

		<h1>SAFETY DATA SHEET</h1>										Page 1 of 6 WP-955		
Prepared to OSHA, ACC, ANSI, NOHSC, WHMIS, 2001/58 & 1272/2008/EC Standards					SDS Revision: 2.0			SDS Revision Date: 12/31/2013						
1. PRODUCT & COMPANY IDENTIFICATION														
1.1	Product Name:	BOSCH LEAD-ACID BATTERY												
1.2	Chemical Name:	Lead Acid (Wet) Battery												
1.3	Synonyms:	NA												
1.4	Trade Names:	Bosch Lead-Acid Battery												
1.5	Product Use:	Automotive Battery												
1.6	Distributor's Name:	Worldpac, Inc.												
1.7	Distributor's Address:	37137 Hickory Street, Newark, CA 94560 USA												
1.8	Emergency Phone:	INFOTRAC: +1 (800) 535-5053 / +1 (352) 323-3500 (CONTRACT 84261)												
1.9	Business Phone / Fax:	+1 (510) 608-5525 / +1 (510) 742-9262												
2. HAZARDS IDENTIFICATION														
2.1	Hazard Identification:	<p>This product is classified as a hazardous substance and as dangerous goods according to the classification criteria of [NOHSC: 1088 (2004)] and ADG Code (Australia).</p> <p>DANGER! HARMFUL IF SWALLOWED. CAUSES SEVERE SKIN BURNS AND EYE DAMAGE.</p> <p>Hazard Statements (H): H302 – Harmful if swallowed. H314 – Causes severe skins burns and eye damage.</p> <p>Precautionary Statements (P): P260 - Do not breathe dust/fume/gas/mist/vapours/spray. P264 - Wash hands and exposed skin areas with soap and warm water thoroughly after handling. P280 – Wear protective gloves/eye protection. P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. P363 - Wash contaminated clothing before reuse. P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P310 - Immediately call a POISON CENTER or doctor/physician. P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. P405 – Store locked up. P501 - Dispose of contents/container to licenses treatment, storage and disposal facility (TSDF).</p>										 		
2.2	Effects of Exposure:	<p>Eyes: Severe irritation, burns, cornea damage, blindness. Lead compounds may cause irritation.</p> <p>Skin: Severe irritation, burns, and ulceration.</p> <p>Ingestion: May cause severe irritation of mouth, throat, esophagus, and stomach. Acute ingestion of lead compounds may cause abdominal pain, nausea, vomiting, diarrhea, and severe cramping. This may lead rapidly to systemic toxicity.</p> <p>Inhalation: Breathing of sulfuric acid vapors or mists may cause severe respiratory irritation. Inhalation of lead dust or fumes may cause irritation of upper respiratory tract and lungs.</p>												
2.3	Symptoms of Overexposure:	<p>Eyes: Severe irritation, redness, and watering, damage to cornea and possible blindness.</p> <p>Skin: Severe skin irritation, red, itching skin, burns and ulceration.</p> <p>Ingestion: Severe discomfort, nausea, vomiting and headache. Symptoms of lead toxicity include headache, fatigue, abdominal pain, loss of appetite, muscular aches and weakness, sleep disturbances, and irritability.</p> <p>Inhalation: May cause irritation to the upper respiratory system. Overexposure to sprays or mists may cause chemical pneumonitis.</p>												
2.4	Acute Health Effects:	Hazardous exposure can occur only when product is heated above the melting point, oxidized or otherwise processed or damaged to create dust, vapor, or fume.												
2.5	Chronic Health Effects:	Possible erosion of tooth enamel; inflammation of nose, throat, and bronchial tubes. Anemia; neuropathy, particularly of the motor nerves, with wrist drop; kidney damage; reproductive changes in both males and females.												
2.6	Target Organs:	Lungs, upper respiratory tract, skin.												
3. COMPOSITION & INGREDIENT INFORMATION														
CHEMICAL NAME(S)	CAS No.	RTECS No.	EINECS No.	%	EXPOSURE LIMITS IN AIR (mg/m ³)									
					ACGIH		NOHSC			OSHA			OTHER	
					TLV	STEL	ppm	ppm	ppm	ppm	ppm	ppm		
LEAD	7439-92-1	OF7525000	231-100-4	40-70	(0.05)	NA	NF	(0.15)	NF	(0.05)	NA	100	(0.05) NIOSH	
SULFURIC ACID	7664-93-9	WS5600000	231-639-5	30-60	(0.2)	(3)	(1)	NF	NF	(1)	(3)	(15)		
ANTIMONY	7440-36-0	CC4025000	231-146-5	0.1-1	(0.5)	NA	NF	(0.5)	NF	(0.5)	NA	50		
ARSENIC	7440-38-2	CG0525000	231-148-6	≤ 0.1	(0.01)	NA	NF	(0.05)	NF	(0.01)	NA	5	(0.002) NIOSH	
NA = Not Available; ND = Not Determined; NE = Not Established; NF = Not Found; C = Ceiling Limit; See Section 16 for Additional Definitions of Terms Used NOTE: All WHMIS required information is included. It is located in appropriate sections based on the ANSI Z400.1-2010 format.														

