motor and very hot and intense burning red flare.
Vapour pressure (mbar at 25°C)	Not applicable
Vapour density	Not applicable
Density at 20°C (g/cm ³)	Not determined
Solubility in water (% by weight)	Insoluble
Solubility in solvents	Not determined
Partition coefficient (log Pow)	Not applicable
Autoignition temperature (°C)	> 250
Decomposition temperature (°C)	Not determined
Viscosity	Not applicable
Oxidising properties	Contents have oxidising properties

9.2. Other information

Note: These are typical values and do not constitute a specification

SECTION 10 STABILITY AND REACTIVITY

10.1. Reactivity

Stable product under recommended storage and handling conditions.

10.2. Chemical stability

Stable product under recommended storage and handling conditions.

10.3. Possibility of hazardous reactions

Stable product under recommended storage and handling conditions.



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10.4. Conditions to avoid

High temperatures, above 75 °C

10.5. Incompatible materials

Not applicable.

10.6. Hazardous decomposition products

Product is explosive, evolving large quantities of gases and emitting large quantities of heat radiation if involved in fire.

SECTION 11 TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

No data available on mixture. Data based on individual components shown below.

Hazardous ingredients	Potassium perchlorate, Strontium nitrate, and Sulphur.
(a) acute toxicity	Strontium nitrate: LD ₅₀ oral rat 1892 mg/kg Harmful by ingestion Calculated product ATE = 901 mg/kg
(b) skin corrosion/irritation	Sulphur: Skin irritant category 2 under CLP
(c) serious eye damage/irritation	Strontium nitrate: Eye irritant category 2 under CLP
(d) respiratory or skin sensitisation	No ingredients classified as sensitisers
(e) germ cell mutagenicity	No deleterious effects known.
(f) carcinogenicity	No deleterious effects known.
(g) reproductive toxicity	No deleterious effects known.
(h) STOT-single exposure	No deleterious effects known.
(i) STOT-repeated exposure	No deleterious effects known.
(j) aspiration hazard	No deleterious effects known.
Likely routes of exposure	Contact with skin
Symptoms related to the physical, chemical and toxicological characteristics	Powders may be mildly irritating to the skin, eyes and respiratory tract. May cause gastric irritation, nausea and vomiting.
Delayed and immediate effects as well as chronic effects from short and long-term exposure	No deleterious effects known.
Other information	None

SECTION 12 ECOLOGICAL INFORMATION

12.1. Toxicity



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No data available on mixture. Data based on individual components shown below.

Potassium perchlorate EC₅₀ Daphnia magna 24h: 670mg/l Not harmful.

12.2. Persistence and degradability

Not applicable – contains inorganic materials and is in form of solid article.

12.3. Bioaccumulative potential

Mobility No test data on product.

12.4. Mobility in soil

None – product in form of solid article.

12.5. Results of PBT and vPvB assessment

Does not fulfil the criteria for classification as PBT or vPvB.

12.6. Other adverse effects

Not a Marine pollutant (IMDG Code).

SECTION 13 DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Disposal of waste materials	Waste should be kept in separate container. NO SMOKING! Destruction must only be done by experts. Used product may be disposed as ordinary plastic/metallic waste. DO NOT TRY TO DISMANTLE THE PRODUCT!
Contaminated packing	May burn rapidly.

SECTION 14 TRANSPORT INFORMATION

14.1. UN numbers	See table below
14.2. UN proper shipping name	See table below
14.3. Transport hazard class(es)	See table below
14.4. Packing group	Not applicable
14.5. Environmental hazards	None
14.6. Special precautions for user	See P Statements in Section 2.2
14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable

	Non US market	Non US market	USA market
Transport	In Fibre Board Box	In Steel Cage +	In Steel Cage +



Safety Data Sheet

Issued by Atp	Department R&D	Date 24 October 2014	Page no 8 (10)
Product denomination Ikaros Parachute Rocket Red		Document no. SDS Ikaros Parachute Rocket Red	Edition no. 5

Supersedes: Version 4 dated 12 September 2011

Classification		Fibre Board Box	Fibre Board Box
Article Number (Order article No.)	340100 (340100)	340100 (340170)	340100 (340180)
- UN No.	0195	0506	0403
- Proper shipping name	Signals, distress, ship	Signals, distress	Flares, aerial
- Transport Class	1.3G	1.4S	1.4G
- Packing Instruction	P135	P135	P135
Label	1.3	1.4	1.4
IMO-IMDG code			
- EMS code	F-B, S-X	F-B, S-X	F-B, S-X
EX number (DOT/USA)	N/A	N/A	2007050373
Swedish Rescue Service Agency Cert. No.	2009-4265	2009-4265	711/4817/2004
Comment	Not classified as Marine Pollutants		

SECTION 15 REGULATORY INFORMATION

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

None specified

15.2. Chemical Safety Assessment

A Chemical Safety Assessment has not been carried out on this mixture.

SECTION 16 OTHER INFORMATION

Inventories - All ingredients listed in EINECS.

Sources of data used in this SDS

In-house data files

Literature such as Sax's Dangerous Properties of Industrial Materials, the RSC Dictionary of Substances and their Effects, RTECS

CLP Annex VI Tables 3.1 & 3.2 Sources of key data used

Suppliers' Safety Data Sheets

RTECS, EU ESIS web site



Safety Data Sheet

Issued by Atp	Department R&D	Date 24 October 2014	Page no 9 (10)
Product denomination Ikaros Parachute Rocket Red		Document no. SDS Ikaros Parachute Rocket Red	Edition no. 5

Supersedes: Version 4 dated 12 September 2011

Version number	5
Date prepared	24.10.14
Supersedes Version	4 dated 12.09.11
Nature of revision	New emergency telephone number. REACH registration numbers introduced for strontium nitrate, potassium nitrate, potassium perchlorate and sulphur.

Mixture classified under CLP (EC1272/2008) by calculation based on ingredient information.

R-phrases used in document

R2	Risk of explosion by shock, friction, fire or other sources of ignition
R8	Contact with combustible material may cause fire
R9	Explosive when mixed with combustible material
R22	Harmful if swallowed
R36	Irritating to eyes
R36/37/38	Irritating to eyes, respiratory system and skin
R50	Very toxic to aquatic organisms
R52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

H-statements used in document

H203	Explosive; fire, blast or projection hazard
H271	May cause fire or explosion; strong oxidiser
H272	May intensify fire; oxidiser
H302	Harmful if swallowed
H315	Causes skin irritation
H319	Causes serious eye irritation

Based on EU Regulation 1907/2006 as amended by 453/2010

The current Material Safety Data Sheet was defined by Hansson PyroTech AB on the basis of knowledge of the product at the date of issue.

Therefore, data provided in this form can not be considered as exhaustive.

It is the duty of the operator

- to develop under his own responsibility, the safety dispositions regarding the operation of the product taking into account the data from this form
- to pass to all users and operators the appropriate safety data and warning regarding the risks mentioned in the documentation relative to the utilisation of the product



Safety Data Sheet

Issued by Atp	Department R&D	Date 24 October 2014	Page no 10 (10)
Product denomination Ikaros Parachute Rocket Red		Document no. SDS Ikaros Parachute Rocket Red	Edition no. 5

Supersedes: Version 4 dated 12 September 2011

- to be cautious of possible risks faced when the product is used for other utilisation than those for which it has been designed

SAFETY DATA SHEET

1. Product and Company Identification

Day and Night, Smoke and Light N. 2

Use: Distress Signal

CIL / Orion

Phone Number: 450-566-0655

533 Argenteuil

LACHUTE, Quebec Canada J8H3Y2

EMERGENCY 613-996-6666

2. Hazards Identification

Emergency Overview



Danger

GHS Classifications

Explosive	Division 1.4
Acute Toxicity	Category 4
Skin Corrosion / Irritation	Product- Category 1A Contents - Category 2
Serious Eye Damage / Irritation	Product-Category 1 Contents - Category 2B
Respiratory or Skin Sensitization	Contents - Category 1
STOT - Repeated Exposure	Contents - Category 2
Aquatic Hazard (Acute/Chronic)	Category 1

Hazard Statements:

Fire or projection hazard
Harmful if swallowed
Very toxic to aquatic life with long lasting effects
Burning flare causes severe skin burns and eye damage
Contents cause skin and eye irritation
May cause allergic reaction to individuals sensitive to milk proteins
May cause damage to thyroid through ingestion of contents after prolonged or repeated exposure

NFPA Rating

Flammability 2
Health 2
Reactivity 1

Precautionary Statements:

Keep out of reach of children.
Keep away from heat/sparks/open flames/hot surfaces. – no smoking.
Keep/Store away from combustible materials.
Use only non-sparking tools
Avoid breathing dust/smoke
Do not ignite inside a building, vehicle or boat cabin.
Do not dismantle.
Allow signal to burn to completion.
Avoid release to the environment.(contents)
Use personal protective equipment as required.
In case of fire: use water deluge. Do not use dry powder or foam extinguishers!

HMIS Rating

Flammability 1
Health 3
Physical Hazard 1

3. Composition / Information on Ingredients

Component	CAS #	EINCS #	%age
1-Amino-Anthraquinone	82-45-1	201-423-5	20-40%
Magnesium	7439-95-4	231-104-6	10-30%
Strontium Nitrate	10042-76-9	233-131-9	10-30%
Potassium Chlorate	3811-04-9	231-100-4	1-20%
Potassium Perchlorate	7778-74-7	231-912-9	1-20%
Lactose	63-42-3	238-691-8	1-20%
Polyvinyl Chloride	9002-86-2	200-831-0	1-20%

4. First Aid Measures

Inhalation	If fumes from ignition or contents are inhaled, remove to fresh air. If not breathing, give artificial respiration and get medical aid.
Skin	For burns, cool with water and bandage appropriately. If contents are contacted, wash with area with soap and water for 15 minutes. Remove contaminated clothing and wash before reuse. Get medical aid if burned or irritation occurs.
Eyes	If burned, cover eye and get medical help immediately. If contents get into eye, flush with plenty of water for at least 15 minutes, occasionally lifting the up and lower lids. Remove contact lenses if easily possible Get medical aid immediately.
Ingestion	Get medical aid immediately.

5. Firefighting Measures

Extinguishing Media	Water deluge	Unsuitable Extinguishing Media	Foam and dry chemical extinguishers and suffocation are ineffective.
Protective Equipment and Precautions for Firefighters	Use NIOSH/MSHA approved self-contained breathing apparatus when this material is involved in a fire. If a large number of signals are involved in a fire, explosion is possible.		
Specific Hazards Arising from the Chemical	Flame and sparks and dense smoke are ejected out the open ends of the flare when it functions. Use copious amounts of water to extinguish fire. Using small quantities of water on contents can cause auto / re-ignition as contents contain magnesium. Use of water on a magnesium fire will generate hydrogen gas that may cause an explosion		
Flashpoint	Not Applicable	Flammability Limits	Not Applicable
		Ignition Temperature	>400°F



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6. Accidental Release Measures

Personal Precautions

Do not breathe contents and avoid contact with skin and eyes. If significant amounts of dust are present, wear chemical safety goggles, Viton or Norfoil gloves, clothing designed to prevent or minimize skin contact and a NIOSH/MSHA approved dust respirator. Keep away from ignition sources.

Environmental Precautions

Prevent dispersion of contents on soil and in water. Prevent contents from spreading or entering into drains, ditches, groundwater or rivers by using appropriate barriers.

Methods for Containment and Clean-up

Be sure all ignition sources are removed before beginning the cleaning operation. Use caution when cleaning up spilled product contents. Use non-static forming broom and dust pan to clean up dust. Undamaged signals may be picked up and put back into their original shipping containers or containers approved by local, state and federal authorities. Pick up spill for recovery or disposal and place in an approved container.

7. Handling and Storage

Handling

Keep out of reach of children. Do not dismantle. Do not allow contents to touch eyes, skin or clothing. Flush skin areas contacted with large amount of water. Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Do not ingest contents. Avoid inhalation of smoke. Signals should be allowed to burn to completion. Unburned and partially burned signals contain potassium perchlorate which should not be allowed to come into contact with surface and ground water. Perchlorate Material - special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate.

Storage

Store in a cool, dry place away from all sources of ignition.

8. Exposure Controls / Personal Protection

Table with 3 columns: Exposure Limits, OSHA PEL, ACGIH TLV. Rows include 1-Amino-Anthraquinone, Magnesium, Strontium Nitrate, Potassium Perchlorate, Potassium Chlorate, Lactose, Polyvinyl Chloride.

Engineering Controls Eye / Face Protection

Use product outdoors only! When cleaning up powder, use local and/or general exhaust. No protective equipment is required unless signals have broken open. For cleanup, wear NIOSH approved goggles to protect from dust

Skin Protection

None under normal conditions when using product. For cleanup, wear NIOSH approved gloves to protect from dust.

Respiratory Protection

None under normal conditions when using product. For cleanup, wear NIOSH approved respirator to protect from dust.

General Hygiene

Use product outdoors away from combustible products.

