

CIS070

CONTENT INFORMATION SHEET

1. Chemical Product and Company Identification

LABEL IDENTIFIER: Battery Module, Lithium, Optimair 6HC PAPR, Packaged

PRODUCT IDENTIFIER: P/N 10048180, Battery Module, Lithium, Packaged

COMPANY IDENTIFICATION: MINE SAFETY APPLIANCES COMPANY

P.O. Box 439

Pittsburgh, PA 15230

CUSTOMER SERVICE: 1-800-MSA-2222 (8:30 a.m. – 5:00 p.m., USA local time)

2. Content Information

CONTENT: Product Safety Data Sheet as furnished by Saft America Inc. for Lithium Sulfur Dioxide Battery

used for Battery Module, Lithium, Optimair 6HC PAPR is attached (6 Pages Total).

Potentially hazardous battery ingredients and content information are provided.

Saft America Inc. PSDS REVISIONS DATE: 1/16/03

3. Disclaimer

This document is not to be considered a Material Safety Data Sheet as define by 29 CFR 1910.1200.

The information provided herein is considered proprietary in nature and is provided only as information that may be necessary for final disposal procedures. It may not be used or disclosed in any other manner.

The information provided herein has been compiled from sources believed to be reliable. However, Mine Safety Appliances Company makes no warranty as to the accuracy, completeness or sufficiency of the information and in no event will Mine Safety Appliances Company be responsible for loss or damage of any nature whatsoever resulting from use of this information.

APPROVED BY:

ZANE N. FRUND, Ph.D., MANAGER, CHEMICAL RESEARCH AND ANALYTICAL SERVICES

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MATERIAL SAFETY DATA SHEET PRODUCT NAME: LITHIUM SULFUR DIOXIDE BATTERY

May be used to comply with OSHA's Hazard Communication Standard. 29 CFR 1910, 1200. Standard must be consulted for specific requirements.

U.S. Department of Labor Occupational Safety and Health Administration (Non-Mandatory Form) Form Approved OMB No. 1218-0072

SECTION 1 - MATERIAL IDENTIFICATION

Manufacturer's Name: SAFT AMERICA, INC. Address: 313 Crescent Street

Valdese, NC 28690 828-874-4111 EMERGENCY TELEPHONE NUMBER:

CHEMTREC - 1-800-424-9300

Telephone Number for Information: 828-874-4111 or 828-438-3287

DATE ISSUED: 01/16/03 SUPERSEDES: 01/29/01

SECTION 2 - HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

Hazardous Components (Specific Chamital Identity: Common Name(s)						
	OSHA PEL	ACGIH TLV 5 TEL	Other Limits Recommended	% (Optional) (typically)	CAS Reg. Number	
Lithium Metal	N/A	N/A	N/A	< 3.5%	7439-93-2	
Sulfur Dioxide	5 ppm	5 ppm	N/A	< 25%	7446-09-5	
Acetonitrile	40 ppm	40 ppm	N/A	< 7.5%	75-05-8	
Acetylene Black	3.5 ppm	3.5 ppm	N/A	< 6%	1333864	

SECTION 3 - PHYSICAL / CHEMICAL CHARACTERISTICS

Boiling Point N/A
Vapor Pressure (mm Hg.) N/A
Vapor Density N/A

N/A Not soluble in water N/A Specific Gravity (H2O = 1)
Melting Point
Ev aporation Rate (Butyl Acetate = 1)

190 C

SECTION 4 - FIRE AND EXPLOSION DATA

Flash Point (Method Used): Extinguishing Media:

Solublity in Water

Appearance and Odor

Nonfiammable (open fiame)

Use water or CO2 on burning lithium sulfur dioxide cells or batteries.
Use a class D fire extinguishing agent only on a raw lithium fire.

