

BLUE STAR BATTERY SYSTEMS CORP(BALLARD BATTERY SYS -- LITHIUM SULFUR
DIOXIDE BATTERY,BA-5800/U -- 6665-99-760-9742

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Product Identification
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Product ID:LITHIUM SULFUR DIOXIDE BATTERY,BA-5800/U
MSDS Date:08/20/1995
FSC:6665
NIIN:99-760-9742
MSDS Number: CDZBF
=== Responsible Party ===
Company Name:BLUE STAR BATTERY SYSTEMS CORP(BALLARD BATTERY SYS
Address:1164 15TH STREET W.
City:NORTH VANCOUVER
State:BC
Country:CN
Info Phone Num:604-986-4101
Emergency Phone Num:604-986-4101
CAGE:NO670

=== Contractor Identification ===
Company Name:BLUE STAR BATTERY SYSTEMS CORP(BALLARD BATTERY SYS
Address:1164 15TH STREET W.
Box:City:NORTH VANCOUVER
State:BC
Country:CN
Phone:604-986-4101
CAGE:NO670
Company Name:CANADIAN COMMERCIAL CORP
Address:50 OCONNOR ST 11TH FLOOR
Box:City:OTTAWA, ONT
Country:CN
Phone:613-996-0034
CAGE:98247
Company Name:EAGLE-PICHER ENERGY PRODUCTS CORP
Address:13136 82A AVENUE
Box:City:SURREY, V3W 9Y6
State:BC
Country:US
Phone:604-543-4350
CAGE:0E1R2

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Composition/Information on Ingredients
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Ingred Name:LITHIUM METAL
CAS:7439-93-2
RTECS #:OJ5540000
Fraction by Wt: 2.6%
Other REC Limits:NONE RECOMMENDED

Ingred Name:SULFUR DIOXIDE (SARA 302)
CAS:7446-09-5
RTECS #:WS4550000
Fraction by Wt: 26.1%
Other REC Limits:NONE RECOMMENDED
OSHA PEL:5 PPM
ACGIH TLV:2 PPM/5 STEL; 9596

Ingred Name:ACETONITRILE (SARA 313) (CERCLA)
CAS:75-05-8

RTECS #:AL7700000
 Fraction by Wt: 8.9%
 Other REC Limits:NONE RECOMMENDED
 OSHA PEL:40 PPM
 ACGIH TLV:40 PPM/60 STEL; 9596
 EPA Rpt Qty:5000 LBS
 DOT Rpt Qty:5000 LBS

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 Hazards Identification
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LD50 LC50 Mixture:LD50 (ORAL, RAT) IS UNKNOWN.
 Routes of Entry: Inhalation:NO Skin:NO Ingestion:NO
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:TARGET ORGANS:NONE. ACUTE- BATTERY IS
 HERMETICALLY SEALED. IF BROKEN OR IN FIRE: INHALATION OF SULFUR
 DIOXIDE MAY CAUSE EYE & RESPIRATORY TRACT IRRITATION. INGESTION CAN
 BE HARMFUL. CHRONIC- UNKNOWN.
 Explanation of Carcinogenicity:NONE
 Effects of Overexposure:NONE. IF BROKEN OR IN FIRE: EYE AND RESPIRATORY
 IRRITATION, DRY THROAT AND COUGHING.
 Medical Cond Aggravated by Exposure:NONE

=====
 First Aid Measures
 =====

First Aid:GET MEDICAL HELP IF SYMPTOMS PERSIST. INHALED:REMOVE TO FRESH
 AIR. CALL PHYSICIAN. EYES:FLUSH WITH WATER FOR 15 MINUTES. HOLD
 EYELIDS OPEN. SEE PHYSICIAN. SKIN:WASH WITH SOAP & WATER. ORAL:IF
 BATTERY/ OPEN BATTERY IS INGESTED, DO NOT INDUCEVOMITING OR GIVE
 FOOD/DRINK. SEEK IMMEDIATE MEDICAL ATTENTION. CALL NATIONAL BATTERY
 INGESTION HOTLINE FOR ADVICE & FOLLOWUP (202-625-3333) COLLECT,
 DAY/NIGHT.

=====
 Fire Fighting Measures
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Flash Point:NONE
 Lower Limits:NOT RELEVANT
 Upper Limits:NOT RELEVANT
 Extinguishing Media:FOR BURNING BATTERIES USE CLASS D EXTINGUISHERS;
 LITH-X, POWDERED GRAPHITE; MET-L-X.
 Fire Fighting Procedures:USE WATER SPRAY OR CARBON DIOXIDE TO LOWER
 TEMPERATURE & EXTINGUISH FIRES IN PACKING MATERIAL. USE SELF
 CONTAINED BREATHING APPARATUS & FULL PROTECTIVE CLOTHING
 Unusual Fire/Explosion Hazard:TOXIC AND CORROSIVE GASES MAY BE FORMED.