3. COMPOSITION & INGREDIENT INFORMATION – cont'd

CHEMICAL NAME(S)	CAS No.	RTECS No.	EINECS No.	%	EXPOSURE LIMITS IN AIR (mg/m ³)									OTHER
					ACGIH		NOHSC			OSHA				
					ppm		ppm			ppm				
					TLV	STEL	ES-TWA	ES-STEL	ES-PEAK	PEL	STEL	IDLH		
TIN	7440-31-5	XP7320000	231-141-8	0.1-1	NA	(0.1)	NF	(0.2)	NF	NA	NA	(100)		
CALCIUM	7440-70-2	NA	231-179-5	≤ 0.1	NA	NA	NF	NF	NF	NA	NA	NA		

4. FIRST AID MEASURES

4.1	First Aid:	<p>Ingestion: Give large quantities of water, but do NOT induce vomiting. Never give anything by mouth to an unconscious person. Contact Infotrac +1 (800) 535-5053 or the nearest Poison Control Center or local emergency telephone number for assistance and instructions. Seek immediate medical attention. If vomiting occurs spontaneously, keep victim's head lowered (forward) to reduce the risk of aspiration.</p> <p>Eyes: If product gets in the eyes, flush eyes thoroughly with copious amounts of water for at least 15 minutes, holding eyelid(s) open to ensure complete flushing. If the eyes or face become swollen during or following use, consult a physician or emergency room immediately.</p> <p>Skin: Remove contaminated clothing and wash affected areas with soap and water. If discomfort persists and/or the skin reaction worsens, contact a physician immediately. Do not wear contaminated clothing until after it has been properly cleaned.</p> <p>Inhalation: Remove victim to fresh air at once. Under extreme conditions, if breathing stops, perform artificial respiration. Seek immediate medical attention.</p>											
4.2	Medical Conditions Aggravated by Exposure:	Overexposure to sulfuric acid mist may cause lung damage and aggravate pulmonary conditions. Contact of electrolyte (water and sulfuric acid solution) with skin may aggravate skin diseases such as eczema and contact dermatitis. Contact of electrolyte (water and sulfuric acid solution) with eyes may damage cornea and/or cause blindness. Lead and its compounds can aggravate some forms of kidney, liver, and neurologic diseases.	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #0056b3; color: white;">HEALTH</td> <td style="text-align: center;">3</td> </tr> <tr> <td style="background-color: #ff0000; color: white;">FLAMMABILITY</td> <td style="text-align: center;">0</td> </tr> <tr> <td style="background-color: #ff8c00; color: white;">PHYSICAL HAZARDS</td> <td style="text-align: center;">2</td> </tr> <tr> <td colspan="2" style="background-color: #cccccc;">PROTECTIVE EQUIPMENT</td> </tr> <tr> <td>EYES</td> <td>SKIN</td> </tr> </table>	HEALTH	3	FLAMMABILITY	0	PHYSICAL HAZARDS	2	PROTECTIVE EQUIPMENT		EYES	SKIN
HEALTH	3												
FLAMMABILITY	0												
PHYSICAL HAZARDS	2												
PROTECTIVE EQUIPMENT													
EYES	SKIN												

5. FIREFIGHTING MEASURES

5.1	Fire & Explosion Hazards:	In operation, batteries generate and release flammable hydrogen gas. They must always be assumed to contain this gas which, if ignited by burning cigarette, naked flame or spark, may cause battery explosion with dispersion of casing fragments and corrosive liquid electrolyte. Carefully follow manufacturer's instructions for installation and service. Keep away all sources of gas ignition and do not allow metallic articles to simultaneously contact the negative and positive terminals of a battery.	
5.2	Extinguishing Methods:	Water, Foam, CO ₂ , Dry Chemical, low velocity water fog, Halon (if permitted),	
5.3	Firefighting Procedures:	As with any fire, firefighters should wear appropriate protective equipment including a MSHA/NIOSH approved or equivalent self-contained breathing apparatus (SCBA) and protective clothing. Treat as hot oil. Hazardous decomposition products may be released. Thermal degradation may produce oxides of carbon, and/or nitrogen, hydrocarbons and/or derivatives. Fire should be fought from a safe distance. Keep containers cool until well after the fire is out. Use water spray to cool fire-exposed surfaces and to protect personal. Fight fire upwind. Prevent runoff from fire control or dilution from entering sewers, drains, drinking water supply, or any natural waterway.	