9. Physical and Chemical Properties

Table with 3 columns: Appearance (colour, physical form, shape), pH, Boiling Point, Vapour Pressure, Melting Point, Freezing Point, Specific Gravity, Solubility, Evaporation Rate, Vapour Density.

10. Stability and Reactivity

Chemical Stability Stable Possibility of Hazardous Reactions Hazardous polymerization will not occur.

Conditions to Avoid

Excessive temperatures, moisture, water, and ignition sources..

Incompatible Materials

Avoid exposure to oxidizers, strong acids and strong bases.

Hazardous Decomposition Products

Carbon monoxide, Carbon dioxide, Sulfur oxide.

11. Toxicology Information

Table with 4 columns: Toxicology, Oral LD50, skin LD50, LC50. Rows include 1-Amino-Anthraquinone, Magnesium, Strontium Nitrate, Potassium Perchlorate, Potassium Chlorate, Lactose, Polyvinyl Chloride.

Acute Dose Effects

Can cause skin, eye and mucous membrane irritation; dermatitis and nausea. Contains traces of milk protein: inhalation of dust may lead to sensitization in some allergic individuals. Contact of contents with skin may cause possible burns, especially if skin is wet or moist, due to the potassium chlorate.

Repeated Dose Effects

Potassium chlorate may cause methemoglobinemia, cyanosis, convulsions, tachycardia, dyspnoea, and death..



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Irritation	Contents can cause skin, eye and mucous membrane irritation or dermatitis. Inhalation will cause irritation to the lungs and mucus membrane.	Corrosivity	Contact with burning product will cause burns to eyes and skin. Contact with potassium chlorate in contents with skin may cause burns, especially if skin is wet or moist,
Carcinogenicity	None of the ingredients are suspect to be a carcinogen.	Reproductive Effects	No information found
Genetic Effects	No information found	Neurological Effects	No information found
Developmental Effects	Perchlorate exposure at certain levels can disrupt the function of the thyroid gland by interfering with the iodide uptake and thyroid hormone production. This interference may lead to developmental defects. Scientists consider pregnant women, children, infants, and individuals with thyroid disorders to be the populations most at risk of harm from being exposed to perchlorate.	Sensitization	Contains traces of milk protein: inhalation of dust may lead to sensitization in some allergic individuals

Target Organ Effects Eye, skin, liver, kidney, and thyroid.

12. Ecological Information

Aquatic Toxicity	Persistence / Degradability	Bioaccumulation / Accumulation	Mobility in Environmental Media
<u>1-Aminoanthraquinone</u> : Fish: 48h LC50:>30 mg/L (<i>Oryzias latipes</i>); EC50 - <i>Daphnia magna</i> (Water flea) - > 82.3 mg/l - 48 h - Toxic to aquatic life.	1-Aminoanthraquinone: 0 % (by BOD), 2 % (by HPLC)	1-Aminoanthraquinone: 50 - 150 (conc. 30 ug/L), 55 - 137 (conc. 3 ug/L)	Strontium Nitrate: Water:: considerable solubility and mobility; Soil/sediments non-significant adsorption
<u>Magnesium</u> : Fishes <i>Pimephales promelas</i> LC50(98hr) 541 mg/L; Fishes, <i>Daphnia magna</i> , LC50(48hr) 140 mg/L			
<u>Strontium Nitrate</u> : Acute toxicity - Fishes, <i>Carassius auratus</i> , LC100, 9,615 mg/l; Chronic toxicity - Fishes, <i>Gasterosteus aculeatus</i> , LC100, 2,912 mg/l			
<u>Potassium Chlorate</u> : fish: LC50 <i>oncorhynchus mykiss</i> (rainbow trout) 1750 mg/l - 96 hr, EC50 <i>daphnia magna</i> (water flea) 1093 mg/l 24 hr			

13. Disposal Considerations

Dispose of in a manner consistent with federal, state, and local regulations.. Refer to California Code of Regulations, Title 33, Sections 67384.1-67384.10 for additional information on handling and disposal of potassium perchlorate containing materials.

14. Transportation Information

Shipping Name	Hazard Class	ID Number	Packing Group	EX Number	Reportable Quantities	Net Explosive Quantity
Signal Devices, Hand	1.4G	UN0191	II	EX-2011021134	none	0.06 kg/unit

15. Regulatory Information

US Regulations	TSCA	CERCLA	CWA	CAA	SARA 313	SARA 302	Acute	Chronic	Fire	Reactivity	Pressure
1-Amino-Anthraquinone	yes	no	no	no	no	no	no	no	no	no	no
Magnesium	8(b)	no	no	no	no	no	no	yes	yes	no	no
Strontium Nitrate	yes	no	no	no	no	no	yes	no	no	yes	no
Potassium Perchlorate	yes	no	no	no	no	no	yes	yes	no	yes	no
Potassium Chlorate	yes	no	no	no	no	no	yes	yes	no	yes	no
Lactose	yes	no	no	no	no	no	no	no	no	no	no
Polyvinyl Chloride	yes	no	no	no	no	no	yes	no	no	no	no

US States	Prop 65	NJ	PA	Canada	WHMIS	DSL	Europe	wgk
1-Amino-Anthraquinone	no	no	no		D2B - toxic	yes		1
Magnesium	no	1136	yes		No results	yes		nwg
Strontium Nitrate	no	1743	no		No results	yes		2
Potassium Perchlorate	no	1577	no		C - Oxidizing material	yes		1
Potassium Chlorate	no	1560	no		No results	yes		2
Lactose	no	no	no		No results	yes		not listed
Polyvinyl Chloride	no	3622	no		No results	yes		not listed



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16. Other Information

Revision Information: May, 2014

Risk and Safety Phrases:

- R10 Flammable
- R38, Irritating to skin
- R20 Harmful by inhalation.
- R21 Harmful in contact with skin.
- R22 Harmful if swallowed.
- R34 Causes burns
- R36 Irritating to eyes.
- R37 Irritating to respiratory system.
- S17 Keep away from combustible material
- S16 Keep away from sources of ignition
- S2 Keep out of the reach of children.

- S8 Keep container dry.
- S13 Keep away from food, drink and animal foodstuffs.
- S24 Avoid contact with skin.
- S25 Avoid contact with eyes.
- S29 Do not empty into drains.
- S41, In case of fire and / or explosion do not breathe fumes
- S43 In case of fire use water
- S51 Use only in well ventilated areas

Key / Legend:

- HMIS: hazardous material identification system
- NFPA: national fire protection association
- CAS: Chemical Abstracts Service number
- EINECS: European inventory of existing chemical substances
- OSHA PEL: occupational safety and health administration permissible exposure limit
- NIOSH TLV: national institute of occupational safety and health Threshold Limit Value
- NTP: National Toxicology Program
- IARC: International Agency for Research on Cancer

- TSCA: toxic substance control act - US
- CERCLA: comprehensive environmental response, compensation and liability act - US
- CWA: clean water act - US
- CAA: clean air act - US
- SARA: superfund amendments and reauthorization act - US
- PROP 65: California's Proposition 65 list
- WHMIS: workplace hazardous materials information system - Canada
- DSL: Domestic Substances List - Canada
- WGK: water hazard classes - Germany

Legal Statement:

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SAFETY DATA SHEET

1. Product and Company Identification

**Skyblazer XLT and XLT, Twin
SAR Red Aerial Signal**

Orion Safety Products
3157 North 500 West
Peru, IN 46970

Use: Emergency signal

Phone Number: US 1-800-851-5260
Intl (11) 1-765-472-4375
EMERGENCY CHEMTREC 1-800-424-9300

2. Hazards Identification

Emergency Overview



Danger

GHS Classifications	
Explosive	Division 1.4
Acute Toxicity	Category 5
Skin Corrosion / Irritation	Product- Category 1A Contents - Category 2
Serious Eye Damage / Irritation	Product-Category 1 Contents - Category 2B

Hazard Statements:

Fire or projection hazard
Causes severe skin burns and eye damage (product when burning)
Causes skin and eye irritation (contents)
Harmful if inhaled or swallowed

NFPA Rating

Flammability 2
Health 2
Reactivity 1

Precautionary Statements:

Keep out of reach of children.
Keep away from heat/sparks/open flames/hot surfaces. – no smoking.
Keep/Store away from combustible materials.
Keep dry.
Keep cool. Do not expose long term to temperatures exceeding 167°F
Avoid breathing dust/smoke
Use only outdoors. Do not ignite inside a building, vehicle or boat cabin.
Wear eye protection.
Do not dismantle.
In case of fire: use water deluge. Do not use dry powder or foam extinguishers!

HMS Rating

Flammability 1
Health 3
Physical Hazard 1

3. Composition / Information on Ingredients

Component	CAS #	EINCS #	%age
Strontium Nitrate	10042-76-9	233-131-9	<50%
Magnesium	7439-95-4	231-104-6	<50%
Strontium Peroxide	1314-18-7	215-224-6	<50%
Polyvinyl chloride	9002-86-2	none	<20%
Black Powder	mixture	mixture	<20%
Dextrin	9004-53-9	232-675-4	<20%
Primer	n/a	n/a	n/a

4. First Aid Measures

Inhalation	If smoke or contents are inhaled, remove to fresh air. If not breathing, give artificial respiration and get medical aid.
Skin	For burns, cool with water and bandage appropriately. If contents are contacted, wash with area with soap and water for 15 minutes. Remove contaminated clothing and wash before reuse. Get medical aid if burned or irritation occurs.
Eyes	If burned, cover eye and get medical help immediately. If smoke or contents get into eye, flush with plenty of water for at least 15 minutes, occasionally lifting the up and lower lids. Remove contact lenses if easily possible Get medical aid immediately.
Ingestion	Get medical aid immediately.

5. Firefighting Measures

Extinguishing Media	Water Deluge	Unsuitable Extinguishing Media	Foam and dry chemical extinguishers and suffocation are ineffective
Protective Equipment and Precautions for Firefighters	Wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode. Prevent further propagation of fire by spraying unburnt nearby product with water. Combat fire from a sheltered position.		
Specific Hazards Arising from the Chemical	Only use outdoors. Use copious amounts of water to extinguish fire. Using small quantities of water on contents / broken product can cause auto / re-ignition as contents contain magnesium. Use of water on a magnesium fire will generate hydrogen gas that may cause an explosion. Irritating fumes. Flaming projectiles may be ejected during a fire. Trace amounts of lead vapor may be produced (from ignition primer) in a fire situation.		

Flashpoint Not Applicable Flammability Limits Not Applicable Ignition Temperature >180F

6. Accidental Release Measures

Personal Precautions	Environmental Precautions
Do not breathe smoke or contents and avoid contact with skin and eyes. Wear flame retardant clothing with long sleeves, dust mask, rubber or nitrile gloves, safety goggles, safety shoes when cleaning up contents. Avoid friction on the released product. Keep away from ignition sources. Contains strong dyes which will color all exposed areas.	Prevent dispersion of contents on soil and in water. Prevent contents from spreading or entering into drains, ditches, groundwater or rivers by using appropriate barriers.

Methods for Containment and Clean-up

Use caution when cleaning up spilled product contents. Remove heat, flames, sparks and other sources of ignition. Use non-sparking tools and equipment. Prevent buildup of electrostatic charges by grounding. Clean spills in a manner that does not disperse dust into the air. Do not absorb in sawdust or other combustible absorbents. Pick up spill for recovery or disposal and place in an approved container. Wash away remainder with plenty of water. Collect wash water for approved disposal. Be very careful - magnesium powder may spontaneously ignite in presence of moisture. Magnesium powder reacts with water, producing flammable hydrogen gas.

7. Handling and Storage

Handling Point product away from body, other people, animals or combustible products when firing. Wear appropriate eye protection when using. Follow instructions on package! Do not disassemble signal. Avoid contact with clothing and other combustible materials. Use outdoors only. Do not remove bottom cap unless you are outdoors and preparing to activate signal. Do not ignite or launch product inside a vehicle, boat cabin, or building. Avoid ingestion and inhalation of smoke and contents. Wash thoroughly after handling. Avoid contact with heat sparks, and flame.

Storage Store in a cool area out of direct sunlight. Do not allow long-term exposure to temperatures in excess of 180°F. Avoid long-term immersion in water, exposure to moisture, open flames or extremely high temperature. Store away from flammable materials, sources of heat, flame and sparks. Do not store partially burned signals in a vehicle, boat, closed container, warehouse, or any other building.

8. Exposure Controls / Personal Protection

Exposure Limits	OSHA PEL	ACGIH TLV
Strontium Nitrate	Not Established	Not Established
Magnesium	unknown	unknown
Strontium Peroxide	nuisance dust 15 mg/m ³ .	nuisance dust 15 mg/m ³ .
Polyvinyl chloride	5mg/ml for the respirable portion and 15mg/ml ¹ for total dust.	5 and 10mg/ml, respectively
Black Powder	Not established	Not established
Dextrin	15 mg/m ³ total dust	10 mg/m ³

Engineering Controls

Use product outdoors only! When cleaning up contents, use local and/or general exhaust.

Eye / Face Protection

Turn face from product when firing. Wear safety glasses or goggles during use and when cleaning up spilled contents.