=====
 Accidental Release Measures
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Spill Release Procedures:IF BROKEN, WEAR PROTECTIVE CLOTHING AND
 RESPIRATORY EQUIPMENT SUITABLE FOR TOXIC GASES. SWEEP, SCOOP OR
 PICK UP SPILLED MATERIAL. TRANSFER TO A SUITABLE CONTAINER FOR
 DISPOSAL.
 Neutralizing Agent:NOT RELEVANT

=====
 Handling and Storage
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Handling and Storage Precautions:VENTILATED AREAS EQUIPPED WITH
 SPRINKLER SYSTEM, AWAY FROM FLAMMABLES & WATER. WASH THOROUGHLY
 AFTER HANDLING.
 Other Precautions:DO NOT INCINERATE. DO NOT TOUCH BROKEN OR LEAKING
 BATTERIES. AVOID MECHANICAL OR ELECTRICAL ABUSE. DO NOT ATTEMPT TO
 RECHARGE. AVOID SHORT CIRCUITS. DO NOT CARRY BATTERIES LOOSE IN

POCKET OR BAG. KEEP BATTERIES AWAY FROM SMALL CHILDREN.

=====
===== Exposure Controls/Personal Protection =====

Respiratory Protection:NOT NECESSARY UNDER NORMAL CONDITIONS OF USE.
WEAR NIOSH-APPROVED SELF-CONTAINED BREATHING APPARATUS WHEN LARGE
NUMBERS OF CELLS ARE INVOLVED IN A FIRE.

Ventilation:ADEQUATE

Protective Gloves:RUBBER FOR LEAKERS

Eye Protection:GOGGLES FOR LEAKERS

Other Protective Equipment:EYE BATH, WASHING FACILITIES

Work Hygienic Practices:OBSERVE GOOD INDUSTRIAL HYGIENE PRACTICES AND
RECOMMENDED PROCEDURES. WASH THOROUGHLY BEFORE EATING,
DRINKING/SMOKING.

Supplemental Safety and Health

PERCENTAGE CHANGED. FOR PREVIOUS CONCENTRATIONS, SEE PNI A, SAME NSN.

=====
===== Physical/Chemical Properties =====

HCC:V1

NRC/State Lic Num:NOT RELEVANT

Spec Gravity:NOT RELEVANT

Viscosity:NOT RELEVANT

Evaporation Rate & Reference:NOT RELEVANT

Solubility in Water:NOT RELEVANT

Appearance and Odor:SOLID

=====
===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

WATER, MOST MATERIALS

Stability Condition to Avoid:MOISTURE, AIR

Hazardous Decomposition Products:RUPTURED BATTERIES WILL RELEASE SULFUR
DIOXIDE.

=====
===== Disposal Considerations =====

Waste Disposal Methods:DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND
FEDERAL REGULATIONS.

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assume responsibility for the suitability of this information to their
particular situation.

POWER CONVERSION INC -- ETERNACELL,LITHIUM/SULFUR DIOXIDE BATTERY,B --
6665-99-760-9742

===== Product Identification =====

Product ID:ETERNACELL,LITHIUM/SULFUR DIOXIDE BATTERY,B
MSDS Date:06/09/1992
FSC:6665
NIIN:99-760-9742
MSDS Number: BRQKJ
=== Responsible Party ===
Company Name:POWER CONVERSION INC
Address:495 BOULEVARD
City:ELMWOOD PARK
State:NJ
ZIP:07407
Country:US
Info Phone Num:201-796-4800
Emergency Phone Num:201-796-4800
CAGE:0CEP0

=== Contractor Identification ===
Company Name:POWER CONVERSION INC
Address:280 MIDLAND AVE
Box:City:SADDLE BROOK
State:NJ
ZIP:07662
Country:US
Phone:201-796-4800
CAGE:0CEP0

===== Composition/Information on Ingredients =====

Ingred Name:LITHIUM METAL
CAS:7439-93-2
RTECS #:OJ5540000
Other REC Limits:NONE RECOMMENDED

Ingred Name:SULFUR DIOXIDE (SARA III)
CAS:7446-09-5
RTECS #:WS4550000
Other REC Limits:NONE RECOMMENDED
OSHA PEL:5 PPM/5 STEL
ACGIH TLV:2 PPM/5 STEL; 9293

Ingred Name:ACETONITRILE (SARA III)
CAS:75-05-8
RTECS #:AL7700000
Other REC Limits:NONE RECOMMENDED
OSHA PEL:40PPM/60 STEL
ACGIH TLV:40PPM/60STEL; 9293
EPA Rpt Qty:5000 LBS
DOT Rpt Qty:5000 LBS

===== Hazards Identification =====

LD50 LC50 Mixture:ORAL LD50 (RAT) IS UNKNOWN.
Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
Health Hazards Acute and Chronic:PRODUCT IS NOT A HEALTH HAZARD UNDER

NORMAL CONDITIONS OF USE. MATERIALS FROM VENTING CELLS MAY CAUSE SEVERE IRRITATION OF EYES AND RESPIRATORY TRACT. PULMONARY EDEMA POSSIBLE. EXTENDED EXPOSURE TO HIGH CONCENTRATIONS IN CONFINED SPACE CAN LEAD TO ASPHYXIATION.