6. ACCIDENTAL RELEASE MEASURES

6.1	Spills:	<p>Before cleaning any spill or leak, individuals involved in spill cleanup must wear appropriate Personal Protective Equipment (PPE). Use safety glasses or safety goggles and face shield; use gloves and other protective clothing (e.g., apron, boots, etc.) to prevent skin contact. Wear acid-resistant clothing, boots, gloves, and face shield.</p> <p>Small Spills: Wear appropriate protective equipment including gloves and protective eyewear. Use a non-combustible, inert material such as vermiculite or sand to soak up the product and place into a container for later disposal. If possible, carefully neutralize spilled electrolyte with soda ash, sodium bicarbonate, lime, etc.</p> <p>Large Spills: Keep incompatible materials (e.g., oxidizers, strong alkalis) away from spill. Stay upwind and away from spill or release. Isolate immediate hazard area and keep unauthorized personnel out of area. Stop spill or release if it can be done with minimal risk. Wear appropriate protective equipment including respiratory protection as conditions warrant. Recover as much free liquid as possible and collect in acid-resistant container. Use absorbent to pick up residue. Avoid discharging liquid directly into a sewer or surface waters. Neutralized acid must be managed in accordance with approved local, state, and federal requirements. Consult state environmental agency and/or federal EPA.</p>
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7. HANDLING & STORAGE INFORMATION

7.1	Work & Hygiene Practices:	Store batteries under roof in cool, dry, well-ventilated areas that are separated from incompatible materials and from activities that may create flames, spark, or heat. Store on smooth, impervious surfaces that are provided with measures for liquid containment in the event of electrolyte spills. Keep away from metallic objects that could bridge the terminals on a battery and create a dangerous short-circuit. Handle carefully and avoid tipping, which may allow electrolyte leakage. Single batteries pose no risk of electric shock but there may be increasing risk of electric shock from strings of connected batteries exceeding three 12-volt units.
7.2	Storage & Handling:	Use and store in a cool, dry, well-ventilated location (e.g., local exhaust ventilation, fans) away from heat and direct sunlight. Store in closed containers. Avoid temperatures above 40°C (120°F). Keep away from incompatible substances (see Section 10). Protect containers from physical damage.
7.3	Special Precautions:	There is a possible risk of electric shock from charging equipment and from strings of series connected batteries, whether or not being charged. Shut-off power to chargers whenever not in use and before detachment of any circuit connections. Batteries being charged will generate and release flammable hydrogen gas. Charging space should be ventilated. Keep battery vent caps in position. Prohibit smoking and avoid creation of flames and sparks nearby. Wear face and eye protection when near batteries being charged.

8. EXPOSURE CONTROLS & PERSONAL PROTECTION

8.1	Ventilation & Engineering Controls:	Use local or general exhaust ventilation to effectively remove and prevent buildup of vapors or mist generated from the handling of this product. Ensure appropriate decontamination equipment is available (e.g., sink, safety shower, eye-wash station). In areas where water and sulfuric acid solutions are handled in concentrations greater than 1%, emergency eyewash stations and showers should be provided, with unlimited water supply.
8.2	Respiratory Protection:	No special respiratory protection is required under typical circumstances of use or handling. In instances where vapors or sprays of this product are generated, and respiratory protection is needed, use only protection authorized by 29 CFR §1910.134, applicable U.S. State regulations, or the Canadian CAS Standard Z94.4-93 and applicable standards of Canadian Provinces, EC member States, or Australia.
8.3	Eye Protection:	Avoid eye contact. Safety glasses with side shields must be used when handling or using this product. A protective face shield is also recommended. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU). 
8.4	Hand Protection:	Wear protective, chemical-resistant gloves (e.g., neoprene, nitrile) when using or handling this product. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. 
8.5	Body Protection:	Not required under normal conditions of use. A chemical resistant apron and/or protective clothing are recommended when handling or using large quantities (e.g., > 5 gallons (18.9 L)) of this product. Protective working garments should meet EU Standard EN 344 or equivalent.

9. PHYSICAL & CHEMICAL PROPERTIES

9.1	Appearance:	NA
9.2	Odor:	A clear liquid with a sharp, penetrating, pungent odor. A battery is a manufactured article; no apparent odor.
9.3	Odor Threshold:	NA
9.4	pH:	NA
9.5	Melting Point/Freezing Point:	NA
9.6	Initial Boiling Point/Boiling Range:	≥ 95 °C (≥ 203 °F)
9.7	Flashpoint:	NA
9.8	Upper/Lower Flammability Limits:	LEL: 4.1%, UEL: 74.2%
9.9	Vapor Pressure:	NA
9.10	Vapor Density:	> 1.0 (air=1.0)
9.11	Relative Density:	1.230-1.350
9.12	Solubility:	NA
9.13	Partition Coefficient (log P _{ow}):	NA
9.14	Autoignition Temperature:	NA
9.15	Decomposition Temperature:	NA
9.16	Viscosity:	NA
9.17	Other Information:	NA