Special Fire Fighling Procedures: Unusual Fire and Explosion Hazards:

Unusual Fire and Explosion Hazard Fiammeble Limits:

neble Limits: N/A N/A N/A

Use self-contained breathing apparatus

Battery may vent when subject to excessive heat - exposing contents

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UEL:



MATERIAL SAFETY DATA SHEET PRODUCT NAME: LITHIUM SULFUR DIOXIDE BATTERY

SECTION 5 - REACTIVITY DATA

Stability: Stable

Conditions to Avoid:

Battery contains hermetically sealed celts and is nonreactive provided the battery integrity is maintained

and the cell seal remains intact.

Incompatibility (Materials to Avoid): indous Decomposition or Byproducts N/A

NA

Hazardous Polymenzation:

Conditions To Avoid:

Will Not Occur

Heating, mechanical abuse, and electrical abuse (such as recharging, voltage reversal and short circuiting)

may result in venting.

SECTION 6 - HEALTH HAZARD DATA

Route(s) of Entry: Sulfur Dioxide

Inhalation? Yes Skin? Yes Ingestion?

Health Hazards (Acute and Chronic): Depending on the concentration of sulfur dioxide exposure, it acts as an asphysiant and may possibly cause

unconsciousness with no known chronic health effects.

Cardnogenicity: None

NTP Listed: No

IARC Monographs Listed: No

OSHA Listed: No

Signs and Symptoms of Exposure: Sulfur Dioxide - Irritation of nose, throat, eyes, and/or skin; suffocating odor. Medical Conditions: Generally Aggravated by Exposure - Sulfur Dioxide - Asthma and other respiratory diseases

Emergency and First Aid Procedures: If cell vents, personnel should be evacuated from contaminated areas. Artificial respiration should

if breathing stops. Flush any material from sidn.

SECTION 7 - PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to Be Taken in Case Material is Released or Spilled: Remove personnel from area until turnes dissipate. Provide maximum ventilation to clear out hazardous gases.

Waste Disposal Method; Dispose of cell or battery in accordance with local, state, and federal environmental regulations.

Precautions to Be Taken in Handling and Storing: See Page 3

Other Precautions: Do not remove or bypass electrical or thermal fuses.

Do not neat above 70 C

SECTION 8 - CONTROL MEASURES

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Respiratory Proteotion (Specify Type): N/A

Ventilation: Local Exhaust N/A

Mechanical (General) N/A

Protective Gloves: N/A Eye Protection: Safety glasses with side shields

Other Protective Clothing or Equipment: NA

Work/Hyglenic Practices: N/A

Special N/A Other N/A

SAFT

MATERIAL SAFETY DATA SHEET PRODUCT NAME: LITHIUM SULFUR DIOXIDE BATTERY

STORAGE:

The LiSO2 cell is capable of long term storage at temperatures as high as 160°F (71°C).

Storage for more than one year at 160°F (71°C) has been demonstrated. Storage at lower temperatures will not affect the product.

LiSO2 cells and batteries should be stored in a well-ventilated, sprinkler protected, non-combustible structure with adequate clearance between walls and battery stacks. The batteries should be separated from other materials. Air conditioning or cooling is not required unless excessively high temperatures will be encountered, but the batteries should be kept as cool as possible in order to maximize shelf life.

Temperatures above 160°F (71°C) should be avoided.

Hermetically scaled LiSO₂ cells do not outgas. However, if exposed to extreme temperatures or rough handling, they may release sulfur dioxide gas if the vent is activated or the battery damaged. A well-ventilated storage area should be used to prevent inadvertent concentration of the gas if extremes are anticipated. If large quantities of batteries are stored, it may be advisable to install alarm devices in the storage area to detect smoke or accumulation of gases.

PACKAGING AND TRANSPORTATION:

Department of Transportation and ICAO regulations are periodically revised. Below listed information is current at time of publication of this document, but users are advised to consult referenced regulatory publications for most current regulations.

DOMESTIC:

Procedures for the transportation of LiSO2 batteries within the United States are specified by the Department of Transportation in the Code of Foderal Regulations, CFR 49, "Transportation".

Lithium batteries containing less than 500 grams and cells containing less than 12 grams of lithium or lithium alloy are authorized for transportation as items of Class 9 by highway, rail, vessel, and cargo-only aircraft provided they meet the provisions of Subchapter 173.185.