Skin Protection

None under normal conditions when using product unless prolonged handling is anticipated. Contains strong dyes which will color all exposed areas. When cleaning up spilled contents, wear full length impervious protective clothing, including gloves, boots, and a lab coat, apron or coveralls, as appropriate. Wash hands and face before eating, drinking or using tobacco products.

Respiratory Protection

None under normal conditions when using product. A particulate respirator (NIOSH t N95 or better filters) may be worn during the cleanup of spilled contents.

General Hygiene

Use product outdoors away from combustible products. For cleanup of spilled contents, emergency showers and eye wash stations should be available. Educate and train employees in the safe use and handling of hazardous materials. Maintain good housekeeping and safety practices. Do not let contents accumulate in storage or work areas. Clean spills up promptly.

9. Physical and Chemical Properties

Appearance (color, physical form, shape): Orange plastic tube.

pH: Not available

Melting Point: >500°F

Solubility: Slight

Boiling Point: Not applicable

Freezing Point: Not applicable

Evaporation Rate: Not applicable

Vapor Pressure: Not applicable

Specific Gravity: Not applicable

Vapor Density: Not applicable

10. Stability and Reactivity

Chemical Stability Stable

Possibility of Hazardous Reactions

Hazardous polymerization will not occur.

Conditions to Avoid

Excessive temperatures, moisture, water, acids. Exposure of the signal to temperatures in excess of 180°F may cause weakening of the signal body. Avoid open flames, extremely high temperatures, wet conditions, and ignition sources

Incompatible Materials

Strong oxidizers, strong acids, oxidizing or reducing agents. Liquid acids of any kind. Hydrogen Fluoride, Avoid exposure to organic solvents which might weaken the signal body.

Hazardous Decomposition Products

Carbon monoxide, Nitrous oxides, Carbon dioxide. Magnesium hydroxides and oxides

11. Toxicology Information

Toxicology	Oral LD50	skin LD50	LC50
Strontium Nitrate	Rat 2750 mg/kg	Not Established	Not Established
Magnesium	Not Established	Not Established	Not Established
Strontium Peroxide	Not Established	Not Established	Not Established
Polyvinyl chloride	Not Established	Not Established	Not Established
Black Powder	Not Established	Not Established	Not Established
Dextrin	Not Established	Not Established	Not Established

Acute Dose Effects

Burning signal can cause severe burns if in contact with body - product burns at an extremely high temperature. Particles from firing may be harmful if inhaled. Contact with contents may cause moderate skin and eye irritation. Inhalation of smoke or contents will cause irritation to the lungs and mucus membrane. Exposure to smoke during use may aggravate asthma if inhaled.

Irritation	Irritating to the skin and eyes on contact. Inhalation will cause irritation to the lungs and mucus membrane.
Carcinogenicity	No information found
Genetic Effects	No information found
Developmental Effects	No information found
Target Organ Effects	Eye, skin, and lungs

Repeated Dose Effects

No known chronic effects. Repeated or prolonged exposure to this compound is not known to aggravate medical conditions.

Corrosivity	May cause eye or skin burns if in contact with burning signal.
Reproductive Effects	No information found
Neurological Effects	No information found
Sensitization	No information found

12. Ecological Information

Aquatic Toxicity	Persistence / Degradability	Bioaccumulation / Accumulation	Mobility in Environmental Media
Strontium Nitrate: <i>Acute toxicity - Fishes, Carassius auratus, LC100, 9,615 mg/l; Chronic toxicity - Fishes, Gasterosteus aculeatus, LC100, 2,912 mg/l</i>	No information found	No information found	No information found

13. Disposal Considerations (for spills and leakage)

Dispose of contaminated product and materials used in cleaning up spills or leaks in the manner approved for pyrotechnic material. Consult appropriate federal, state, and local regulatory agencies to ascertain proper disposal procedures. Open burning is preferred method of disposal for pyrotechnic materials..

14. Transportation Information

	shipping name	hazard class	ID Number	packing group	EX Number	Reportable Quantities
United States & International	Flares, aerial	1.4G	UN0403	II	XLT & SAR -EX2002110107 TWIN -EX2002110148	none

15. Regulatory Information

US Regulations	TSCA	CERCLA	CWA	CAA	SARA 313	SARA 302	Acute	Chronic	Fire	Reactivity	Pressure
Strontium Nitrate	yes	no	no	no	no	no	no	no	no	no	no
Magnesium	yes	no	no	no	no	no	no	no	no	no	no
Strontium Peroxide	yes	no	no	no	no	no	not stated	not stated	not stated	not stated	not stated
Polyvinyl chloride	yes	no	no	no	no	no	no	no	no	no	no
Black Powder	mixture	mixture	mixture	mixture	mixture	mixture	mixture	mixture	mixture	mixture	mixture
Dextrin	yes	no	no	no	no	no	no	no	no	no	no

US States	Prop 65	NJ	PA	Canada	WHMIS	DSL	Europe	wgk
Strontium Nitrate	no	1743	no		No results	yes		2
Magnesium	no	1136	yes		No results	yes		nwg
Strontium Peroxide	no	1745	no		No results	yes		not listed
Polyvinyl chloride	no	3622	no		No results	yes		not listed
Black Powder	mixture	mixture	mixture		mixture	mixture		mixture
Dextrin	no	no	no		No results	yes		1

16. Other Information

Revision Information: March 2015

Risk and Safety Phrases:

R10 Flammable
R38 Irritating to skin (contents)
R20 Harmful by inhalation.
R21 Harmful in contact with skin.
R22 Harmful if swallowed.
R34 Causes burns
R36 Irritating to eyes.
R37 Irritating to respiratory system.
S17 Keep away from combustible material
S16 Keep away from sources of ignition
S2 Keep out of the reach of children.

S8 Keep container dry.
S13 Keep away from food, drink and animal foodstuffs.
S24 Avoid contact with skin.
S25 Avoid contact with eyes.
S29 Do not empty into drains.
S41, In case of fire and / or explosion do not breathe fumes
S43 In case of fire use water
S51 Use only in well ventilated areas
S39 Wear eye / face protection.

Key / Legend:

HMIS: hazardous material identification system
NFPA: national fire protection association
CAS: Chemical Abstracts Service number
EINECS: European inventory of existing chemical substances
OSHA PEL: occupational safety and health administration permissible exposure limit
NIOSH TLV: national institute of occupational safety and health Threshold Limit Value
NTP: National Toxicology Program
IARC: International Agency for Research on Cancer

TSCA: toxic substance control act - US
CERCLA: comprehensive environmental response, compensation and liability act - US
CWA: clean water act - US
CAA: clean air act - US
SARA: superfund amendments and reauthorization act - US
PROP 65: California's Proposition 65 list
WHMIS: workplace hazardous materials information system - Canada
DSL: Domestic Substances List - Canada
WGK: water hazard classes - Germany

Legal Statement:

This information is accurate to the best knowledge Orion Safety Products. Orion Safety Products makes no representations or warranties, either express or implied, including without limitation any warranties of merchantability or fitness for a particular purpose, with respect to the information set forth herein or the product to which the information refers. Accordingly, Orion Safety Products will not be responsible for damages resulting from use of or reliance upon this information. Any person utilizing this document should seek competent professional advice to verify and assume responsibility for the suitability of this information to their particular situation.

MATERIAL SAFETY DATA SHEET - 16 Sections

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identifier #1170 - Wind and Waterproof Matches			[WHMIS Classification]
Product Use			
Manufacturer's Name		Supplier's Name Coghlan's Ltd.	
Street Address		Street Address 121 Irene Street	
City	Province	City Winnipeg	Province Manitoba
Postal Code	Emergency Telephone	Postal Code R3T 4C7	Emergency Telephone 1-877-264-4526
Date MSDS Revised February 1, 2012	MSDS Prepared By		Phone Number (204)284-9550

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Ingredients (specific)	%	CAS Number	LD ₅₀ of Ingredient (specify species and route)	LC ₅₀ of Ingredient (specify species)
Potassium Chlorate	35	3811-04-9		
Phosphorus	4	7723-14-0		

SECTION 3 - HAZARDS IDENTIFICATION

Route of Entry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Skin Contact	Skin Absorption	Eye Contact	Inhalation	Ingestion
[Emergency Overview]					
[WHMIS Symbols]					
[Potential Health Effects]					
<p>Flammable Solid – Ignites readily, burning fiercely. The combustion of large quantities of the product gives rise to significant quantities of irritant smoke with flames.</p>					

SECTION 4 - FIRST AID MEASURES

Skin Contact Wash with water, followed by soap and water. If large areas of the skin are effected, or if irritation arises seek medical care.
Eye Contact
Inhalation In severe cases, remove patient. If recovery is not rapid or product complete seek medical attention.
Ingestion If swallowed, rinse mouth with water. Seek medical attention and show this Data Sheet if possible.

[Optional, not required under WHMIS]

SECTION 5 – FIRE FIGHTING MEASURES

Flammable	<input type="checkbox"/> Yes	<input type="checkbox"/> No	If yes, under which conditions?
Means of Extinction Use large volumes of water as a spray or fog, avoid use of water jet. Contain run-off water with temporary earth barriers. A self contained breathing apparatus and full protective clothing must be worn in fire conditions.			
Flashpoint (°C) and Method Does not flash	Upper Flammable Limit (% by volume)	Lower Flammable Limit (% by volume)	
Autoignition Temperature (°C)	Explosion Data – Sensitivity to Impact	Explosion Data – Sensitivity to Static Discharge	
Hazardous Combustion Products Ignites readily. Oxidising agent will assist combustion. Keep fire exposed containers cool by spraying with water.			
[NFPA]			

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Leak and Spill Procedures No naked lights. No smoking. Ensure suitable personal protection during removal of a spillage involving large quantities of product. This means wearing eye protection, PROBAN overalls and chemically resistant gloves. Carefully transfer to a waterproof container for disposal and soak contents with water. Due to the potassium chlorate content, product must be prevented from entering surface water or drains. When spillages or uncontrolled discharges into watercourses occur, the Environment Agency must be alerted.

SECTION 7 – HANDLING AND STORAGE

Handling Procedures and Equipment Read the instructions before use. Do not breath smoke. Wash hands before meals and after use. When using do not eat, drink or smoke.
Storage Requirements Keep away from food, drink and animal feeding stuffs. Keep out of reach of children. Keep in original container, tightly closed in a safe place. Keep away from heat and sources of ignition. Store in a dry place. Storage Life: Physically and chemically stable for at least 4 years when stored in the original unopened sales container at ambient temperatures.

SECTION 8 – EXPOSURE CONTROL / PERSONAL PROTECTION

Exposure Limits	<input type="checkbox"/> ACGIH TLV	<input type="checkbox"/> OSHA PEL	<input type="checkbox"/> Other (specify)
Specific Engineering Controls (such as ventilation, enclosed process) Should it be necessary to enter a heavily smoke laden area, protective respiratory equipment and eye protection must be used.			
Personal Protective Equipment			
<input type="checkbox"/> Gloves	<input checked="" type="checkbox"/> Respirator	<input checked="" type="checkbox"/> Eye	<input type="checkbox"/> Footwear <input type="checkbox"/> Clothing <input type="checkbox"/> Other
If checked, please specify type See HSE Guidance Booklet (HS) G 53: "Respiratory Protective Equipment – a practical guide for users"			

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Odour and Appearance The match comprises of the main burning composition dipped onto the match splint and then tipped with a dark brown striker tip to facilitate ignition . Odourless.	Odour Threshold (ppm)
Specific Gravity (H ₂ O = 1)	Vapour Density (air=1) N/A	Vapour Pressure (mmHg) N/A
Evaporation Rate	Boiling Point (°C) N/A	Freezing Point (°C)
pH N/A	Coefficient of Water/Oil Distribution	[Solubility in Water] soluble

SECTION 10 – STABILITY AND REACTIVITY

Chemical Stability	<input type="checkbox"/> Yes <input type="checkbox"/> No	If no, under which conditions?
Incompatibility with Other Substances	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, which ones?
Stable under normal conditions.		
Reactivity, and under what conditions? Ignites readily.		
Hazardous Decomposition Products Combustion or thermal decomposition will evolve irritant vapours.		

SECTION 11– TOXICOLOGICAL INFORMATION

Effects of Acute Exposure	
Effects of Chronic Exposure	
Irritancy of Product Eye Contact: Combustion product may cause eye irritation. Ingestion: Harmful if swallowed.	
Skin Sensitization Possible risk of skin irritation.	Respiratory Sensitization Possible irritation to respiratory tract.
Carcinogenicity – IARC	Carcinogenicity – ACGIH
Reproductive Toxicity	Teratogenicity
Embryotoxicity	Mutagenicity
Name of Synergistic Products/Effects	

SECTION 12 – ECOLOGICAL INFORMATION

[Aquatic Toxicity]

This ecological assessment is calculated from data available on the components of the formulation.

Harmful to aquatic organisms.

Un-burned composition is non-selectively toxic to plants.

Not readily biodegradable.