Prepared to OSHA, ACC, ANSI, NOHSC, WHMIS, 2001/58 & 1272/2008/EC Standards SDS Revision: 2.0 SDS Revision Date: 12/31/2013

10. STABILITY & REACTIVITY

10.1	Stability:	This product is stable under normal storage and use conditions.
10.2	Hazardous Decomposition Products:	Sulfur trioxide, carbon monoxide, sulfuric acid mist, sulfur dioxide, hydrogen sulfide. Temperatures above the melting point are likely to produce toxic metal fume, vapor, or dust; contact with strong acid or base or presence of nascent hydrogen may generate highly toxic arsine gas.
10.3	Hazardous Polymerization:	Will not occur.
10.4	Conditions to Avoid:	Prolonged overcharge at high current; sources of ignition.
10.5	Incompatible Substances:	<u>Sulfuric Acid</u> : Contact with combustibles and organic materials may cause fire and explosion. Also reacts violently with strong reducing agents, metals, sulfur trioxide gas, strong oxidizers, and water. Contact with metals may produce toxic sulfur dioxide fumes and may release flammable hydrogen gas. <u>Lead Compounds</u> : Avoid contact with strong acids, bases, halides, halogenates, potassium nitrate, permanganate, peroxides, nascent hydrogen, and reducing agents.

11. TOXICOLOGICAL INFORMATION

11.1	Routes of Entry:	Inhalation: YES Absorption: YES Ingestion: YES
11.2	Toxicity Data:	This product has not been tested on animals to obtain toxicological data. Toxicology data for some of the components in this mixture, found in scientific literature, are presented below: <u>Sulfuric Acid</u> : LD ₅₀ (oral, rat): 2,140 mg/kg; <u>Arsenic</u> : LD50 (oral, rat): 763 ppm; <u>Lead</u> : LD ₅₀ (oral, rat): 7000 ppm
11.3	Acute Toxicity:	See section 2.4. Severe skin irritation, damage to cornea may cause blindness, upper respiratory irritation.
11.4	Chronic Toxicity:	See section 2.5.
11.5	Suspected Carcinogen:	The National Toxicology Program (NTP) and the International Agency for Research on Cancer (IARC) have classified "strong inorganic acid mist containing sulfuric acid" as a substance that is carcinogenic to humans. This classification does not apply to sulfuric acid solutions in static liquid state or to electrolyte in batteries. Batteries subjected to abusive charging at excessively high currents for prolonged periods of time without vent caps in place may create a surrounding atmosphere of the offensive strong inorganic acid mist containing sulfuric acid. <u>Lead</u> is listed as a 2B carcinogen, likely in animals at extreme doses. Proof of carcinogenicity in humans is lacking at present. <u>Arsenic</u> is listed by International Agency for Research on Cancer (IARC), OSHA and NIOSH as a carcinogen only after prolonged exposure at high levels
11.6	Reproductive Toxicity:	This product is not reported to cause reproductive toxicity in humans.
	Mutagenicity:	This product is not reported to produce mutagenicity effects in humans.
	Embryotoxicity:	This product is not reported to produce embryotoxic effects in humans.
	Teratogenicity:	This product is not reported to cause teratogenic effects in humans.
	Reproductive Toxicity:	This product is not reported to cause reproductive effects in humans.
11.7	Irritancy of Product:	See Section 2.3
11.8	Biological Exposure Indices:	NA
11.9	Physician Recommendations:	Treat symptomatically.

12. ECOLOGICAL INFORMATION

12.1	Environmental Stability:	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
12.2	Effects on Plants & Animals:	No data available.
12.3	Effects on Aquatic Life:	<u>Sulfuric Acid</u> : LC ₅₀ (Gambusia affinis (fish), 96h): 42 mg/L. Harmful to aquatic life with long lasting effects.

13. DISPOSAL CONSIDERATIONS

13.1	Waste Disposal:	Dispose of in accordance with federal, state, provincial and local regulations.
13.2	Special Considerations:	Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

14. TRANSPORTATION INFORMATION

The basic description (ID Number, proper shipping name, hazard class & division, packing group) is shown for each mode of transportation. Additional descriptive information may be required by 49 CFR, IATA/ICAO, IMDG, SCT, ADGT, ADR and the CTDGR.