Effects of Overexposure: SEVERE IRRITATION OF EYES AND RESPIRATORY TRACT. ASPHYXIATION.

Medical Condition Aggravated by Exposure: NONE STATED BY THE MANUFACTURER.

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 ===== First Aid Measures =====
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First Aid: NONE NORMALLY REQUIRED. HOWEVER, IF CONTACTED BY VAPORS FROM VENTING BATTERY OR CORROSIVE LIQUID FROM BROKEN BATTERY: EYES: FLUSH WITH LARGE AMOUNTS OF WATER. GET MEDICAL ATTENTION. SKIN: WASH AREA WITH SOAP AND WATER. GET MEDICAL ATTENTION. INHALATION: MOVE TO FRESH AIR. GET MEDICAL ATTENTION. INGESTION: GET MEDICAL ATTENTION.

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 ===== Fire Fighting Measures =====
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Extinguishing Media: SAND, DRY CHEMICAL, FOAM, METAL-X.
 Fire Fighting Procedures: DO NOT USE WATER. REMOVE OTHER BATTERIES AND POTENTIAL COMBUSTIBLE MATERIALS FROM AREA OF BURNING BATTERY AND CONTAIN AND EXTINGUISH WITH AGENTS LISTED ABOVE.
 Unusual Fire/Explosion Hazard: HEATING ABOVE 160F OR SHORTING CAN LEAD TO VENTING OF SULFUR DIOXIDE AND ACETONITRILE. HEATING ABOVE 354F WILL MELT LITHIUM, A SEVERE FIRE AND EXPLOSION HAZARD.

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 ===== Accidental Release Measures =====
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Spill Release Procedures: IF CELL OR BATTERY VENTS, LEAKS OR IS PUNCTURED, VENTILATE CONTAMINATED AREA. WASH AWAY ANY LIQUID RESIDUE WITH WATER. WEAR EYE AND HAND PROTECTION. RESPIRATOR MAY BE NECESSARY IN CONFINED SPACES.
 Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.

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 ===== Handling and Storage =====
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Handling and Storage Precautions: DO NOT RECHARGE, DISASSEMBLE, PUNCTURE, INCINERATE, SHORT CIRCUIT, OR EXPOSE TO TEMPERATURES ABOVE 160F. STORE IN ORIGINAL CONTAINERS.
 Other Precautions: NEVER STORE IN LOOSE BINS. DO NOT USE CELLS IN HERMETICALLY SEALED CONTAINERS.

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 ===== Exposure Controls/Personal Protection =====
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Respiratory Protection: NONE NORMALLY REQUIRED.
 Ventilation: GOOD WORK AREA VENTILATION IS NORMALLY ADEQUATE.
 Protective Gloves: NONE NORMALLY REQUIRED.
 Eye Protection: WEAR EYE PROTECTION.
 Other Protective Equipment: NONE NORMALLY REQUIRED.
 Work Hygienic Practices: NONE NORMALLY REQUIRED.
 Supplemental Safety and Health

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 ===== Physical/Chemical Properties =====
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HCC: V1
 Evaporation Rate & Reference: NOT RELEVANT
 Solubility in Water: NOT RELEVANT
 Appearance and Odor: SEALED BATTERY

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Stability and Reactivity Data
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Stability Indicator/Materials to Avoid: YES

DO NOT EXPOSE VENTED CELLS TO WATER.

Stability Condition to Avoid: AVOID EXPOSURE TO TEMPERATURES ABOVE 160F.

Hazardous Decomposition Products: SULFUR DIOXIDE, ACETONITRILE.

ACETONITRILE MAY DECOMPOSE ABOVE 245F, RELEASING HIGHLY TOXIC
CYANIDES.

Conditions to Avoid Polymerization: WILL NOT OCCUR.

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Disposal Considerations
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Waste Disposal Methods: DISCHARGED CELLS MAY CONTAIN SIGNIFICANT AMOUNTS
OF ENERGY AND HANDLED WITH CARE. THEY SHOULD BE ELECTRICALLY
ISOLATED AND PACKED FOR DISPOSAL. DO NOT COMPACT. DISPOSE OF IN
SANITARY LANDFILL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL
REGULATIONS.

