SAFT AMERICA INC TRANSPORTATION DIV -- NICKEL-CADMIUM AIRCRAFT BATTERY -- 6140-01-089-8134

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

Product ID:NICKEL-CADMIUM AIRCRAFT BATTERY
MSDS Date:05/05/1999
FSC:6140
NIIN:01-089-8134
Status Code:A
MSDS Number: CKZGB
=== Responsible Party ===
Company Name:SAFT AMERICA INC TRANSPORTATION DIV
Address:711 INDUSTRIAL BLVD
Box:1886
City:VALDOSTA
State:GA
ZIP:31601-1886
Country:US
Info Phone Num:912-247-2331
Emergency Phone Num:(800)424-9300
Chemtrec Ind/Phone:(800)424-9300
CAGE:09052
=== Contractor Identification ===
Company Name:SAFT AMERICA INC.
Address:711 INDUSTRIAL BLVD
Box:1886
City:VALDOSTA
State:GA
ZIP:31602
Country:US
Phone:912-247-2331
Contract Num:SPO430-01-C-0776
CAGE:09052

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

Ingred Name:CADMIUM (AS CADMIUM, CAS#7440-43-9; CADMIUM HYDROXIDE,
CAS#21041-95-2; AND CADMIUM OXIDE,

CAS#1306-19-0)
CAS:7440-43-9
RTECS #:EU9800000
= Wt:8.
OSHA PEL:5 MCG/M3 DUST
ACGIH TLV:0.05 MG/M3 CEILING
EPA Rpt Qty:10 LBS
DOT Rpt Qty:10 LBS

Ingred Name:NICKEL (AS NICKEL, CAS#7440-02-0; NICKEL HYDROXIDE,
CAS#1205-44-87; AND NICKEL OXIDE, CAS#1313-99-1)
CAS:7440-02-0
RTECS #:QR5950000
= Wt:36.
OSHA PEL:1 MG/M3
ACGIH TLV:1 MG/M3

Ingred Name:ELECTROLYTE SOLUTION (18-28% POTASSIUM HYDROXIDE)
CAS:1310-58-3
RTECS #:TT2100000
= Wt:19.
ACGIH TLV:2 MG/M3 CEILING
ACGIH STEL:C2 MG/M3
EPA Rpt Qty
:1000 LBS
DOT Rpt Qty:1000 LBS

Ingred Name:COBALT HYDROXIDE (AS COBALT METAL)
CAS:7440-48-4
RTECS #:GF8750000
= Wt:1.
OSHA PEL:0.1 MG/M3
ACGIH TLV:0.02 MG/M3

Ingred Name:STEEL
= Wt:34.
OSHA PEL:NONE ESTABLISHED

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

Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES
Health Hazards Acute and Chronic:EYE-CONTACT WITH ELECTROLYTE SOLUTION
CAUSES VERY RAPID, SEVERE DAMAGE. EXTREMELY CORROSIVE TO EYE
TISSUES. MAY RESULT

IN PERMANENT BLINDNESS. SKIN-CONTACT WITH ELECTROLYTE SOLUTION MAY CAUSE SERIOUS BURNS TO SKIN TISSUES. INGESTION-ELECTROLYTE SOLUTION CAUSES TISSUE DAMAGE TO THROAT AREA & GASTRO/RESPIRATORY TRACT. INHALATION-DURING ACTIVATION PROCEDURES MIST GENERATED MAY CAUSE VARYING DEGREES O F IRRITATION TO THE NASAL MUCOUS MEMBRANES & RESPIRATORY TRACT TISSUES. VARYING FROM MILD IRRITATION OF NASAL MUCOUS MEMBRANES TO DAMAGE OF LUNG TISSUE PROPER.

Explanation of Carcinogenicity: NIOSH RECOMMENDS THAT NICKEL AND CADMIUM BE TREATED AS OCCUPATIONAL CARCINOGENS.