14.1	49 CFR (GND):	UN2794, BATTERIES, WET, FILLED WITH ACID, 8, III	
14.2	IATA (AIR):	UN2794, BATTERIES, WET, FILLED WITH ACID, 8, III	
14.3	IMDG (OCN):	UN2794, BATTERIES, WET, FILLED WITH ACID, 8, III	
14.4	TDGR (Canadian GND):	UN2794, BATTERIES, WET, FILLED WITH ACID, 8, III	
14.5	ADR/RID (EU):	UN2794, BATTERIES, WET, FILLED WITH ACID, 8, III	
14.6	SCT (MEXICO):	UN2794, ACUMULADORES ELECTRICOS DE ELECTROLITO LIQUIDO ACIDO, 8, III	
14.7	ADGR (AUS):	UN2794, BATTERIES, WET, FILLED WITH ACID, 8, III	

15. REGULATORY INFORMATION

15.1	SARA Reporting Requirements:	This product contains <u>Lead</u> , <u>Sulfuric Acid</u> , <u>Antimony</u> , and <u>Arsenic</u> , substances subject to Section 313 reporting requirements.	
15.2	SARA Threshold Planning Quantity:	NA	
15.3	TSCA Inventory Status:	All components of this product are listed in the TSCA Inventory or are exempt.	
15.4	CERCLA Reportable Quantity (RQ):	<u>Sulfuric Acid</u> : 1,000 lbs (454 kg); <u>Antimony</u> : 5,000 lbs (2,270 kg); <u>Lead</u> : 10 lbs (4.54 kg)	
15.5	Other Federal Requirements:		
15.6	Other Canadian Regulations:	This product has been classified according to the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by the CPR. The components of this product are listed on the DSL/NDSL. None of the components of this product are listed on the Priorities Substances List. WHMIS E, D2B (Other Toxic Effects).	
15.7	State Regulatory Information:	<p><u>Lead</u> is found on the following state criteria lists: California Proposition 65 (CA65), Florida Toxic Substances List (FL), Massachusetts Hazardous Substances List (MA), Michigan Critical Substances List (MI), Minnesota Hazardous Substances List (MN), New Jersey Right-to-Know List (NJ), New York Hazardous Substances List (NY), Pennsylvania Right-to-Know List (PA), and Washington Permissible Exposures List (WA).</p> <p><u>Sulfuric Acid</u> is found on the following state criteria lists: FL, MA, MN, NJ, PA, and WA.</p> <p><u>Tin</u> is found on the following state criteria lists: FL, MA, MN, PA, WA</p> <p><u>Antimony</u> is found on the following state criteria lists: FL, MA, MN, NJ, PA, and WA.</p> <p><u>Arsenic</u> is found on the following state criteria lists: FL, MA, MN, NJ, PA, WA.</p> <p><u>Calcium</u> is found on the following state criteria lists: FL, MA, and PA.</p> <p>This product contains <u>Lead</u>, a substance known to the State of California of causing cancer, birth defects or other reproductive harm.</p> <p>No other ingredients in this product, present in a concentration of 1.0% or greater, are listed on any of the following state criteria lists: California Proposition 65 (CA), Florida Toxic Substances List (FL), Massachusetts Hazardous Substances List (MA), Michigan Critical Substances List (MI), Minnesota Hazardous Substances List (MN), New Jersey Right-to-Know List (NJ), New York Hazardous Substances List (NY), Pennsylvania Right-to-Know List (PA), Washington Permissible Exposures List (WA), Wisconsin Hazardous Substances List (WI).</p>	
15.8	Other Requirements:	<p>The primary component of this product is listed in Annex I of EU Directive 67/548/EEC.</p> <p><u>Sulfuric Acid</u>: Corrosive (C).</p> <p><u>Risk Phrases</u> (R): 35 - Causes severe burns.</p> <p><u>Safety Phrases</u> (S): (1/2)-26-30-45 - Keep locked up and out of the reach of children. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Never add water to this product. In case of accident or if you feel unwell seek medical advice immediately (show the label where possible).</p>	

16. OTHER INFORMATION

16.1	Other Information:	<p>DANGER! HARMFUL IF SWALLOWED. CAUSES SEVERE SKIN BURNS AND EYE DAMAGE.</p> <p>Do not breathe dust/fume/gas/mist/vapours/spray. Wash hands and exposed skin areas with soap and warm water thoroughly after handling. Wear protective gloves/eye protection. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. KEEP OUT OF REACH OF CHILDREN.</p>	
16.2	Terms & Definitions:	See last page of this Safety Data Sheet.	
16.3	Disclaimer:	<p>This Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR §1910.1200. Other government regulations must be reviewed for applicability to this product. To the best of ShipMate's & Worldpac's knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness is not guaranteed and no warranties of any type, either expressed or implied, are provided. The information contained herein relates only to the specific product(s). If this product(s) is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.</p>	
16.4	Prepared for:	<p>Worldpac, Inc. 37137 Hickory Street Newark, CA 94560 USA Tel: +1 (510) 608-5525 Fax: +1 (510) 742-9262 http://www.worldpac.com</p>	
16.5	Prepared by:	<p>ShipMate, Inc. P.O. Box 787 Sisters, OR 97759-0787 USA Tel: +1 (310) 370-3600 Fax: +1 (310) 370-5700 http://www.shipmate.com</p>	