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particular situation.

POWER CONVERSION INC -- ETERNACELL -- 6665-99-760-9742

===== Product Identification =====

Product ID:ETERNACELL
MSDS Date:01/01/1987
FSC:6665
NIIN:99-760-9742
MSDS Number: BLLYZ
=== Responsible Party ===
Company Name:POWER CONVERSION INC
Address:495 BOULEVARD
City:ELMWOOD PARK
State:NJ
ZIP:07407-2029
Country:US
Info Phone Num:201-796-4800
Emergency Phone Num:201-796-4800
CAGE:5G978

=== Contractor Identification ===

Company Name:HAWKER ETERNACELL, INC.
Address:495 BOULEVARD
Box:City:ELMWOOD PARK
State:NJ
ZIP:07407-2029
Country:US
Phone:201-796-4800 /FAX: 201-796-6243
CAGE:5G978

===== Composition/Information on Ingredients =====

Ingreed Name:ACETONITRILE (SARA III)
CAS:75-05-8
RTECS #:AL7700000
Other REC Limits:NONE SPECIFIED
OSHA PEL:40PPM/60 STEL
ACGIH TLV:40PPM/60STEL; 9192
EPA Rpt Qty:5000 LBS
DOT Rpt Qty:5000 LBS

===== Hazards Identification =====

Routes of Entry: Inhalation:YES Skin:YES Ingestion:NO
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
Health Hazards Acute and Chronic:SEVERE IRRITATION OF EYES AND
RESPIRATORY TRACT. PULMONARY EDEMA POSSIBLE. EXTENDED EXPOSURE TO
HIGH CONCENTRATIONS IN CONFINED SPACES CAN LEAD TO ASPHYXIATION.
Explanation of Carcinogenicity:NONE OF THE HAZARDOUS INGREDIENTS ARE
LISTED AS CARCINOGENIC TO HUMANS BY IARC, NTP OR OSHA.
Effects of Overexposure:NONE SPECIFIED BY MANUFACTURER.
Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

===== First Aid Measures =====

First Aid:EMPLOYEE BREATHING VAPORS FROM VENTING CELL SHOULD BE REMOVED
TO FRESH AIR. ANY SKIN, EYE OR MUCOUS MEMBRANE CONTACT WITH
ELECTROLYTE SHOULD BE FOLLOWED BY FLUSHING WITH LARGE QUANTITIES OF
WATER. IN CASE OF EYE CONTACT, CONSULT PHYSICIAN.

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Fire Fighting Measures
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Extinguishing Media:USE SAND, FOAM, METAL-X OR DRY CHEMICAL.

Fire Fighting Procedures:REMOVW OTHER BATTERIES & POTENTIAL COMBUSTIBLE MATERIALS FROM AREA OF BURNING BATTERY & CONTAIN & EXTINGUISH WITH AGENT LISTED ABOVE.

Unusual Fire/Explosion Hazard:HEAT CELL ABOVE 160F OR SHORT CIRCUIT CELL CAN LEAD TO VENTING/RELEASE OF SULFUR DIOXIDE & ACETONITRILE. HEATING ABOVE 354F WILL MELT THE LITHIUM & EXPLODE/FIRE

=====
Accidental Release Measures
=====

Spill Release Procedures:IF CELL VENTS OR IS PUNCTURED, VENTILATE AREA WELL. WASH AWAY ANY LIQUID RESIDUE WITH WATER. WEAR EYE AND HAND PROTECTION. RESPIRATOR MAY BE NECESSARY IN CONFINED SPACES.

=====
Handling and Storage
=====

Handling and Storage Precautions:DO NOT PUNCTURE, INCINERATE, SHORT CIRCUIT OR EXPOSE TO TEMPERATURES ABOVE 160F. STORE IN ORIGINAL CONTAINERS. NEVER STORE IN LOOSE BINS.

Other Precautions:DO NOT USE CELLS IN HERMETICALLY SEALED CONTAINERS. DO NOT EXPOSE CELLS TO CHARGING CURRENTS. NEVER CUT INTO CELL.

=====
Exposure Controls/Personal Protection
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Respiratory Protection:NONE SPECIFIED BY MANUFACTURER.

Ventilation:NONE SPECIFIED BY MANUFACTURER.

Protective Gloves:NONE SPECIFIED BY MANUFACTURER.

Eye Protection:EYE PROTECTION SHOULD BE WORN.

Other Protective Equipment:NONE SPECIFIED BY MANUFACTURER.

Work Hygienic Practices:WASH HANDS THOROUGHLY AFTER USE AND BEFORE EATING, DRINKING OR SMOKING.

