CONTENT INFORMATION SHEET

1. Chemical Product and Company Identification

LABEL IDENTIFIER: Battery Pack Assembly, Lithium Sulfur Dioxide, C420 PAPR

PRODUCT IDENTIFIER: P/N 10072089, Battery Pack Assembly, Lithium Sulfur Dioxide, 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: The MSDS as furnished by Saft America, Inc. for Lithium Sulfur Dioxide Battery used for Battery Pack Assembly, Lithium Sulfur Dioxide, C420 PAPR is attached (5 Pages Total).

Saft America, Inc. MSDS Revision Date: 1/16/03

3. Disclaimer

This document is not a Material Safety Data Sheet as defined 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 material handling. It may not be used or disclosed in any other manner. Use of the product may have impacted its contents; and it is the user's responsibility to dispose of the product in accordance with local, state and federal laws and regulations.

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

SAFT

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 Chemical 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	Specific Gravity (H_2O = 1)	> 1
Vapor Pressure (mm Hg.)	N/A	Melting Point	190 C
Vapor Density	N/A	Evaporation Rate (Butyl Acetate = 1)	N/A
Solubility in Water	Not soluble in water		
Appearance and Odor	N/A		

SECTION 4 - FIRE AND EXPLOSION DATA

Flash Point (Method Used):	Nonflammable (open flame)
Extinguishing Media:	Use water or CO_2 on burning lithium sulfur dioxide cells or batteries. Use a class D fire extinguishing agent only on a raw lithium fire.
Special Fire Fighting Procedures:	Use self-contained breathing apparatus
Unusual Fire and Explosion Hazards:	Battery may vent when subject to excessive heat - exposing contents
Flammable Limits:	N/A
LEL:	N/A
UEL:	N/A

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MATERIAL SAFETY DATA SHEET
PRODUCT NAME: LITHIUM SULFUR DIOXIDE BATTERY

SECTION 5 - REACTIVITY DATA

Stability: Stable
Conditions to Avoid: Battery contains hermetically sealed cells and is nonreactive provided the battery integrity is maintained and the cell seal remains intact.
Incompatibility (Materials to Avoid): N/A
Hazardous Decomposition or Byproducts N/A
Hazardous Polymerization: Will Not Occur
Conditions To Avoid: 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? Yes

Health Hazards (Acute and Chronic): Depending on the concentration of sulfur dioxide exposure, it acts as an asphyxiant and may possibly cause
unconsciousness with no known chronic health effects.

Carcinogenicity: 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 be given
if breathing stops. Flush any material from skin.

SECTION 7 - PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to Be Taken in Case Material is Released or Spilled: Remove personnel from area until fumes 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 heat above 70 C

SECTION 8 - CONTROL MEASURES

Respiratory Protection (Specify Type): N/A
Ventilation: Local Exhaust N/A Special N/A
Mechanical (General) N/A Other N/A
Protective Gloves: N/A
Eye Protection: Safety glasses with side shields
Other Protective Clothing or Equipment: N/A
Work/Hygienic Practices: N/A

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 sealed $LiSO_2$ 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 Federal 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 (l).

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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MATERIAL SAFETY DATA SHEET
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INTERNATIONAL:

Procedures for international air 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:

Proper Shipping Name:	Lithium Batteries
UN Hazard Class:	Class 9
UN ID No:	UN 3090
Hazard Label:	Miscellaneous Hazard
Container Marking:	Miscellaneous Hazard
Placard:	Miscellaneous Hazard

NOTE:

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