DEFINITION OF TERMS

A large number of abbreviations and acronyms appear on a SDS. Some of these that are commonly used include the following:

GENERAL INFORMATION:

CAS No.	Chemical Abstract Service Number
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EXPOSURE LIMITS IN AIR:

ACGIH	American Conference on Governmental Industrial Hygienists
TLV	Threshold Limit Value
OSHA	U.S. Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
IDLH	Immediately Dangerous to Life and Health

FIRST AID MEASURES:

CPR	Cardiopulmonary resuscitation - method in which a person whose heart has stopped receives manual chest compressions and breathing to circulate blood and provide oxygen to the body.
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HAZARDOUS MATERIALS IDENTIFICATION SYSTEM: HMIS

HEALTH, FLAMMABILITY & REACTIVITY RATINGS:

0	Minimal Hazard
1	Slight Hazard
2	Moderate Hazard
3	Severe Hazard
4	Extreme Hazard

HEALTH
FLAMMABILITY
PHYSICAL HAZARDS
PERSONAL PROTECTION

PERSONAL PROTECTION RATINGS:

A	
B	
C	
D	
E	
F	

G	
H	
I	
J	
K	
X	Consult your supervisor or SOPs for special handling directions.

Safety Glasses	Splash Goggles	Face Shield & Protective Eyewear	Gloves
Boots	Synthetic Apron	Protective Clothing & Full Suit	Dust Respirator
Full Face Respirator	Dust & Vapor Half-Mask Respirator	Full Face Respirator	Airline Hood/Mask or SCBA

OTHER STANDARD ABBREVIATIONS:

NA	Not Available
NR	No Results
NE	Not Established
ND	Not Determined
ML	Maximum Limit
SCBA	Self-Contained Breathing Apparatus

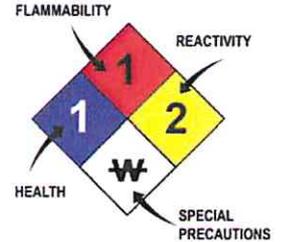
NATIONAL FIRE PROTECTION ASSOCIATION: NFPA

FLAMMABILITY LIMITS IN AIR:

Autoignition Temperature	Minimum temperature required to initiate combustion in air with no other source of ignition
LEL	Lower Explosive Limit - lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source
UEL	Upper Explosive Limit - highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source

HAZARD RATINGS:

0	Minimal Hazard
1	Slight Hazard
2	Moderate Hazard
3	Severe Hazard
4	Extreme Hazard
ACD	Acidic
ALK	Alkaline
COR	Corrosive
W	Use No Water
OX	Oxidizer
TREFOIL	Radioactive



TOXICOLOGICAL INFORMATION:

LD ₅₀	Lethal Dose (solids & liquids) which kills 50% of the exposed animals
LC ₅₀	Lethal concentration (gases) which kills 50% of the exposed animals
ppm	Concentration expressed in parts of material per million parts
TD ₀₁	Lowest dose to cause a symptom
TCLo	Lowest concentration to cause a symptom
TD ₀₁ , LD ₀₁ , & LD ₀₁ , or TC, TC ₀₁ , LC ₀₁ , & LC ₀₁	Lowest dose (or concentration) to cause lethal or toxic effects
IARC	International Agency for Research on Cancer
NTP	National Toxicology Program
RTECS	Registry of Toxic Effects of Chemical Substances
BCF	Bioconcentration Factor
TL _m	Median threshold limit
log K _{OW} or log K _{OC}	Coefficient of Oil/Water Distribution

REGULATORY INFORMATION:

WHMIS	Canadian Workplace Hazardous Material Information System
DOT	U.S. Department of Transportation
TC	Transport Canada
EPA	U.S. Environmental Protection Agency
DSL	Canadian Domestic Substance List
NDSL	Canadian Non-Domestic Substance List
PSL	Canadian Priority Substances List
TSCA	U.S. Toxic Substance Control Act
EU	European Union (European Union Directive 67/548/EEC)
WGK	Wassergefährdungsklassen (German Water Hazard Class)

WORKPLACE HAZARDOUS MATERIALS IDENTIFICATION (WHMIS) SYSTEM:

Class A	Class B	Class C	Class D1	Class D2	Class D3	Class E	Class F
Compressed	Flammable	Oxidizing	Toxic	Irritation	Infectious	Corrosive	Reactive

EC (67/548/EEC) INFORMATION:

C	E	F	N	O	T	Xi	Xn
Corrosive	Explosive	Flammable	Harmful	Oxidizing	Toxic	Irritant	Harmful