Supplemental Safety and Health

=====
Physical/Chemical Properties
=====

HCC:Z6

=====
Stability and Reactivity Data
=====

Stability Indicator/Materials to Avoid:YES

DO NOT EXPOSE VENTED CELLS TO WATER.

Stability Condition to Avoid:AVOID EXPOSURE TO TEMPERATURES ABOVE 160F.

Hazardous Decomposition Products:ACETONITRILE MAY DECOMPOSE ABOVE 245F, RELEASING HIGHLY TOXIC CYANIDES.

=====
Disposal Considerations
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Waste Disposal Methods:DISCHARGED CELLS MAY CONTAIN SIGNIFICANT AMOUNTS OF ENERGY AND SHOULD BE HANDLED WITH CARE. THEY SHOULD BE ELECTRICALLY ISOLATED AND PACKED FOR DISPOSAL. DO NOT COMPACT. DISPOSE OF IN SANITARY LANDFIL L I/A/W LOCAL, STATE AND FEDERAL REGULATIONS.

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POWER CONVERSION INC. -- BA5800/U ETERNACELL (G6-104E FROM CROMPTON) -- 6665-99-760-9742

=====
Product Identification
=====

Product ID:BA5800/U ETERNACELL (G6-104E FROM CROMPTON)

MSDS Date:06/11/1986

FSC:6665

NIIN:99-760-9742

MSDS Number: BLZJL

=== Responsible Party ===

Company Name:POWER CONVERSION INC.

Address:495 BOULEVARD

City:ELMWOOD PARK

State:NJ

ZIP:07407

Info Phone Num:201-796-4800

Emergency Phone Num:201-796-4800

Preparer's Name:MARK SCHIMPF

CAGE:55002

=== Contractor Identification ===

Company Name:CROMPTON ETERNACELL LTD

Address:RIVER DRIVE SOUTH SHIELDS

Box:City:TYNE & WEAR

Country:UK

Phone:44-0-91-456-1451

CAGE:CROMP

Company Name:GREASEBY DYNAMICS, LTD (UNKNOWN)

CAGE:U3092

Company Name:POWER CONVERSIONS INC (CANCELED USE 5G978)

Address:495 BOULEVARD

Box:City:ELMWOOD PARK

State:NJ

ZIP:07407-2029

Country:US

Phone:201-796-4800

CAGE:55002

=====
Composition/Information on Ingredients
=====

Ingred Name:SULFUR DIOXIDE

CAS:7446-09-5

RTECS #:WS4550000

OSHA PEL:5 PPM/5 STEL

ACGIH TLV:2 PPM/5 STEL; 9293

=====
Hazards Identification
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Routes of Entry: Inhalation:NO Skin:NO Ingestion:NO

Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO

Health Hazards Acute and Chronic:PRODUCT PRESENTS NO HAZARD UNTIL CASE IS BREACHED. VENTING DISCHARGES SULFUR DIOXIDE AND/OR ELECTROLYTE. ALSO BEWARE OF PHYSICAL INJURY. FOLLOW PROPER HANDLING PROCEDURES.

=====
First Aid Measures
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First Aid:INHALATION OF VAPORS: REMOVE TO FRESH AIR. ANY SKIN, EYE OR MUCOUS MEMBRANE CONTACT WITH BATTERY ELECTROLYTE SHOULD BE FOLLOWED BY FLUSHING WITH LARGE QUANTITIES OF WATER. IN CASE OF EYE CONTACT,

CONSULT A PHYSICIAN.

=====
Fire Fighting Measures
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Extinguishing Media:SAND, METAL-X, DRY CHEMICAL, FOAM
Fire Fighting Procedures:REMOVE OTHER BATTERIES AND COMBUSTIBLE
MATERIALS FROM AREA OF BURNING BATTERIES AND EXTINGUISH WITH AGENTS
LISTED ABOVE.
Unusual Fire/Explosion Hazard:HEATING BATTERIES ABOVE 160F OR SHORT
CIRCUITING CELLS CAN LEAD TO VENTING & RELEASE OF SULFUR DIOXIDE &
ACETONITRILE. HEATING >345F PRESENTS FIRE & EXPLOSION.

=====
Accidental Release Measures
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Spill Release Procedures:IF CELL VENTS OR IS PUNCTURED, VENTILATE AREA
WELL. WASH AWAY ANY LIQUID RESIDUE WITH WATER. WEAR EYE & HAND
PROTECTION. RESPIRATOR MAY BE NECESSARY IN CONFINED SPACES.
Neutralizing Agent:NONE

=====
Handling and Storage
=====

Handling and Storage Precautions:DO NOT PUNCTURE, INCINERATE, SHORT
CIRCUIT OR EXPOSE TO TEMPERATURES ABOVE 160F. STORE IN ORIGINAL
CONTAINERS.
Other Precautions:DO NOT USE BATTERIES IN HERMITICALLY SEALED
CONTAINERS. DO NOT EXPOSE CELLS TO CHARGING CURRENTS. NEVER CUT
INTO CELLS.