Effects of Overexposure: EYE EFFECTS: CONTACT WITH NICKEL OXIDE MAY CAUSE MINOR IRRITATION. SKIN EFFECTS: CONTACT WITH NICKEL COMPOUNDS MAY CAUSE SKIN SENSITIZATION, RESULTING IN CHRONIC ECZEMA OR NICKEL ITCH. INGESTION: IN GESTION OF CADMIUM AND/OR NICKEL COMPOUNDS CAUSES NAUSEA & INTESTINAL DISORDERS. INHALATION: INHALATION OF CADMIUM OXIDE MAY CAUSE DRY THROAT, COUGH, HEADACHE, VOMITING, CHEST PAIN, CHILLS, EXCESSIVE OVEREXPOSURE MAY RESULT IN PULMONARY EDEMA, BREATHING DIFFICULTY, PROSTATION, AND KIDNEY DAMAGE.

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

First Aid: BATTERY ELECTROLYTE: EYE CONTACT-FLUSH WITH PLENTY OF WATER FOR AT LEAST 20 MINUTES. GET IMMEDIATE MEDICAL ATTENTION. SKIN CONTACT-REMOVE CONTAMINATED CLOTHING AND FLUSH AFFECTED AREAS WITH PLENTY OF WATER FOR AT LEAST 20 MINUTES. INGESTION-DO NOT INDUCE VOMITING. DILUTE BY GIVING LARGE VOLUMES OF WATER OR MILK. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSO N. INHALATION: REMOVE TO FRESH AIR. GIVE OXYGEN OR ARTIFICIAL RESPIRATION IF NEEDED. GET IMMEDIATE MEDICAL ATTENTION. NICKEL OXIDE: SKIN CONTACT-WASH WITH COLD WATER AND SOAP.

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

Extinguishing Media: CO_2, SAND

Fire Fighting Procedures: USE SELF-CONTAINED BREATHING APPARATU

S TO
AVOID BREATHING TOXIC FUMES. WEAR PROTECTIVE CLOTHING AND EQUIPMENT TO PREVENT POTENTIAL BODY CONTACT WITH ELECTROLYTE SOLUTION OR MIXTURE OF WATER AND ELECTR OLYTE SOLUTION. DISCONNECT OR CUT ALL CABLES TO AND FROM BATTERY-ESPECIALLY GROUND CONNECTION.
Unusual Fire/Explosion Hazard:ELECTROLYTE SOLUTION IS CORROSIVE TO ALL HUMAN TISSUES. IT WILL REACT VIOLENTLY WITH MANY ORGANIC CHEMICALS, ESPECIALLY NITROCARBONS AND CHLORCARBONS. ELECTROLYTE SOLUTION REACTS WITH
ZINC, ALUMINUM, TIN AND OTHER ACTIVCE MATERIALS RELEASING FLAMMABLE HYDROGEN GAS.

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

Spill Release Procedures:ELECTROLYTE SOLUTION SPILLS, SMALL(UP TO 5 GALLONS): FLUSH WITH WATER AND NEUTRALIZE WITH DILUTE CRITIC ACID.
LARGE: CONTAIN MATERIAL IN SUITABLE CONTAINERS OR HOLDING AREA. DO NOT ALLOW MATERIAL TO ENTER SEWERS, STREAMS, OR STORM CONDUITS.
RECOVER MATERIAL WITH VACCUM TRUCK AND DISPOSE OF PROP
ERLY.
REPORTABLE QUANTITY: 1000 POUNDS. 40CFR-117.13
Neutralizing Agent:DILUTE CRITI ACID.