CLP/GHS (1272/2008/EC) PICTOGRAMS:

GHS01	GHS02	GHS03	GHS04	GHS05	GHS06	GHS07	GHS08	GHS09
Explosive	Flammable	Oxidizer	Pressurized	Corrosive	Toxic	Harmful Irritating	Health Hazard	Environment

Safety Data Sheet

1. IDENTIFICATION

Product Name: Battery Acid Synonyms: Battery Electrolyte (Acid) , Sulfuric Acid (Dilute)	Manufacturer/Supplier: Johnson Controls Battery Group Address: P.O. Box 590 Milwaukee, Wi 53201 US
General Information Number: (800)-333-2222 ext. 3138 Contact Person: Industrial Hygiene & Safety Department	Emergency number: CHEMTREC: 800-424-9300

2. HAZARD(S) IDENTIFICATION

Health		Physical	
Skin corrosion/irritation	Category 1	Corrosive to metals	Category 1
Serious eye damage/eye irritation	Category 1		
Carcinogenicity	Category 1A		
Specific target organ toxicity, single exposure	Category 3 Respiratory Tract irritation		

Label Elements:


<p>DANGER! May be corrosive to metals. Causes severe skin burns and eye damage. May cause cancer May cause respiratory irritation.</p>

Precautionary Statement

Prevention Response

Do not breathe vapor or mist. Wash thoroughly after handling.
 If swallowed: Rinse mouth. Do NOT induce vomiting. If inhaled: Remove person to fresh air and keep comfortable for breathing. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Wash contaminated clothing before reuse. If exposed or concerned: Get medical advice/attention. Absorb spillage to prevent material damage.

Storage

Store in a well-ventilated place. Keep container tightly closed. Store in corrosive resistant container with a resistant inner line. Store locked up.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENTS (Chemical/Common Names):	CAS No.:	% by Wt:
Sulfuric Acid (Dilute)	7664-93-9	~35

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. FIRST AID MEASURES

Inhalation	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison control center or doctor for treatment advice.
Skin contact	Immediately take off all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by treated a physician. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes for at least 15 minutes. Remove contact lenses if present and easy to do. Continue rinsing. Call a physician or poison control center immediately
Ingestion	Call a physician or poison control center immediately. Rinse mouth. DO not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into lungs.
Most important symptoms/effects, acute and delayed	Burning pain and severe corrosive skin damage. May cause severe irritation or burns to the eyes, skin, gastrointestinal tract, and respiratory system. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Chemical burns: flush with water immediately. While flushing, remove clothes which do not adhere to affected areas. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. FIRE FIGHTING MEASURES

Suitable extinguishing media	Powder. Foam. Carbon dioxide (CO2)
Unsuitable extinguishing media	Do not use water jet as an extinguisher as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Firefighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials
General fire hazards	No unusual fire or explosion hazards noted. Not flammable, but reacts with most metals to form flammable hydrogen gas.

6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment,	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or
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and emergency preparedness

vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

Large spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand, or earth and place in containers. Prevent entry into waterways, sewer, basements or confined areas.

Small spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Environmental precautions

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS. Avoid discharge into drains, water courses, or onto the ground.

7. HANDLING AND STORAGE**Handling**

Do not breathe vapor. Do not get in eyes, on skin, or on clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial practices.

Storage

Store locked up. Store in original tightly closed container. Store away from incompatible materials. Keep away from heat, sparks, and open flame. (See section 10 of the SDS)

Other**8. EXPOSURE CONTROLS / PERSONAL PROTECTION****Occupational exposure limits****US OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)**

Ingredient	CAS Number	Type	Value
Sulfuric Acid (Dilute)	7664-93-9	PEL	1 mg/m ³

US ACGIH Threshold Limit Values

Ingredient	CAS Number	Type	Value	Form
Sulfuric Acid (Dilute)	7664-93-9	TWA	0.2 mg/m ³	Thoracic Fractions

US NIOSH: Pocket Guide to Chemical Hazards

Ingredient	CAS Number	Type	Value
Sulfuric Acid (Dilute)	7664-93-9	TWA	1 mg/m ³

Biological limit values

No biological exposure limits noted for the ingredient(s).

Engineering Controls (Ventilation):

Good ventilation required (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewashes station.

Respiratory Protection:

NONE REQUIRED UNDER NORMAL HANDLING CONDITIONS

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

Skin Protection:

Wear appropriate chemical resistant gloves and clothing.

Eye Protection:

Wear safety glasses with side shields (or goggles). Face shield is recommended.