=====
Exposure Controls/Personal Protection
=====

Respiratory Protection:NONE
Ventilation:NONE
Protective Gloves:NONE
Eye Protection:SAFETY GLASSES
Other Protective Equipment:NONE
Supplemental Safety and Health
LITHIUM SULFUR-DIOXIDE, SEALED, CYLINDRICAL BATTERY. DOT EXEMPTION
DOT-E-7052 APPLIES. LIQUID CATHODE, D SIZE, 2 CELLS/BATTERY, OVER
0.5 GM LITHIUM/CELL.

=====
Physical/Chemical Properties
=====

HCC:Z6
Appearance and Odor:LITHIUM BATTERY

=====
Stability and Reactivity Data
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Stability Indicator/Materials to Avoid:YES
KEEP WATER AWAY FROM VENTED CELLS.
Stability Condition to Avoid:HIGH TEMPERATURES
Hazardous Decomposition Products:N/R - SEE FIRE & EXPLOSION HAZARD

=====
Disposal Considerations
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Waste Disposal Methods:DISCHARGED BATTERIES MAY STILL CONTAIN ENERGY &
SHOULD BE HANDLED WITH CARE. ELECTRICALLY ISOLATE & PACK FOR
DISPOSAL. DO NOT COMPACT. DISPOSE IN SANITARY LANDFILLS IN
ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL
REGULATIONS.

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SAFT AMERICA INC ADVANCED BATTERY SYSTEMS DIVISION -- LITHIUM SULFUR
DIOXIDE BATTERY,BA-5800/U -- 6665-99-760-9742

=====
Product Identification
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Product ID:LITHIUM SULFUR DIOXIDE BATTERY,BA-5800/U
MSDS Date:11/15/1993
FSC:6665
NIIN:99-760-9742
MSDS Number: CFYKD
=== Responsible Party ===
Company Name:SAFT AMERICA INC ADVANCED BATTERY SYSTEMS DIVISION
Address:313 CRESCENT STREET
City:VALDESE
State:NC
ZIP:28690
Country:US
Info Phone Num:704-874-4111/CORP 912-247-2331
Emergency Phone Num:704-874-4111/800-424-9300 (CHEMTREC)
CAGE:7X634
=== Contractor Identification ===
Company Name:SAFT AMERICA INC ADVANCED BATTERY SYSTEMS DIVISION
Address:313 CRESCENT ST NE
Box:City:VALDESE
State:NC
ZIP:28690-9643
Country:US
Phone:828-874-4111/912-245-2806
CAGE:7X634

=====
Composition/Information on Ingredients
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Ingred Name:LITHIUM METAL
CAS:7439-93-2
RTECS #:OJ5540000
Fraction by Wt: <2.5%
Other REC Limits:NONE RECOMMENDED

Ingred Name:SULFUR DIOXIDE (SARA 302)
CAS:7446-09-5
RTECS #:WS4550000
Fraction by Wt: <25%
Other REC Limits:NONE RECOMMENDED
OSHA PEL:5 PPM
ACGIH TLV:2 PPM/5 STEL; 9596

Ingred Name:ACETONITRILE (SARA 313) (CERCLA)
CAS:75-05-8
RTECS #:AL7700000
Fraction by Wt: <6%
Other REC Limits:NONE RECOMMENDED
OSHA PEL:40 PPM
ACGIH TLV:40 PPM/60 STEL; 9596
EPA Rpt Qty:5000 LBS
DOT Rpt Qty:5000 LBS

Ingred Name:ACETYLENE BLACK
CAS:133-86-4
Fraction by Wt: <5%

Other REC Limits:NONE RECOMMENDED

===== Hazards Identification =====

LD50 LC50 Mixture:LD50 (ORAL, RAT) IS UNKNOWN.

Routes of Entry: Inhalation:NO Skin:NO Ingestion:NO

Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO

Health Hazards Acute and Chronic:TARGET ORGANS:NONE. ACUTE- BATTERY IS HERMETICALLY SEALED. IF BROKEN OR IN FIRE: INHALATION OF SULFUR DIOXIDE MAY CAUSE EYE, RESPIRATORY TRACT IRRITATION. HIGH CONCENTRATIONS MAY CAUSE UNCONSCIOUSNESS . INGESTION CAN BE HARMFUL. CHRONIC- NONE.