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Disposal

Applies to unburned product. Do not contaminate ponds, waterways or ditches with chemical. Dispose of product according

To the requirements of the "Environmental Protection Act 1990". Empty containers should not be used for other purposes. Disposal should be in accordance with local, state or national legislation.

SECTION 14 – TRANSPORT INFORMATION

Special Shipping Information

See section 16

PIN

TDG

[DOT]

[IMO]

[ICAO]

SECTION 15 – REGULATORY INFORMATION

[WHMIS Classification]

[OSHA]

[SERA]

[TSCA]

Users should ensure that they comply with any relevant local, state or national legislation.

EU Classification: Matches are NOT classified under the CHIP Regulations.

However Octavius Hunt Ltd does give the following safety advice: S2: Keep out of reach of children.

S13: Keep away from food, drink and animal feeding stuffs.

S16: Keep away from sources of ignition – NO smoking.

UK Regulatory: Health and Safety at Work act 1974.

Information: The Control of Substances Hazardous to Health Regulations may apply to this product.

SECTION 16 – OTHER INFORMATION

UN No. : 1944

UN Pack Group: III

AIR

ICAO/IATA Class.

-primary : 4.1 Flammable Solid

SEA

IMDG Class.

-primary : 4.1 Flammable Solid

Marine Pollutant

Proper Shipping Name: Matches, Safety

ROAD/RAIL

ADR/RID Class. : 4.1

This data sheet was prepared in accordance with Directive 91/155/EEC.



ACR ELECTRONICS, INC.

Material Safety Data Sheet

MSDS 11

Revision T

8-28-2009

SECTION 1: Product and Company Identification

ACR Electronics, Inc., 5757 Ravenswood Rd., Ft. Lauderdale, FL. 33312 USA
PHONE: (954)-981-3333 FAX: (954)-961-4403 INTERNET: www.acrelectronics.com
E-MAIL: msds@acrelectronics.com

Hours of Operation: 9am to 5pm Mon. through Fri.

EMERGENCY 24-HOUR TELEPHONE NUMBERS: CHEM-TEL, INC, Inside U.S. (800) 255-3924, Outside U.S. (813) 248-0585 and FAX (813) 248-0582 see www.chemtelinc.com for more information about Chem-Tel, Inc.

Primary Batteries SHIPPING NAME **LITHIUM METAL BATTERIES**
1032, 1034 LLB-1 BATTERY (TWO 2/3A BATTERIES)

Batteries Contained in Equipment SHIPPING NAME **LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT**
2766.6 MINI B300 ILS RLB-30 (ONE 2 2/3A BATTERY)
2767 MINI B300 ILS H2ON (ONE 2 2/3A BATTERY)
2769.4, 2769.5 VECTA2™ (ONE 2 2/3A BATTERY) Also see MSDS 29 for Mini B 2 Test Beacon in this Kit
2869, 2869.1 VECTA3™ (ONE 2 2/3A BATTERY) Also see MSDS 29 for Mini B 2 Test Beacon in this Kit
2781, 2785 AND 2786 FPR 100 KIT (ONE 2 2/3A BATTERY), FPR-100 KIT (ONE 2 2/3A BATTERY), RLB-35 PROGRAMING HEAD (ONE 2 2/3A BATTERY)

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) 625-3333. 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 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.



ACR ELECTRONICS, INC.

Material Safety Data Sheet

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.



ACR ELECTRONICS, INC.

Material Safety Data Sheet

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 pyrolize 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 ³ Ceiling OSHA PEL 0.2 mg/m ³ TWA ACGIH TLV
1,2-Dimethoxyethane	None Established
Propylene Carbonate	2 mg/m ³ Ceiling ACGIH TLV
Lithium	None Established
Lithium Trifluoromethane Sulfonate	None Established
Carbon Black	3.5 mg/m ³ TWA OSHA PEL/ACGIH TLV
Ethylene Carbonate	None Established
Graphite (natural-non-fibrous)	15 mppcf TWA OSHA PEL 2 mg/m ³ TWA (respirable dust) ACGIH TLV
Graphite (synthetic non-fibrous)	5 mg/m ³ TWA (respirable dust), 15 mg/m ³ TWA (total dust) OSHA PEL 2 mg/m ³ 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.



ACR ELECTRONICS, INC.

Material Safety Data Sheet

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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)
Auto Ignition Point: Not applicable
Appearance and Odor: Small cylindrical batteries. Contents dark in color.

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/m³/6 hr Propylene Carbonate: LD50 oral rat 29100 uL/kg; LD50 dermal rabbit >20 mL/kg; LC50 inhalation rat >5 g/m³ 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.

SECTION 12: ECOLOGICAL INFORMATION

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

SECTION 13: DISPOSAL INFORMATION

Lithium batteries are best disposed of as a non-hazardous waste when fully or mostly discharged. The Federal Environmental Protection Agency (EPA) (governed by the Resource Conservation and Recovery Act (RCRA)) do not list or exempt Lithium as a hazardous waste. However, if waste lithium batteries are still fully charged or only partially discharged, they can be considered a reactive hazardous waste because of significant amounts of unreacted lithium in the battery. The batteries must be neutralized through an approved secondary treatment facility prior to disposal as a hazardous waste (as required by the U.S. Land Ban Restrictions for the hazardous and Solid Waste Amendments of 1984.) Secondary treatment centers receive these batteries as manifested hazardous waste under code "D003 - reactive." Use a professional disposal firm for disposal of mass quantities of undischarged lithium batteries. DO NOT INCINERATE or subject battery cells to temperatures in excess of 212°F. Such treatment can cause cell rupture.

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



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SECTION 14: TRANSPORT INFORMATION

The transportation of lithium metal batteries and lithium metal batteries contained in equipment is regulated as UN3090 and UN3091 by ICAO, IATA, IMO and US DOT. However, the listed lithium metal batteries cells and batteries are not subject to the other provisions of the regulations as long as they are packaged and marked in accordance with the regulations.

(The lithium content of cells contained in this document is less than 1 gram. The lithium content of batteries contained in this document is less than 2 grams)

The listed lithium metal batteries meet the requirements of the UN Manual of Tests and Criteria, Part III subsection 38.3. In addition, each shipment must be accompanied by appropriate documentation and the package must be capable of withstanding the drop test requirements.

Transportation in the United States (Reference 49 CFR parts 171, 172, 173 and 175) Passenger Aircraft Ban for shipments (Lithium Batteries only)

All primary lithium metal batteries are banned as cargo on passenger aircraft. The outside of each package must be labeled with the following statement: "**PRIMARY LITHIUM BATTERIES- FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT**". The labeling requirement covers shipments via highway, rail, vessel or aircraft and covers all shipments inside the US.

Lithium Metal Batteries and Lithium Metal Batteries contained in Equipment are "excepted" from Dangerous Goods Classification based on US/DOT CFR 49 Section 173.185, Section 172.102. The listed batteries and battery packs were tested and meets requirements for shipping per The UN Manual of Tests and Criteria, Part III, Subsection 38.3, UN T1-T8 Tests ST/SG/AC.10/11.

Except for personal use, the shipment of lithium metal batteries aboard passenger aircraft is no longer allowed. Airline passengers may continue to 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>

Transportation Internationally (Reference IATA Dangerous Goods Regulations 50th edition)

Lithium Metal Batteries: Effective January 1, 2009, new ICAO regulations (Packing Instruction 968, Part 1) for air cargo shipments require a reduced package size quantity and the use of a new label. The maximum quantity per package must not exceed 2.5 Kg G. The new Lithium Battery Caution label (IATA Figure F.4.I) requires an Emergency Contact telephone number. In the case of primary lithium metal batteries, the UN number is UN 3090.

Lithium Metal Batteries Contained in Equipment: Effective January 1, 2009, new ICAO regulations (Packing Instruction 970, Part 1) for air cargo shipments require a reduced package size quantity and the use of a new label. The new Lithium Battery Caution label (IATA Figure F.4.I) requires an Emergency Contact telephone number. The UN number is UN 3091.

At this time, IMO and ADR continue to follow Special Provision 188 from the UN Model Regulations.



ACR ELECTRONICS, INC.

Material Safety Data Sheet

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 MSDS 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 MSDS contains all information required by the Controlled Products Regulations.

SECTION 16: OTHER INFORMATION

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

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

DISCLAIMER: This MSDS 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 Gillette 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.

PRODUCT SAFETY DATASHEETPage 1 of 4
Lithium Iron Disulfide Batteries
January, 2011**PRODUCT SAFETY DATA SHEET****PRODUCT NAME:** Energizer Battery**Type No.:** L91, L92, EA91, EA92**Volts:** 1.5**TRADE NAMES:** ULTIMATE (L91, L92); ADVANCED (EA91, EA92) **Approximate Weight:** 7.6 g. (L92, EA92) – 14.5 g. (L91, EA91)**CHEMICAL SYSTEM:** Lithium Iron Disulfide**Designed for Recharge:** No**SECTION 1 - MANUFACTURER INFORMATION**Energizer Battery Manufacturing, Inc.
25225 Detroit Rd.
Westlake, OH 44145Telephone Number for Information:
800-383-7323 (USA / CANADA)

Date Prepared: January, 2011

SECTION 2 - HAZARDS IDENTIFICATION

Under normal conditions of use, the battery is hermetically sealed.

Ingestion: Swallowing a battery can be harmful.**Inhalation:** Contents of an open battery can cause respiratory irritation.**Skin Contact:** Contents of an open battery can cause skin irritation.**Eye Contact:** Contents of an open battery can cause severe irritation.**SECTION 3 - INGREDIENTS****IMPORTANT NOTE:** The battery should not be opened or burned. Exposure to the ingredients contained within or their combustion products could be harmful.

MATERIAL OR INGREDIENT	PEL (OSHA)	TLV (ACGIH)	%/wt.
Carbon Black (CAS# 1333-86-4)	3.5 mg/m ³ TWA	3.5 mg/m ³ TWA	0-4
1,2 Dimethoxyethane (CAS# 110-71-4)	None established	None established	2-4
1,3 Dioxolane (CAS# 646-06-0)	None established	20 ppm TWA	5-9
Graphite (CAS# 7782-42-5)	15 mg/m ³ TWA (total dust) 5 mg/m ³ TWA (respirable fraction)	2 mg/m ³ TWA (respirable fraction)	0-4
Iron Disulfide (CAS# 1309-36-0)	None established	None established	24-35
Lithium or Lithium Alloy	None established	None established	6.7 / AA 6.6 / AAA
Lithium Iodide	None established	None established	0.3-3
Non-Hazardous Components Steel (Iron CAS# 7439-89-6)	None established	None established	18-22
Plastic and Other	None established	None established	Balance

SECTION 4 – FIRST AID MEASURES

Ingestion: Do not induce vomiting or give food or drink. Seek medical attention immediately. CALL NATIONAL BATTERY INGESTION HOTLINE for advice and follow-up (202-625-3333) collect day or night.

Inhalation: Provide fresh air and seek medical attention.

Skin Contact: Remove contaminated clothing and wash skin with soap and water.

Eye Contact: Immediately flush eyes thoroughly with water for at least 15 minutes, lifting upper and lower lids, until no evidence of the chemical remains. Seek medical attention.

Note: Carbon black is listed as a possible carcinogen by International Agency for Research on Cancer (IARC).

SECTION 5- FIRE FIGHTING MEASURES

In case of fire where lithium batteries are present, flood area with water or smother with a Class D fire extinguishant appropriate for lithium metal, such as Lith-X. Water may not extinguish burning batteries but will cool the adjacent batteries and control the spread of fire. Burning batteries will burn themselves out. Virtually all fires involving lithium batteries can be controlled by flooding with water. However, the contents of the battery will react with water and form hydrogen gas. In a confined space, hydrogen gas can form an explosive mixture. In this situation, smothering agents are recommended. A smothering agent will extinguish burning lithium batteries.

Emergency Responders should wear self-contained breathing apparatus. Burning lithium-iron disulfide batteries produce toxic and corrosive lithium hydroxide fumes and sulfur dioxide gas.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

To cleanup leaking batteries:

Ventilation Requirements: Room ventilation may be required in areas where there are open or leaking batteries.

Respiratory Protection: Avoid exposure to electrolyte fumes from open or leaking batteries.

Eye Protection: Wear safety glasses with side shields if handling an open or leaking battery.

Gloves: Use neoprene or natural rubber gloves if handling an open or leaking battery.

Battery materials should be disposed of in a leak-proof container.

SECTION 7 - HANDLING AND STORAGE

Storage: Store in a cool, well ventilated area. Elevated temperatures can result in shortened battery life. In locations that handle large quantities of lithium batteries, such as warehouses, lithium batteries should be isolated from unnecessary combustibles.

Mechanical Containment: If potting or sealing the battery in an airtight or watertight container is required, consult your Energizer Battery Manufacturing, Inc. representative for precautionary suggestions. Do not obstruct safety release vents on batteries. Encapsulation of batteries will not allow cell venting and can cause high pressure rupture.

Handling: Accidental short circuit for a few seconds will not seriously affect the battery. Prolonged short circuit will cause the battery to lose energy, generate significant heat and can cause the safety release vent to open. Sources of short circuits include jumbled batteries in bulk containers, metal jewelry, metal covered tables or metal belts used for assembly of batteries into devices. Damaging a lithium battery may result in an internal short circuit.