Lithium batteries containing less than 1 gram of lithium or lithium alloy and cells containing less than 0.5 grams of lithium or lithium alloy are subject to lessor transportation restrictions provided they meet the requirements of Subchapter 173.185 para (I).

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Lithium cells or batteries, for disposal, may be offered only for motor vehicle transportation per the restrictions of Subchapter 173.185 para (h).

Lithium cells or batteries discharged to below 2 volts, not to exceed 100 cells or batteries per shipment, may be shipped for testing purposes by highway only.



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INTERNATIONAL:

Procedures for international sir transportation of LiSO2 batteries are specified by the International Civil Aviation Organization (ICAO), Montreal, Quebec: publication "Technical Instructions for the Safe Transport of Dangerous Goods by Air." This document is published annually.

The ICAO procedures for air shipment of LiSO2 cells and batteries are similar, but not necessarily identical, to those specified by the US Department of Transportation.

Regulations for the shipment of lithium batteries with cells containing less than 0.5 grams of lithium are given in Special Provision A45.

Regulations for the shipment of lithium batteries with cells containing no more than 12 grams of lithium are covered in Packaging Instruction 903.

TRANSPORTATION DATA:

2		
Proper Shipping Name:	Lithium Batterics	
UN Hazard Class:	Class 9	
UN ID No:	UN 3090	
Hazard Label:	Miscellaneous Hazard	
Container Marking:	Miscellaneous Hazard	
Placard:		
· 100 E.U.	Miscellaneous Hazard	

NOTE:

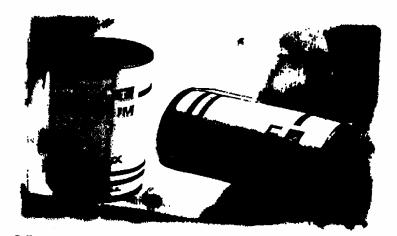
Many batteries and some single cells are certified "Non-Dangerous" in accordance with DOT and UN regulations. These products need not be marked as Class 9 Category UM3090 and do not have restriction on shipment. Contact manufacturer for more information.

Electaires: This information has been consplict from sources considered to be dependente and in, to the best of our insertedge and belief, accurate and reliable as of the date compiled However, no representation, werranty (either expresse or insplict) or quarteries in made to the expecting negative or compileteness of the information sentained bearin. This information reliable to the specific material designated and may not be valid for each material used in combination with any other preferance or in any processes. It is the user respectability for any issue or damage that may easier, inhetient direct, indirect, inclined as the sufficient of the surface of the information for his own particular use. We do not accept liability for any issue or damage that may easier, whether direct, indirect, inclined as the surface of this information nor do we offer warranty against patent infringement. Additional information is available by calling the sateghese number above deviced.

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PRIMARY LITHIUM BATTERIES



R20 - D
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7.75 Ah All varies according to
3.0 V
2.8 V
2.5 A
ics (frequency, duration te opplication's
+30 °C/+86 °F max -60 °C (-76 °F) /
+85 °C (+185 °F)
-60 °C (-76 °F) /
+71 °C (+160 °F)
en al Dalmana and major and a second
240
34.2 mm (1.345 in) 59.3 mm (2.33 in)
59.3 mm (2.33 in)
85 g (3 oz)
85 g (3 oz)
85 g (3 oz)

LO 26 SX

3.0 V Primary lithium - sulfur dioxide (Li-SO₂) High Drain capability Spiral D-size cell

For high drain applications up to 2.5 A continuous, 5 A pulse currents, possibly combined with exposure to extreme temperatures.

Key features

- High and stable discharge voltage
- Performance not affected by cell orientation
- Low self discharge rate (less than 3% after 1 year of storage at +20 °C)
- Hermetic glass-to-metal sealing
- Built-in safety vent (at the negative end of the cell)
- Restricted for transport (class 9)
- e UL Component Recognition (File Number MH 15076)
- Meats shock, vibration and other environmental requirements of military specifications
- Made in the USA

Main applications

- Radiocommunications and
- other military applications

 Beacons and Emergency
- Location Transmitters Sonobuoys

Missiles

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