Explanation of Carcinogenicity:NONE

Effects of Overexposure:NONE. IF BROKEN OR IN FIRE: IRRITATION, DRY THROAT, COUGHING, UNCONSCIOUSNESS

Medical Cond Aggravated by Exposure:IF SULFUR DIOXIDE IS RELEASED: ASTHMA AND OTHER RESPIRATORY DISEASES

===== First Aid Measures =====

First Aid:GET MEDICAL HELP IF SYMPTOMS PERSIST. INHALED:MOVE TO FRESH AIR. PROVIDE OXYGEN/CPR IF NEEDED. EYES:FLUSH WITH WATER FOR 15 MINUTES. HOLD EYELIDS OPEN. SEE PHYSICIAN. SKIN:WASH WITH SOAP & WATER. ORAL :IF BATTERY/OPEN BATTERY IS INGESTED, DO NOT INDUCE VOMITING OR GIVE FOOD/DRINK. SEEK IMMEDIATE MEDICAL ATTENTION. CALL NATIONAL BATTERY INGESTION HOTLINE FOR ADVICE & FOLLOWUP (202-625-3333).

===== Fire Fighting Measures =====

Flash Point:NONE

Lower Limits:NOT RELEVANT

Upper Limits:NOT RELEVANT

Extinguishing Media:FOR BURNING LITHIUM SULFUR DIOXIDE CELLS/BATTERIES, USE WATER/CARBON DIOXIDE. USE CLASS D EXTINGUISHERS FOR RAW LITHIUM.

Fire Fighting Procedures:USE WATER SPRAY OR CARBON DIOXIDE TO LOWER TEMPERATURE & EXTINGUISH FIRES IN PACKING MATERIAL. USE SELF CONTAINED BREATHING APPARATUS & FULL PROTECTIVE CLOTHING

Unusual Fire/Explosion Hazard:TOXIC AND CORROSIVE GASES MAY BE FORMED. BATTERY MAY VENT OR RUPTURE.

===== Accidental Release Measures =====

Spill Release Procedures:IF BROKEN, WEAR PROTECTIVE CLOTHING AND RESPIRATORY EQUIPMENT SUITABLE FOR TOXIC GASES. SWEEP, SCOOP OR PICK UP SPILLED MATERIAL. TRANSFER TO A SUITABLE CONTAINER FOR DISPOSAL.

Neutralizing Agent:NOT RELEVANT

===== Handling and Storage =====

Handling and Storage Precautions:STORE AT 70F/21C, IN VENTILATED AREAS EQUIPPED WITH SPRINKLER SYSTEM, AWAY FROM OTHER MATERIALS. AVOID TEMPERATURES ABOVE 160F/71C.

Other Precautions:DO NOT INCINERATE. DO NOT TOUCH BROKEN OR LEAKING BATTERIES. AVOID MECHANICAL OR ELECTRICAL ABUSE. DO NOT ATTEMPT TO RECHARGE. AVOID SHORT CIRCUITS. DO NOT CARRY BATTERIES LOOSE IN POCKET OR BAG. KEEP BATTERIES AWAY FROM SMALL CHILDREN.

=====
Exposure Controls/Personal Protection
=====

Respiratory Protection:NOT NECESSARY UNDER NORMAL CONDITIONS OF USE.
WEAR NIOSH-APPROVED SELF-CONTAINED BREATHING APPARATUS WHEN LARGE
NUMBERS OF CELLS ARE INVOLVED IN A FIRE.

Ventilation:ADEQUATE

Protective Gloves:RUBBER FOR LEAKERS

Eye Protection:GOGGLES FOR LEAKERS

Other Protective Equipment:EYE BATH, WASHING FACILITIES

Work Hygienic Practices:OBSERVE GOOD INDUSTRIAL HYGIENE PRACTICES AND
RECOMMENDED PROCEDURES. WASH AFTER HANDLING AND BEFORE EATING OR
DRINKING.

Supplemental Safety and Health
HCC PER TECHNICAL SUPPORT.

=====
Physical/Chemical Properties
=====

HCC:F8

NRC/State Lic Num:NOT RELEVANT

Melt/Freeze Pt:M.P/F.P Text:374F,190C

Spec Gravity:>1

Viscosity:NOT RELEVANT

Evaporation Rate & Reference:NOT RELEVANT

Solubility in Water:INSOLUBLE

Appearance and Odor:BATTERY

=====
Stability and Reactivity Data
=====

Stability Indicator/Materials to Avoid:YES

Stability Condition to Avoid:EXCESSIVE HEAT, RECHARGING, MECHANICAL
ABUSE

Hazardous Decomposition Products:RUPTURED BATTERIES MAY RELEASE SULFUR
DIOXIDE.

=====
Disposal Considerations
=====

Waste Disposal Methods:DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND
FEDERAL REGULATIONS.

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particular situation.