The contents of an open battery, including a vented battery, when exposed to water, may result in a fire and/or explosion. Crushed or damaged batteries may result in a fire.

If soldering or welding to the battery is required, consult your Energizer representative for proper precautions to prevent seal damage or short circuit.

Charging: This battery is manufactured in a charged state. It is not designed for recharging. Recharging can cause battery leakage or, in some cases, high pressure rupture. Inadvertent charging can occur if a battery is installed backwards.

Labeling: If the Energizer label or package warnings are not visible, it is important to provide a package and/or device label stating:

WARNING: Battery can explode or leak and cause burns if installed backwards, disassembled, charged, or exposed to water, fire or high temperature.

Where accidental ingestion of small batteries is possible, the label should include:

WARNING: (1) Keep away from small children. If swallowed, promptly see doctor; have doctor phone (202) 625-3333 collect.
(2) Battery can explode or leak and cause burns if installed backwards, disassembled, charged, or exposed to water, fire or high temperature.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Ventilation Requirements: Not necessary under normal conditions.

Respiratory Protection: Not necessary under normal conditions.

Eye Protection: Not necessary under normal conditions.

Gloves: Not necessary under normal conditions.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point @ 760 mm Hg (°C)	Not applicable for an Article
Vapor Pressure (mm Hg @ 25°C)	Not applicable for an Article
Vapor Density (Air = 1)	Not applicable for an Article
Density (g/cm ³)	1.7 -2.0
Percent Volatile by Volume (%)	Not applicable for an Article
Evaporation Rate (Butyl Acetate = 1)	Not applicable for an Article
Physical State	Solid
Solubility in Water (% by weight)	Not applicable for an Article
pH	Not applicable for an Article
Appearance and Odor	Solid object / no odor

SECTION 10 - STABILITY AND REACTIVITY

Lithium iron disulfide batteries do not meet any of the criteria established in 40 CFR 261.2 for reactivity.

SECTION 11 - TOXICOLOGICAL INFORMATION

Lithium iron disulfide batteries are not hazardous waste. Under normal conditions of use, lithium iron disulfide batteries are non-toxic.

SECTION 12 - ECOLOGICAL INFORMATION

Issues such as ecotoxicity, persistence and bioaccumulation are not applicable for articles.

SECTION 13 – DISPOSAL CONSIDERATIONS

Dispose of in accordance with all applicable federal, state and local regulations.

SECTION 14 – TRANSPORT INFORMATION

In general, all batteries in all forms of transportation (ground, air, or ocean) must be packaged in a safe and responsible manner. Regulatory concerns from all agencies for safe packaging require that batteries be packaged in a manner that prevents short circuits and be contained in "strong outer packaging" that prevents spillage of contents. All original packaging for Energizer lithium batteries are compliant with these regulatory concerns.

Energizer lithium-iron disulfide batteries are exempt from the classification as dangerous goods as they meet the requirements of the special provisions listed below. (Essentially, they are properly packaged and labeled, contain less than 1 gram of lithium and pass the tests defined in UN model regulation section 38.3).

Regulatory Body	Special Provisions
ADR	188, 230, 310, 636
IMDG	188, 230, 310, 957
UN	UN 3090, UN 3091
US DOT	29, A54, A55, 101, 102, A100
IATA, ICAO	Packaging Instructions 968 - 970

SECTION 15 - REGULATORY INFORMATION

Outside of the transportation requirements noted in Section 14, lithium iron disulfide batteries marketed by Energizer Battery Manufacturing, Inc. are not regulated.

SARA/TITLE III - As an article, this battery and its contents are not subject to the requirements of the Emergency Planning and Community Right-To-Know Act.

SECTION 16 - OTHER INFORMATION

None.

Energizer has prepared copyrighted Product Safety Datasheets to provide information on the different Eveready/Energizer battery systems. As defined in OSHA Hazard Communication Standard, Section 1910.1200 (c), Eveready/Energizer batteries are manufactured articles, which do not result in exposure to a hazardous chemical under normal conditions of use. The information and recommendations set forth herein are made in good faith, for information only, and are believed to be accurate as of the date of preparation. However, ENERGIZER BATTERY MANUFACTURING, INC., MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THIS INFORMATION AND DISCLAIMS ALL LIABILITY FROM REFERENCE ON IT.



Energizer.

Energizer Battery Manufacturing, Inc.
25225 Detroit Road
Westlake, Ohio 44145
(440) 835-7500 Phone
(440) 899-6028 Fax

Lithium Primary/Metal Battery Transportation

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Introduction

The rules governing the transportation of lithium batteries are divided into slightly differing regulations in the United States and outside the United States. Each set of rules is shown separately below for both battery transportation and for batteries packed with or inside equipment.

UPDATE The U.S. Department of Transportation (DOT) will be publishing a Supplemental Notice of Proposed Rulemaking – not a final effective rule – in December, 2011 with a final rule scheduled for some time in 2012. This Supplemental Notice of Proposed Rulemaking replaces the proposal dated January 11, 2010.

This guidance document is meant to cover expected situations for shipments of Energizer lithium batteries only. For special circumstances, please contact your authorized Energizer distributor.

Lithium batteries identified as being defective for safety reasons, that have been damaged or have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

For all shipments, it is required that any person preparing or offering lithium cells or batteries for transport receive adequate instruction on these requirements commensurate with their responsibilities.

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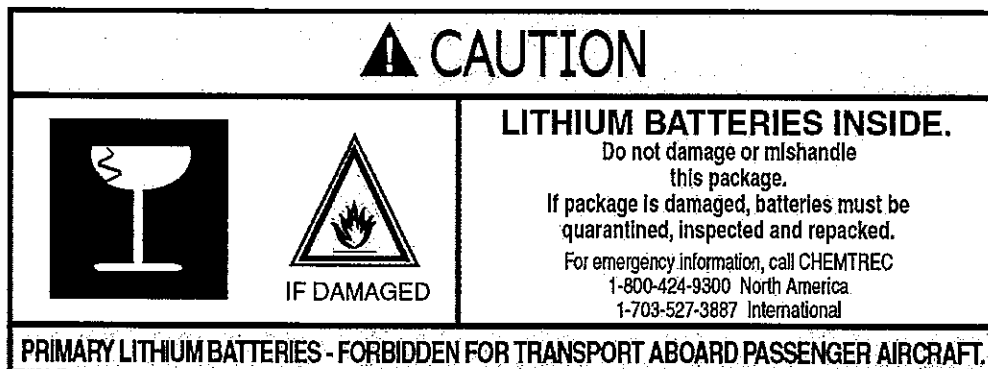
Within, To and From the United States

Batteries Only - Surface and Air Transportation (49 CFR 172.102.188)

To ship lithium batteries by any method (rail, truck, sea vessel, air) within, to and from the United States, the shipments must meet the criteria shown below.

- Batteries must be packaged in a manner to prevent short circuits and separated so that electrically active terminals cannot come into contact with each other.
- The gross weight of the shippable container shall not exceed 30 kg.
- The shippable container must be capable of passing a 1.2 m. drop test in any orientation without spillage of the contents of the packaging, damage to the batteries inside or shifting of the contents that could lead to short circuit.
- The shippable container must be marked "PRIMARY LITHIUM BATTERIES – FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" or "LITHIUM METAL BATTERIES – FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT". This marking must be a background of contrasting color and the letters must be at least 6 mm in height.
- The shippable container must be marked to indicate lithium batteries are present and that special procedures should be followed if the package is damaged.

To meet the marking requirements addressed above, Energizer marks packages with the following label.



For customers re-shipping batteries, the CHEMTREC information may not be used without a subscription from CHEMTREC.

Customers may also use the red and white bordered label shown on page 6 of this document, in place of the yellow label above, provided the statement "PRIMARY LITHIUM BATTERIES – FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" is

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marked on the same face of the packaging with the red-bordered label. The font-size requirements listed above would still apply.

- Each shipment must be accompanied by documentation that includes the following statement:

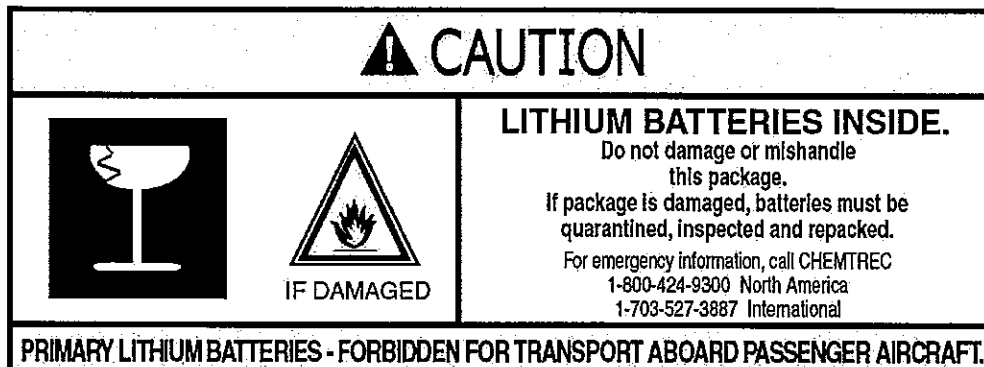
“This shipment contains Primary Lithium batteries. Do not damage or mishandle the packages. If package is damaged, flammability hazard may exist; batteries must be quarantined, inspected, and repacked.”

- The cell or battery must be of the type proven to meet the requirements of each test in the United Nations (UN) Manual of Tests and Criteria, Part III, Sub-Section 38.3 (Lithium Batteries).

Batteries Contained In or Packed With Equipment, Surface and Air Transportation
(49 CFR 172.102.188) and (49 CFR 172.102.A101)

- Batteries must be packaged in a manner to prevent short circuits and separated so that electrically active terminals cannot come into contact with each other.
- The shippable container must be marked “PRIMARY LITHIUM BATTERIES – FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT” or “LITHIUM METAL BATTERIES – FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT”. This marking must be a background of contrasting color and the letters must be at least 6 mm in height.
- The shippable container must be marked to indicate lithium batteries are present and that special procedures should be followed if the package is damaged.

To meet the requirements addressed above, Energizer marks packages with the following label.



While the CHEMTREC information is not required for batteries packaged with or in equipment, Energizer uses the same label for all shipments (batteries and batteries with

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or in equipment.) For customers re-shipping batteries with or in equipment, this CHEMTREC information may not be used without a subscription from CHEMTREC.

Customers may also use the red and white bordered label shown on page 6 of this document, in place of the yellow label above, provided the statement "PRIMARY LITHIUM BATTERIES – FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" is marked on the same face of the packaging with the red-bordered label. The font-size requirements listed above would still apply.

- Each shipment must be accompanied by documentation that includes the following statement:

"This shipment contains Primary Lithium batteries. Do not damage or mishandle the packages. If package is damaged, flammability hazard may exist; batteries must be quarantined, inspected, and repacked."

- There is no maximum packaging gross weight.
- For air shipments only:
 - The package shall contain no more than the number of lithium batteries or cells necessary to power the intended piece of equipment
 - The net weight of the lithium batteries in the package does not exceed 5 kg.

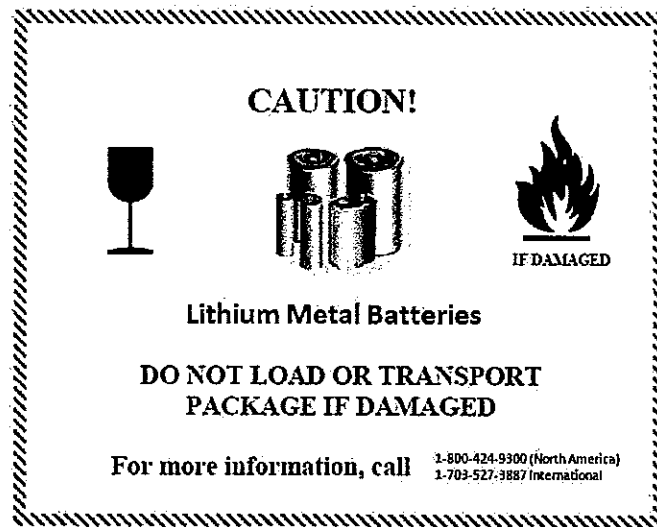
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International (Outside the United States)

Batteries Only, Air Only

(International Air Transport Association (IATA) Packing Instruction 968)

- Batteries must be packaged in a manner to prevent short circuits and separated so that electrically active terminals cannot come into contact with each other.
- The gross weight of the shippable container shall not exceed 2.5 kg.
- The shippable container must be capable of passing a 1.2 m. drop test in any orientation without spillage of the contents of the packaging, damage to the batteries inside or shifting of the contents that could lead to short circuit.
- The batteries must be capable of passing the UN Model Regulation T-tests (UN Manual of Tests and Criteria, Part III, Sub-Section 38.3 Lithium Batteries).
- The shippable container must be labeled with the label shown below. The minimum dimensions of the label are 120 mm x 110 mm. The red border is mandatory but the batteries, glass and fire icon can be in black and white.