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

Handling and Storage Precautions:THESE CELLS AND THE BATTERIES CONSTRUCTED FROM THEM MAY BE HIGHLY CHARGED AND ARE CAPABLE OF HIGH ENERGY DISCHARGE. CARE SHOULD BE TAKEN TO HANDLE CELLS PROPERLY TO AVOID SHORTING OR MISUSE THAT WILL RESULT IN A RAPID, UNCONTROLLED ELECTRICAL, CHEMICAL, OR HEAT ENERGY RELEASE.
Other
Precautions:DO NOT SHORT CIRCUIT- MAY CAUSE BURNS OR FIRE. DO NOT TRANSPORT ACTIVATED BATTERIES WITHOUT VENT CAP IN PLACE. WHEN REMOVING BATTERY FROM SERVICE, VISUALLY INSPECT FOR LEAKAGE PRIOR TO HANDLING. IF LE AKAGE HAS OCCURRED FOLLOW SPILL MANAGEMENT PROCEDURES. DO NOT ALLOW AN EXPOSED FLAME OR SPARK TO COM E NEAR THE CELLS.

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

Respiratory Protection:USE NIOSH APPROVED MIST RESPIRATOR DURING ACTIVATI

ON AND ACTUAL USUAGE TO MAINTAIN EXPOSURE LEVELS BELOW GASES GENERATED.
Ventilation:PERFORM BATTERY CHARGING PROCEDURES IN A WELL VENTILATED AREA. BATTERY OPERATION AREAS MUST BE WELL VENTILATED TO REMOVE NORMAL GASES GENERATED.
Protective Gloves:USE ANY WATER-INSOLUBLE, NON-PERMEABLE GLOVE, I.E., SYNTHETIC RUBBER.
Eye Protection:USE SPLASH GOGGLES OR FACE SHIELD WHENEVER HANDLING A BATTERY.
Other Protective Equipment:RUBBER BOOTS, RUBBER APRON OR RAINWEAR, OR EQUIVALEN
T IF EXPOSURE TO ELECTROLYTE SOLUTION IS LIKELY.
Work Hygienic Practices:SKIN CONTACT: WASH WITH COLD WATER AND SOAP.
Supplemental Safety and Health
CADMIUM FUMES MAY BE RELEASED WHEN BATTERIES ARE SUBJECTED TO HIGH TEMPERATURES. IN CASE OF FIRE, DO NOT BREATH SMOKE AND FUMES!

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

HCC:B1
Boiling Pt:=765.6C, 1410.F
Melt/Freeze Pt:=320.C, 608.F
Vapor Pres:2 MM HG AT 68F
Spec Gravity:1.170-1.250 (ELECTROLYTE)
Evaporation Rate
& Reference:NOT DETERMINED
Solubility in Water:COMPLETELY SOLUBLE

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

Stability Indicator/Materials to Avoid:YES
ALUMINUM, ZINC, TIN AND OTHER ACTIVE METALS, ACID, CHLORINATED & AROMATIC HYDDCARBONS, NITROCARBONS, HALOCARBONS. TRICHOLORETHYLENE WILL REACT WITH ELECTROLYTE SOLUTION TO FORM DICHLOROLORACETYLENE WHICH IS SPONTANEOUSLY C
Stability Condition to Avoid:NOTE THAT NORMAL REACTIONS INSIDE BATTERY LIBER
ATE FLAMMABLE HYDROGEN GAS. DO NOT SEAL BATTERY FROM ATMOSPHERE.
Hazardous Decomposition Products:NICKEL OXIDE, CADMIUM, CADMIUM, CADMIUM OXIDE, AND POTASSIUM HYDROXIDE NOTE THAT NORMAL REACTIONS INSIDE BATTERY LIBERATE FLAMMABLE HYDROGEN GAS. DO NOT SEAL BATTERY FROM ATMOSPHERE.

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

Waste Disposal Methods:THE STORAGE BATTERY IS A UNIVERSAL WASTE UNDER RCRA. IT MAY BE RETURNED TO SAFT FOR RECYCLING. BATTERY IS

TCLP
TOXIC. BATTERY AND ELECTROLYTE SOLUTION ARE CORROSIVE. IF NOT RECYCLED, MUST BE DISPOSED IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS.

========== Other Information ==========

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