BALLARD BATTERY SYSTEMS CORP -- LITHIUM SULFUR DIOXIDE BATTERY, BA-5567/U -
- 6665-99-760-9742

===== Product Identification =====

Product ID:LITHIUM SULFUR DIOXIDE BATTERY, BA-5567/U

MSDS Date:08/20/1991

FSC:6665

NIIN:99-760-9742

MSDS Number: BLWJB

=== Responsible Party ===

Company Name:BALLARD BATTERY SYSTEMS CORP

Address:1164 WEST 15TH STREET

City:NORTH VANCOUVER

Country:BC

Info Phone Num:604-986-4104

Emergency Phone Num:604-986-4104

CAGE:0E1R2

=== Contractor Identification ===

Company Name:EAGLE-PICHER ENERGY PRODUCTS CORP

Address:13136 82A AVENUE

Box:City:SURREY, V3W 9Y6

State:BC

Country:US

Phone:604-543-4350

CAGE:0E1R2

===== Composition/Information on Ingredients =====

Ingred Name:LITHIUM METAL

CAS:7439-93-2

RTECS #:OJ5540000

Fraction by Wt: 2.3%

Other REC Limits:NONE SPECIFIED

Ingred Name:SULFUR DIOXIDE (SARA III)

CAS:7446-09-5

RTECS #:WS4550000

Fraction by Wt: 22%

Other REC Limits:NONE SPECIFIED

OSHA PEL:5 PPM/5 STEL

ACGIH TLV:2 PPM/5 STEL; 9293

Ingred Name:ACETONITRILE (SARA III)

CAS:75-05-8

RTECS #:AL7700000

Fraction by Wt: 7.7%

Other REC Limits:NONE SPECIFIED

OSHA PEL:40PPM/60 STEL

ACGIH TLV:40PPM/60STEL; 9192

EPA Rpt Qty:5000 LBS

DOT Rpt Qty:5000 LBS

===== Hazards Identification =====

Routes of Entry: Inhalation:YES Skin:NO Ingestion:NO

Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO

Health Hazards Acute and Chronic:ACUTE: 10-20 PPM IRRITATING; 100 PPM
DANGEROUS; ABOVE 400 PPM LIFE THREATENING. CHRONIC: RHINITIS.

Explanation of Carcinogenicity:NONE OF THE HAZARDOUS INGREDIENTS ARE LISTED AS CARCINOGENIC TO HUMANS BY IARC, NTP OR OSHA.
 Effects of Overexposure:EYE AND RESPIRATORY IRRITATION, DRY THROAT AND COUGHING.
 Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

===== First Aid Measures =====

First Aid:FOR SULFUR DIOXIDE EXPOSURE; REMOVE TO VENTILATED AREA.
 CONSULT PHYSICIAN.

===== Fire Fighting Measures =====

Extinguishing Media:FOR BURNING BATTERIES USE CLASS D EXTINGUISHERS;
 LITH-X, POWDERED GRAPHITE; MET-L-X.
 Fire Fighting Procedures:USE WATER SPRAY OR CARBON DIOXIDE TO LOWER TEMPERATURE & EXTINGUISH FIRES IN PACKING MATERIAL. USE SELF CONTAINED BREATHING APPARATUS & FULL PROTECTIVE CLOTHING
 Unusual Fire/Explosion Hazard:NONE SPECIFIED BY MANUFACTURER.

===== Accidental Release Measures =====

Spill Release Procedures:NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions:VENTILATED AREAS EQUIPPED WITH SPRINKLER SYSTEM, AWAY FROM FLAMMABLES.
 Other Precautions:NONE

===== Exposure Controls/Personal Protection =====

Respiratory Protection:FULL FACE CHEMICAL CARTRIDGE, BELOW 20 PPM. SELF CONTAINED BREATHING APPARATUS.
 Ventilation:NONE SPECIFIED BY MANUFACTURER.
 Protective Gloves:NONE SPECIFIED BY MANUFACTURER.
 Eye Protection:NONE SPECIFIED BY MANUFACTURER.
 Other Protective Equipment:NEEDED FOR RUPTURED BATTERIES ONLY - FOR SULFUR DIOXIDE FIRE.
 Work Hygienic Practices:WASH HANDS THOROUGHLY AFTER USE AND BEFORE EATING, DRINKING OR SMOKING.
 Supplemental Safety and Health

===== Physical/Chemical Properties =====

HCC:Z6
 Appearance and Odor:SOLID

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
 LITHIUM REACTS WITH WATER TO FORM HYDROGEN. MOIST SULFUR DIOXIDE IS CORROSIVE.
 Stability Condition to Avoid:LITHIUM REACTS WITH AIR, WATER AND MOST MATERIALS.
 Hazardous Decomposition Products:RUPTURED BATTERIES WILL RELEASE SULFUR DIOXIDE.

===== Disposal Considerations =====

Waste Disposal Methods: ACCORDING TO REGULATIONS.

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