For customers re-shipping batteries, the telephone numbers (CHEMTREC information) may not be used without a subscription from CHEMTREC.

- Each shipment must be accompanied by a document such as an air waybill with the following:
 - “This shipment contains Primary Lithium batteries. Do not damage or mishandle the packages. If package is damaged, flammability hazard may exist; batteries must be quarantined, inspected, and repacked.”
 - A telephone number for additional information.

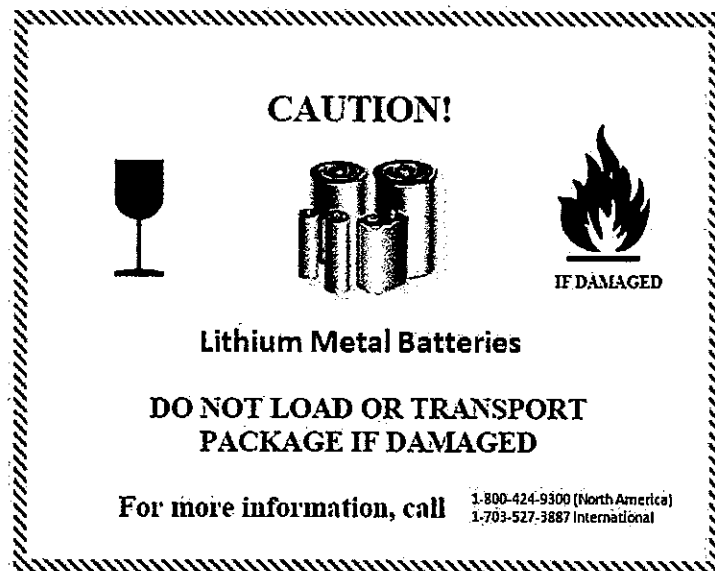
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Batteries Only, Surface (Truck/Sea/Rail) Transportation (IMDG/ADR Regulations)

To ship lithium batteries by surface (rail, truck, sea vessel, etc) outside the United States, the shipments must meet the criteria shown below.

- Cell and batteries must meet the requirements of UN Manual of Test and Criteria, Part III, sub-section 38.3.
- Cells and batteries shall be packed in strong outer packagings and inner packagings that completely enclose the cell or battery and protect the batteries from short circuit.
- Each package shall be marked with an indication:
 - The package contains 'lithium metal' cells or batteries;
 - The package shall be handled with care and that a flammability hazard exists if the package is damaged;
 - Information that special procedures shall be followed if the package is damaged and that inspection and possible repackaging is necessary; and
 - A telephone number of more information.

While not technically required, the IATA label shown below meets the marking requirements listed above for the shippable package. The minimum dimensions of the label are 120 mm x 110 mm. The red border is mandatory but the batteries, glass and fire can be in black and white.



For customers re-shipping batteries packed in or with equipment, the telephone numbers (CHEMTREC information) may not be used without a subscription from CHEMTREC.

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- Each package shall be accompanied separately by a document with:
 - “This shipment contains Primary Lithium batteries. Do not damage or mishandle the packages. If package is damaged, flammability hazard may exist, batteries must be quarantined, inspected, and repacked.”
 - A telephone number for additional information
- Each package shall be capable of withstanding a 1.2 m drop test in any orientation without damage to the cells or batteries, shifting of contents so as to allow uncontrolled battery to battery or cell-to-cell contact, or release of the contents.
- The maximum weight of a shippable package is 30 kg gross mass.

Batteries Packed With or Contained In Equipment, Air Transportation
(IATA Packing Instructions 969 and 970)

- The batteries must be capable of passing the UN Model Regulation T-tests (UN Manual of Tests and Criteria, Part III, Sub-Section 38.3 Lithium Batteries).
- Cells and batteries must be packed in inner packagings that completely enclose the cell or battery.
- Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
- The maximum number of batteries in each package must be the minimum number required to power the equipment plus two spares.
- For batteries packaged **with** equipment only, the shippable container must be capable of passing a 1.2 m. drop test in any orientation without spillage of the contents of the packaging, damage to the batteries inside or shifting of the contents that could lead to short circuit. This provision does not apply to batteries packaged **inside** equipment.
- For batteries contained **inside** equipment only, the equipment must be equipped with an effective means of preventing accidental activation.
- The shippable container must be labeled with the label shown below. The minimum dimensions of the label are 120 mm x 110 mm. The red border is mandatory but the batteries, glass and fire can be in black and white.



For customers re-shipping batteries packed in or with equipment, the telephone numbers (CHEMTREC information) may not be used without a subscription from CHEMTREC.

- Each shipment must be accompanied by a document such as an air waybill with an indication that:
 - “This shipment contains Primary Lithium batteries. Do not damage or mishandle the packages. If package is damaged, flammability hazard may exist, batteries must be quarantined, inspected, and repacked.”
 - A telephone number for additional information

Batteries Contained In or Packed With Equipment
Surface (Truck/Sea/Rail) Transportation (IMDG / ADR Regulations)

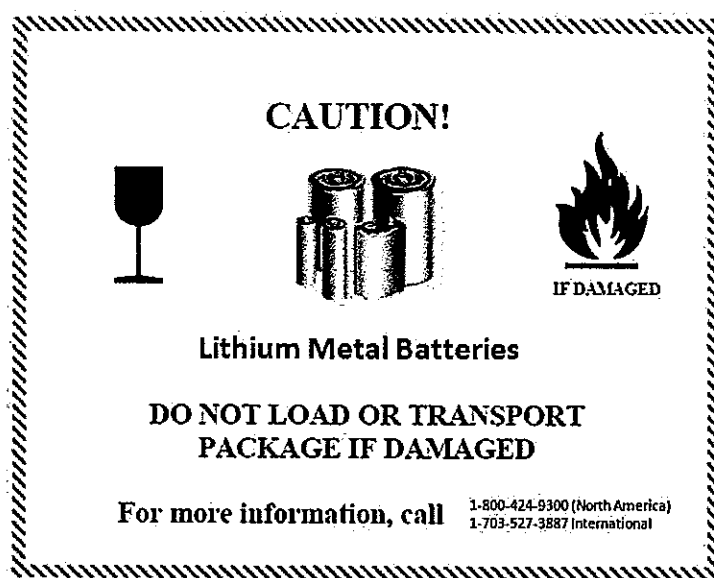
To ship lithium batteries packaged with, or inside equipment by surface (rail, truck, sea vessel, etc) outside the United States, the shipments must meet the criteria shown below.

- Cell and batteries must meet the requirements of UN Manual of Test and Criteria, Part III, sub-section 38.3.
- Cells and batteries, except when installed **inside** equipment, shall be packed in strong outer packagings and inner packagings that completely enclose the cell or battery and protect the batteries from short circuit.
- Cells or batteries installed **inside** equipment shall be protected from damage and short circuit and the equipment shall be equipped with a means of preventing accidental activation.
- The shippable container must be labeled with:

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- An indication the package contains 'lithium metal' cells or batteries;
- An indication the package shall be handled with care and that a flammability hazard exists if the package is damaged;
- An indication that special procedures shall be followed in the event the package is damaged, to include inspection and repacking if necessary; and
- A telephone number for additional information.

While not technically required, the IATA label shown below meets the marking requirements listed above for the shippable package. The minimum dimensions of the label are 120 mm x 110 mm. The red border is mandatory but the batteries, glass and fire can be in black and white.



For customers re-shipping batteries packed in or with equipment, the telephone numbers (CHEMTREC information) may not be used without permission and a subscription from CHEMTREC.

- Each shipment must be accompanied by a shipping document with an indication that:
 - "This shipment contains Primary Lithium batteries. Do not damage or mishandle the packages. If package is damaged, flammability hazard may exist, batteries must be quarantined, inspected, and repacked."
 - A telephone number for additional information
- Except for batteries installed **inside** equipment, each package shall be capable of withstanding a 1.2 m drop test in any orientation without damage to the cells or batteries, shifting of contents so as to allow uncontrolled battery to battery or cell-to-cell contact, or release of the contents.

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MATERIAL SAFETY DATA SHEET – 16 Sections

SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identifier #9248, #9249 Survival Candle			[WHMIS Classification]
Product Use			
Manufacturer's Name		Supplier's Name Coghlan's Ltd.	
Street Address		Street Address 121 Irene Street	
City	Province	City Winnipeg	Province Manitoba
Postal Code	Emergency Telephone	Postal Code R3T 4C7	Emergency Telephone 1-877-264-4526
Date MSDS Revised February 01, 2010	MSDS Prepared By		Phone Number (204)284-9550

SECTION 2 – COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Ingredients (specific)	%	CAS Number	LD ₅₀ of Ingredient (specify species and route)	LC ₅₀ of Ingredient (specify species)
No hazardous components				

SECTION 3 – HAZARDS IDENTIFICATION

Route of Entry <input checked="" type="checkbox"/> Skin Contact <input type="checkbox"/> Skin Absorption <input type="checkbox"/> Eye Contact <input checked="" type="checkbox"/> Inhalation <input type="checkbox"/> Ingestion
[Emergency Overview] Paraffin wax fumes may cause discomfort; molten product will cause burns upon skin contact.
[WHMIS Symbols]
[Potential Health Effects]

SECTION 4 – FIRST AID MEASURES

Skin Contact If burned, cool immediately with cold water. If serious, consult a physician.
Eye Contact Flush with eyes open with copious amounts of cold water. Consult a physician.
Inhalation Remove to fresh air.
Ingestion Product not acutely toxic by ingestion.

[Optional, not required under WHMIS]

SECTION 5 – FIRE FIGHTING MEASURES

Flammable	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	If yes, under which conditions? When ignited.
Means of Extinction Water, fog, foam, dry chemical or CO ₂ . Use water to keep exposed containers cool.			
Flashpoint (°C) and Method 200 (ASTM D92)	Upper Flammable Limit (% by volume)	Lower Flammable Limit (% by volume)	
Autoignition Temperature (°C)	Explosion Data – Sensitivity to Impact	Explosion Data – Sensitivity to Static Discharge	
Hazardous Combustion Products			
[NFPA]			

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Leak and Spill Procedures
Recover free product. Keep out of sewers and water courses by diking or impounding. Allow to solidify and scrape up.

SECTION 7 – HANDLING AND STORAGE

Handling Procedures and Equipment
No special procedure or equipment required for handling.
Storage Requirements
Store no higher than 15°C (59°F) above melting point. Avoid direct exposure to sunlight.

SECTION 8 – EXPOSURE CONTROL / PERSONAL PROTECTION

Exposure Limits	<input type="checkbox"/> ACGIH TLV	<input type="checkbox"/> OSHA PEL	<input type="checkbox"/> Other (specify)
Specific Engineering Controls (such as ventilation, enclosed process)			
Personal Protective Equipment			
<input checked="" type="checkbox"/> Gloves	<input type="checkbox"/> Respirator	<input checked="" type="checkbox"/> Eye	<input type="checkbox"/> Footwear
<input checked="" type="checkbox"/> Clothing	<input type="checkbox"/> Other		
If checked, please specify type			
Gloves – as required to handle hot material; Eye – normal industrial eye protection recommended; Clothing – splash resistant clothing and footwear.			

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Physical State Solid	Odour and Appearance white in appearance/ slight odor	Odour Threshold (ppm)
Specific Gravity (H ₂ O = 1) .89 @ 25°C	Vapour Density (air=1) 5	Vapour Pressure (mmHg) .01 @ 20°C
Evaporation Rate (Butyl Acetate = 1) .01	Boiling Point (°C) 300°F	Freezing Point (°C)
pH	Coefficient of Water/Oil Distribution	[Solubility in Water] Insoluble

SECTION 10 – STABILITY AND REACTIVITY

Chemical Stability <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If no, under which conditions?
Incompatibility with Other Substances <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes, which ones? Strong oxidizing agents
Reactivity, and under what conditions?	
Hazardous Decomposition Products Peroxides or chlorine; depending on conditions of oxidation.	

SECTION 11– TOXICOLOGICAL INFORMATION

Effects of Acute Exposure	
Effects of Chronic Exposure	
Irritancy of Product	
Skin Sensitization	Respiratory Sensitization
Carcinogenicity – IARC N/A	Carcinogenicity – ACGIH
Reproductive Toxicity	Teratogenicity
Embryotoxicity	Mutagenicity
Name of Synergistic Products/Effects	

SECTION 12 - ECOLOGICAL INFORMATION

[Aquatic Toxicity]

SECTION 13 - DISPOSAL CONSIDERATIONS

Waste Disposal

Dispose of in approved incinerator or licensed disposal facility. Follow local regulations.

SECTION 14 - TRANSPORT INFORMATION

Special Shipping Information

UN1944, Class 4.1, PGIII

PIN

TDG

[DOT]

[IMO]

[ICAO]

SECTION 15 - REGULATORY INFORMATION

[WHMIS Classification]

[OSHA]

[SERA]

[TSCA]

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

SECTION 16 - OTHER INFORMATION

The data given here is based on current knowledge and experience. The purpose of this Safety Data Sheet is only to describe the product. The data does not signify any warranty with regard to the products' properties.

Safety Data Sheet according Regulation (EC) No.: 1907/2006, Annex II

1. IDENTIFICATION OF THE PRODUCT AND OF THE COMPANY

Product Label Name

Dry fuel Esbit

Use

Dry fuel.

Company identification

Gummi-Noller GmbH & Co. KG, Ysostr. 2, 27283 Verden
 Telefon (+49) 0 42 31 / 8 88-0, Fax (+49) 0 42 31 / 8 88-88

E- mail address of the competent person: alexandra.guenther@gmx.de

Telephone number in case of emergencies Telefon (+49) 0 42 31 / 8 88-0

2. HAZZARD IDENTIFICATION

Human health effects

see Point 11 and 15.

Harmfull after 1999/45/EG.

Highly flammable.

May cause sensitisation.

Environmental effects

see Point 12.

3. COMPOSITION/INFORMATION OF INGREDIENTS

Chemical name			
%	Symbol	R-Phrases	EINECS; ELINCS
	Pictogram	H-Phrases	Signal Word
	Registration number (ECHA)	DNEL	PNEC

Methenamine			
80 - 100	F	11;42/43	202-905-8
	GHS02, GHS07	228;317	Warning

Text of R-Phrases see Point 16.

4. FIRST AID MEASURES

4.1 Inhalation

Remove to fresh air Always seek medical advice in case of significant exposure. Give MSDS to the medical personal.

4.2 Eye contact

Rinse thoroughly with plenty of water.
Seek medical advice if irritation persists..

4.3 Skin contact

Remove contaminated clothing and shoes. Seek Medical advice.

4.4 Ingestion

Seek medical invoice.

4.5 Emergency equipment

Information to the doctor: delayed effects of exposure are to be expected.

5. FIRE-FIGHTING MEASURES

5.1 Extinguished media Suitable

Carbon dioxide, foam, water spray

5.2 Unsuitable

5.3 Exposure hazards

In case of fire can be developed:
formaldehyde, ammonia, Nitrous gases, cyanide

5.4 Protective equipment for fire-fighters

Do not approach area without self contained breathing apparatus and protective cloth in

6. ACCIDENTAL RELEASE MEASURES

See Point 8 and 13.

6.1 Personal precautions

Avoid contact with skin and eyes and inhalation. Prevent formation of Dust.

6.2 Environmental precautions

Prevent spilled substance from entering supplies or water courses.

6.3 Methods of cleaning up

Recover mechanically the product.

7. HANDLING AND STORAGE

7.1 Handling

Avoid Formation of dust. Avoid contact with skin and eyes. Use only in well ventilated rooms. Keep away from ignition Sources. No smoking. Eating, drinking, smoking and storage of food in the work area restricted. Note Label and Instructions for use.

7.2 Storage

Keep container tightly close.

GB

3/6

Safety Data Sheet according Regulation (EC) No.: 1907/2006, Annex II
Overworked 23th March 2010 replaced Version of 13th February 2007 PDF- Date: 25.05.2010
Dry fuel Esbit

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Exposure limits

GB	Chemical name	Methenamine	% Sector:80-100
	TWA: 10 mg/m ³	inhalable	-
	:-		

9. PHYSICAL AND CHEMICAL PROPERTIES

State of matter:	solid
Color:	White
Odour:	Ammonia
pH-value(10%):	no Data available
Boiling Point:	no Data available
Melting point:	280°C(Sublimation)
Ignition temperature:	390°C
Explosive properties:	no Data available
Dust Explosion border:	20 mg/m ³
Density:(g/ml):	1,33
Water solubility:	100 - 874 g/l/20°C, 844 g/l/60°C
Miscibility:	Alcohol; Chloroform

10. STABILITY AND REACTIVITY

Conditions to avoid

stable in storage
Protect to Moisture
Heating

Materials to avoid

Acids, Alumina, Tin, Zinc, HCl, HBr, HJ, Peroxide

Hazardous(thermal) Decompositions products

Formaldehyde

11. TOXICOLOGICAL INFORMATION

Acute toxicity

9200mg/kg (rat oral)

Chronic effects

possible(Skin and eye Contacts)

Other toxicological Informations

12. ECOLOGICAL INFORMATION

Ecotoxicity:	no Data available
Mobility:	no Data available
Persistence / Degradability:	abiotic degradation possible; not easy biologic degradation
Contact with water	Hydolysis
In wastewater Treatment:	no Data available
Toxicity for fish:	LC50/96h 48800 mg/L (Pimephales promelas) NOEC / 336h 15 mg/L (Selenastrum Capricornulum) TGR / 12h 500 mg/L (Escheria coli)

13. DISPOSAL CONSIDERATIONS

13.1 Product

Dispose in a safe manner in accordance with local/national Regulations.

Refer to manufacturer / Supplier for information on recovery/recycling

Disposal code No.: (EC):

Regulations 1001/118/EC; 2001/119 / EC; 2001/573/ EC

07 07 99 Wastes a.n.g.

07 01 99 Wastes a.n.g.

13.2 Contaminated packing materials

Dispose in a safe manner in accordance with local/national Regulations.

If the packing materials are not to clean: dispose how wastes

15 01 01 Package from paper and paperboard

15 01 02 Package from plastics

14. TRANSPORT INFORMATION

General statements

UN Number: 1328

Road/ Rail- transport (ADR / RID)

Name: Hexamethylenetetramine

Class: 4.1

Packing group: III

Classification code: F1

LQ 9: 6 Kg

Tunnel category: (E)



Transport by sea (IMDG- Code)

Proper shipping name: HEXAMETHYLENETETRAMINE
 Class: 4.1 
 Packing group: III
 EmS: F-A, S-G
 Marine Pollutant: n.a.

Transport by air (IATA/ICAO)

Proper shipping name: Hexamethylenetetramine
 Class: 04.01.10
 Packing group: III

15. REGULATORY INFORMATION



Classified as dangerous according to Directive 1999/45/EEC

Symbol:



R Phrases: 11 Highly flammable.
 42/43 May cause sensitization by inhalation and skin contact.
 S Phrases: (2) Keep out of the reach of children.
 22 Do not breathe dust.
 24 Avoid contact with skin.
 35 This material and its container must be disposed of in a safe way.
 37 Wear suitable gloves.
 45 In case of accident or if you feel unwell seek medical advice immediately (show the label where possible).

Classified as dangerous according to CLP (GHS) Regulation (EC) No 1272/2008

Pictogramme: GHS02; GHS07  
 Signal word: Warning
 H-Phrases: 228 Flammable solids, Hazard Category 1, 2.
 317 Sensitisation — Skin, Hazard Category 1.
 P-Phrases: 261 Avoid breathing dust.
 280 Wear protective gloves.
 302 + 352 IF ON SKIN: Wash with plenty of soap and water.
 333 + 313 If skin irritation or rash occurs: Get medical advice/attention.
 501 Dispose of contents /container to hazardous wasteren.

GB

6/6

Safety Data Sheet according Regulation (EC) No.: 1907/2006, Annex II
Overworked 23th March 2010 replaced Version of 13th February 2007 PDF- Date: 25.05.2010
Dry fuel Esbit

16. OTHER INFORMATION

MSDS is conformity with EU Directive 2001/58/EC
Product Classification following EU Directives 67/548/EEC; 1999/45/EEC and REGULATION (EC) No 1272/2008 and
Regulation VERORDNUNG (EG) Nr. 1907/2006



Division of Candle Corporation of America

MATERIAL SAFETY DATA SHEET

MSDS #0001

REVISED DATE: 5-31-2002

PRODUCT NAME: STERNO BRAND® CANNED HEAT™ COOKING FUEL

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION:

ACUTE HEALTH	FIRE	REACTIVITY	HMIS	LEAST-0	SLIGHT- 1	MODERATE- 2
2	3	0	HAZARD RATING:	HIGH -	3	EXTREME- 4

PRODUCT NAME: STERNO BRAND® CANNED HEAT™ COOKING FUEL **SYNONYM: EAM Part No. RE1097-1**
 UPC/SKU #: US Domestic: ST04006 (2 5/8 oz), ST04006ED, ST04008 (7 oz), ST04008ED, ST04008S, ST04037, ST04040, ST04041, ST04042, ST04043, ST04048, ST04049, ST04528 (gal.)
Canadian Institutional: ST03121, ST03142, ST04528C (gal.)
Canadian Retail: ST00391 (7 oz), ST03136 (2 5/8 oz)
International: ST04008B, ST04008BZG, ST04008T, ST04406, ST04406J, ST04408, ST04408J, ST04528B (gal.)

CAS NUMBER: Not applicable - product is a mixture
 GENERAL USE: A gelled alcohol food warming fuel. Fuel is SDA-3A (ethyl alcohol denatured with methyl alcohol.)

The STERNO GROUP
 Division of Candle Corporation of America
 999 E Touhy, Suite 450
 Des Plaines, IL USA 60018

DOMESTIC: For consumer information: Call toll free: 1-(888) 4-LITES-1

EMERGENCY TELEPHONE NUMBER: For emergencies involving spill, leak, fire, exposure or accident, call CHEMTREC: 1-(800) 424-9300, day or night.

THE PITTSBURGH POISON CENTER HAS BEEN PROVIDED SPECIFIC INFORMATION FOR USE IN MEDICAL EMERGENCIES INVOLVING THESE PRODUCTS. IN THE USA, CANADA & MEXICO, CALL TOLL FREE: 1-(888) 313-8954.

INTERNATIONAL: ALL EMERGENCIES, involving spill, leak, fire, exposure or accident, CALL 1-(703) 527-3887.
 ALL MEDICAL EMERGENCIES, call your local Poison Control Center.

2. COMPOSITION/INFORMATION ON INGREDIENTS:

OSHA REGULATED COMPONENTS (present at a concentration > or = 1%):

Component	CAS #	%	PEL	TLV
Ethanol	64-17-5	67		1000 ppm
Methanol	67-56-1	3-4		200 ppm

The following components, present at a concentration > or = 0.1%, are listed as carcinogens or potential carcinogens by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or OSHA:

Component	CAS #	%	PEL	TLV
None - not applicable				



Division of Candle Corporation of America

MATERIAL SAFETY DATA SHEET

MSDS #0001

REVISED DATE: 5-31-2002

PRODUCT NAME: STERNO BRAND® CANNED HEAT™ COOKING FUEL

3. HAZARDS IDENTIFICATION:

Flammable solid, gelled ethanol, and it's pink in appearance.

PRECAUTIONARY LABELING: Caution flammable mixture. Keep away from children. Do not use near fire or flame. Contains 3.3% Methyl Alcohol.

EYE CONTACT: Eye irritant upon direct contact.

SKIN CONTACT: May cause skin irritation upon prolonged contact.

INGESTION: possible Alcoholic breathe, exhilaration followed by CNS depression, slurred speech, convulsions and hypoglycemia.

INHALATION: Burn product in a well ventilated area.

4. FIRST AID MEASURES:

EYE CONTACT: Flush eye with large amounts of warm water for 15 minutes. If irritation persists, contact poison center or doctor.

SKIN CONTACT: Remove and isolate contaminated clothing. Flush exposed area with warm water for 15 minutes. If irritation persists, contact poison center or doctor.

INGESTION: Drink sips of warm water or milk. If symptoms persist, contact poison center or doctor.

INHALATION: Seek fresh air and take slow deep breaths. Drink some sips of water. If coughing persists, contact poison center or doctor.

5. FIRE FIGHTING MEASURES:

FLASH POINT (METHOD): 54 degrees F or 12.1 degrees C (Tag closed cup)

AUTOIGNITION: @ 745 mm Hg: 845.6F (452 degrees C)

EXTINGUISHING MEDIA: CO₂, Foam, Dry Chemical

SPECIAL FIRE FIGHTING PROCEDURES: No known toxic combustion products or special fire fighting hazards. Self-contained breathing apparatus and protective clothing should be worn when fighting chemical fires. Do not use high pressure stream of water to extinguish burning material.

UNUSUAL FIRE AND EXPLOSION HAZARD: Closed cans exposed to flame and heat may erupt, scattering fragments.

6. ACCIDENTAL RELEASE MEASURES:



Division of Candle Corporation of America

MATERIAL SAFETY DATA SHEET

MSDS #0001

REVISED DATE: 5-31-2002

PRODUCT NAME: STERNO BRAND® CANNED HEAT™ COOKING FUEL

SMALL SPILLS: Remove all sources of ignition. Provide adequate ventilation. Absorb on vermiculite, paper or other absorbent. Flush area with water.

7. HANDLING AND STORAGE:

STORAGE: Store in a cool dry place (40 - 120 degrees F or 4 - 49 degrees C). Provide adequate ventilation in area of use. Store away from sources of heat or open flame. Keep container closed when not in use.

HANDLING: Avoid contact with skin and eyes. Do not ingest. Place can in fuel holder or under chafer before lighting. Burn can in a level upright position. Keep away from combustibles (e.g. paper plates and napkins). Keep away from children.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

GENERAL CONTROLS: Avoid contact with skin and eyes. Provide adequate ventilation.

PROTECTIVE CLOTHING: The use of eye protection (goggles) and rubber gloves is recommended.

RESPIRATORS: Not required.

SPECIAL PRECAUTIONS: Keep out of the reach of children.

PRECAUTIONARY LABELING: Caution flammable mixture. Keep away from children. Do not use near fire or flame. Contains 3.3% Methyl Alcohol.

9. PHYSICAL AND CHEMICAL PROPERTIES:

APPEARANCE AND ODOR: Pink-red gel, alcohol odor

DENSITY: 0.85 g/cm³

SOLUBILITY IN WATER: Moderate

pH: 7.5-8.5 (as is)

VAPOR PRESSURE: N/A

VAPOR DENSITY: N/A

BOILING POINT: N/A

FREEZE/MELT POINT: N/A

10. STABILITY AND REACTIVITY:

GENERAL: This product is stable. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS: Heat, open flame, strong oxidizers.

HAZARDOUS DECOMPOSITION: None known.

11. TOXICOLOGICAL INFORMATION:

No information is available at this time.



Division of Candle Corporation of America

MATERIAL SAFETY DATA SHEET

MSDS #0001

REVISED DATE: 5-31-2002

PRODUCT NAME: STERNO BRAND® CANNED HEAT™ COOKING FUEL

12. ECOLOGICAL INFORMATION:

No information is available at this time.

13. DISPOSAL CONSIDERATIONS:

Note: The purchaser is responsible for proper waste disposal of empty, partial, or full cans. Any disposal practice must be in compliance with local, state, and federal laws and regulations (contact local or state environmental agency for specific rules). Do not dump into sewers, any body of water, or onto the ground.

14. TRANSPORTATION:

DOT CLASSIFICATION: U.S. DOMESTIC: ST00391, ST03121, ST03136, ST03142, ST04006, ST04006ED, ST04008, ST04008ED, ST04008S, ST04037, ST04040, ST04041, ST04042, ST04043, ST04048, ST04049, ST04528, ST04528C - Consumer Commodity ORM-D Exception

INTERNATIONAL: ST04528, ST04528B - Flammable Solids, Organic, N.O.S. (Contains Ethanol), Class 4.1, UN 1325, PGIII

ST04006, ST04008, ST04008B, ST04008BZG, ST04008T, ST04043, ST04408, ST04408J - Dangerous Goods in Limited Quantity of Class 4.1, UN 1325, PG III; or, Flammable Solid, Organic, N.O.S., (Contains Ethanol), 4.1, UN1325, III, Limited Quantity

15. REGULATORY INFORMATION:

OSHA: This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1900.1200).

RCRA (40 CFR 261, Subpart D): The hazardous waste number for methanol is U154 indicating ignitability. This product is considered a hazardous waste based on flammability.

CLEAN WATER ACT: None of the OSHA regulated components in this product are Section 311 listed chemicals.

SARA: Sections 301-304 (Threshold Planning Quantity - TPQ) 40 CFR 355: No TPQ for any OSHA regulated component. Section 313 (Toxic chemical release reporting) 40 CFR 372: The following chemicals must be reported under SARA 313: Not applicable to any OSHA regulated component.

CERCLA: Section 102 (Reportable Quantity - RQ) 40 CFR 302: The RQ for Methyl Alcohol is 5000 lbs. Releases greater than or equal to this amount must be reported to the National Response Center (NRC) immediately: 800-424-8802.

16. OTHER INFORMATION:

MSDS REVISION INDICATORS: Revised Sections 1, 14, 16, and Header

REVISION DATE: May 31, 2002, Supersedes November 3, 2000



Division of Candle Corporation of America

MATERIAL SAFETY DATA SHEET

MSDS #0001

REVISED DATE: 5-31-2002

PRODUCT NAME: STERNO BRAND® CANNED HEAT™ COOKING FUEL

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The information on this sheet is limited to the material identified and is believed by the Candle Corporation of America to be correct based on its knowledge and information as of the date noted. Candle Corporation of America makes no representation, guarantee or warranty, expressed or implied, as to the accuracy, reliability or completeness of the information and assumes no responsibility for injury, damage or loss resulting from the use of the material.

LAST PAGE OF MSDS #0001

AVIATION EMERGENCY FOOD AND DRINKING WATER

APPLICATION: Aircraft Liferrafts

REGULATIONS: FAR 135.167, ANO II-No. 8, ANO V -No. 12

S.O.S. EMERGENCY FOOD RATION

GENERAL DESCRIPTION: A compact, lightweight, baked survival Food Ration specifically formulated to provide a balanced minimum daily diet (with critical drinking water restriction) for aviation survival situations.

SUITABLE FOR: All age groups from infants through elderly.

DIETARY STANDARD: Complies with Halal and vegetarian requirements.

PRODUCT USE: Can be eaten without preparation. For infants, elderly, or injured people, can be mixed with liquids for drinking or mashed into a porridge.

CONTENTS: 1) AV 1000: 1,000 kcal (4200 kJ) ; 2 food bars ; net wt = 7 oz.(193 gm)
2) AV 2000: 2,000 kcal (8400 kJ) ; 4 food bars ; Net Wt.=14 oz.(386 gm)

ADVANTAGES: Superior to CHARMS CANDY RATION because:

- ◆ S.O.S. is more compact.
- ◆ S.O.S. weighs 39% less per ration.
- ◆ S.O.S. has 64% more calories per ounce.
- ◆ S.O.S. will not stimulate thirst, while candy will.
- ◆ S.O.S. is a nutritious baked product, and is not laden with sugar.
- ◆ S.O.S. can be stored under all climatic conditions and will not melt or become sticky like candy.

PACKAGING: Grease-proof, water-vapor-proof MIL-B-131 barrier material.
Rations are heat sealed under partial vacuum.

SHELF LIFE: 5 year shelf life.
May be safely stored in all climatic conditions.

S.O.S. PURIFIED EMERGENCY DRINKING WATER

4.2 oz.(125 ml) flexible foil pouches.

Purified by reverse osmosis to meet or exceed U.S. Pharmacopeia standards

SHIPPING DATA:

CONTENTS	FOOD (AV 1000)	FOOD (AV 2000)	WATER
CASE	72 packets	48 packets	96 pouches
Gross weight	32 lbs (14.5)	41 lbs. (18.6 kg)	29.5 lbs.(13.4 kg.)
Volume	0.68 ft ³ (0.019 m ³)	0.68 ft ³ (0.019 m ³)	0.76 ft ³ (0.022 m ³)
PALLET	60 cases	60 cases	70 cases
Gross weight	1950 lbs(886 kg)	2490 lbs. (1129 kg)	2090 lbs.(950 kg)
Volume	44 ft ³ (1.24 m ³)	44 ft ³ (1.24 m ³)	67 ft ³ (1.91 m ³)

REQUIREMENTS: F.A.R. regulation 135.167 specifies one pint (4 S.O.S. water pouches) of water and 2000 kcal (8400 KJ) of food per person of raft rating.

Manufactured by: S.O.S. FOOD LAB, INC., 9399 N.W. 13 St. • Miami, Florida 33172 USA
Tel: (305) 594-9933 • Fax: (305) 594-7667



S.O.S. Food Lab, Inc.

Manufacturer of Emergency Food & Water Rations

Info@sosfoodlab.com, www.sosfoodlab.com

S.O.S. 1000 KCAL AVIATION FOOD RATION

The H.S. Tariff Classification # is 2106.1099.

The list of ingredients is: Sugar, Shortening, Occident flour, Cornstarch, Dextrose, Vital Wheat Gluten, Desiccated Coconut, High Gluten, Corn Syrup, Soy Lecithin, and Vita Premix.

Headquarters & East Coast Plant

9399 N.W. 13 Street, Miami, FL 33172

TF 877-670-6057 / T 305.594.9933 / F 305.594.7667

West Coast Plant

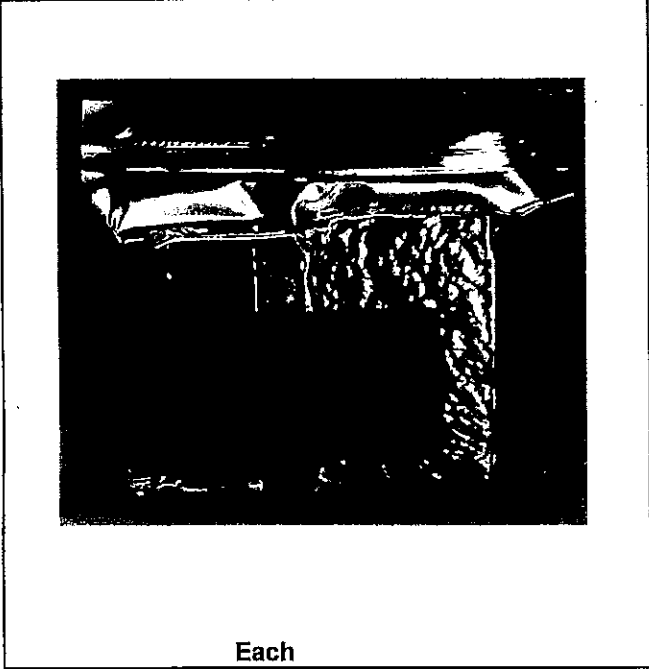
1010 S. Arroyo Pkwy., Unit 8, Pasadena, CA 91105

T 626.441.1660, F 626.441.3020



S.O.S. EMERGENCY RATION AV-1000 KCAL
ITEM DETAILS

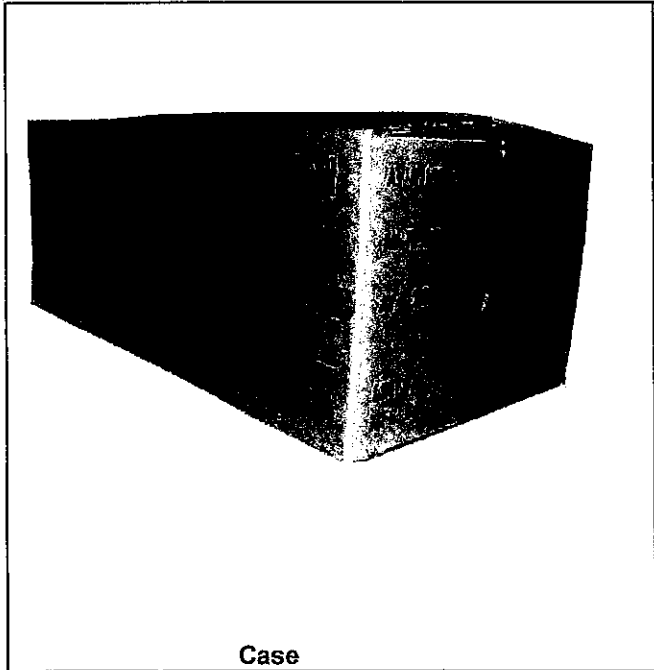
1000KCAL - AVIATION 1000 KCAL



	Height (in)	Width (in)	Depth (in)	Cube (ft3)	Total Weight (lbs)
Each	3.375	4.0625	0.75	0.006	7 oz
Case	8	9.75	18.5	0.84	33.0
Pallet	44.5	40	48	49.45	1,700.0

# Per Case	72 packets
# Per Pallet	50 cases
# Per Layer	10 cases
Layers Per Pallet (High)	5 layers

H.S. Tariff Clasification # 1905.31
NMFC 65





S.O.S. Food Lab, Inc.

MANUFACTURER INFORMATION

In compliance with the FDA's Bioterrorism/Food Safety Security Act, S.O.S. Food Lab, Inc. offers the following information.

Vendor's Name: S.O.S. FOOD LAB., INC.

Vendor FDA Registration Number: 13851878728

Quality Assurance Office Information

Contact Name & Title: Stella Konieczpolski - President

Contact Address: 9399 NW 13 Street, Miami, FL 33172

Contact Phone: 305-594-9933

Contact Fax: 305-594-7667

Email Address: sosfood@gate.net

Representative Information

Contact Name & Title: Beatrice Ableton - Vice President

Contact Address: 9399 NW 13 Street, Miami, FL 33172

Contact Phone: 305-594-9933

Contact Fax: 305-594-7667

Email Address: sosfood@gate.net

Stella Konieczpolski

Stella Konieczpolski
President

*Personally known
to me.*

12/24/03

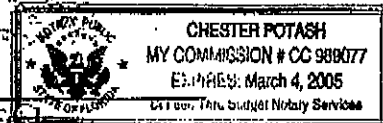
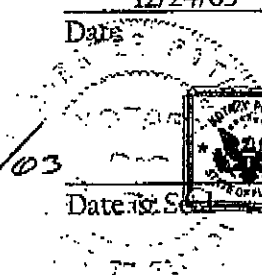
Date

Chester Potash

Chester Potash
Notary Public

12/24/03

Date of Seal



Headquarters:

9399 N.W. 13th Street, Miami, FL 33172 USA
Tel: (305) 594-9933 Fax: (305) 594-7667

Manufacturing Location & Warehouse:

1010 S. Arroyo Pkwy, Pasadena, CA 91105
Tel: (626) 441-1660 Fax: (626) 441-3020