General Hygiene Considerations:

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Liquid
Color	Clear/cloudy liquid
Odor	Slightly acid
Odor Threshold	Not available
pH	Not available
Melting Point	-79.6 °F / -62 °C
Boiling Point	230 °F / 110 °C
Flash Point	Not available
Evaporation Rate (Butyl Acetate = 1)	Not determined
Flammability	Not available
Upper/lower flammability or explosive limits	Not available
Vapor Pressure (mm Hg @ 20 ° C)	11.7
Vapor Density	3.4 (Air = 1)
Relative Density	1.285
Solubility	100%
% Volatile by Weight	0%
Partition coefficient (n-octanol/water)	Not available
Auto-ignition temperature	Not available
Decomposition temperature	Not available
Viscosity	Not available

10. STABILITY AND REACTIVITY

Reactivity	This product is stable and non-reactive under normal conditions of use, storage, and transport.
Stability	Material is stable under normal conditions.
Conditions to Avoid	Keep away from heat, sparks, open flames, and/or hot surfaces. No smoking. Contact with incompatible materials.
Incompatibility (materials to avoid)	Strong reducing agents. Reacts with organic materials. Combustibles. Metals. Carbides. Nitrates.
Hazardous Decomposition Products	Sulfur dioxide (SO ₂) Sulfur trioxide. Hydrogen.
Hazardous Polymerization	Will not occur.

11. TOXICOLOGICAL INFORMATION**INFORMATION ON LIKELY ROUTES OF EXPOSURE**

Inhalation	Corrosive. Inhalation produces damaging effects on the mucous membranes and upper respiratory tract. Inhalation of vapors may cause lung edema. Prolonged inhalation may be harmful.
Skin Contact	Causes severe skins burns. Prolonged skin contact may cause dermatitis.

Eye Contact	Causes serious eye damage
Ingestion	Causes digestive tract burns.
Symptoms related to the physical, chemical, and toxicological characteristics	Burning pain and severe corrosive skin damage. May cause severe irritation or burns to the eyes, skin, gastrointestinal tract, and respiratory system. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

INFORMATION ON TOXICOLOGICAL EFFECTS

Acute Effects	Occupational exposure to the substance or mixture may cause adverse effects.
Chronic Effects	Prolonged inhalation may be harmful. Sulfuric acid fumes: Prolonged, repeated exposure to acid fumes/mists may cause chronic bronchitis, irritation of skin, mucous membranes and gastrointestinal tract and erosion of the teeth.

Toxicological Data

Constituents	Species	Test Results
Sulfuric Acid absorbed in glass-fiber material (CAS 7664-93-9)		
Acute		
<i>Oral</i>		
LD50	Rat	2140 mg/kg
Skin corrosion/irritation	Causes severe skin burns	
Serious eye damage/eye irritation	Causes severe skin burns	
Respiratory Sensitization	No data available	
Skin Sensitization	Not a skin sensitizer	
Germ Cell Mutagenicity	No data available to indicate product or any components present a greater than 0.1% are mutagenic or genotoxic	

CARCINOGENICITY

Mist: May cause cancer by inhalation

ACGIH Group A2 (Suspected human carcinogen)

IARC Monographs. Overall Evaluation of Carcinogenicity

Sulfuric Acid (CAS 7664-93-9) 1 Carcinogenic to humans

NTP Report on Carcinogens

Sulfuric Acid (CAS 7664-93-9) Known to be a Human Carcinogen.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects

Specific target organ toxicity -
single exposure Not classified

Specific target organ toxicity -
repeated exposure Not classified

Aspiration hazard Not classified.

12. ECOLOGICAL INFORMATION

Ecotoxicity This product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Persistence and Degradability No data available

Bioaccumulative potential No data available

Mobility in soil No data available

Other adverse effects No other adverse environmental effects are expected from this component.

13. DISPOSAL CONSIDERATIONS

Disposal Instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazardous waste code:	D002: Corrosive waste The waste code should be assigned in discussion between the user, the producer, and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or lines may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal Instructions)
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. TRANSPORT INFORMATION

United States DOT:

UN Number	UN2796
UN Proper shipping Name	Battery fluid, acid (Sulfuric acid (Dilute) RQ=2857 lbs)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Label(s)	8
Packing group	II
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling.
Special provisions	A3, A7, B2, B15, IB2, N6, N34, T8, TP2, TP12
Packaging exceptions	154
Packaging non bulk	202
Packaging bulk	242

IATA

UN Number	UN2796
UN Proper shipping Name	Battery fluid, acid (Sulfuric acid (Dilute))
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	No
ERG Code	8L
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling.

IMDG

UN Number	UN2796
UN Proper shipping Name	Battery fluid, acid (Sulfuric acid (Dilute))
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	
Marine pollutant	No
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling.

15. REGULATORY INFORMATION

US Federal Regulations

All components are on the U.S. EPA TSCA Inventory List

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200

TSCA

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Sulfuric Acid (Dilute)
(CAS 7664-93-9) LISTED

Superfund Amendment and Reauthorization Act of 1986 (SARA)

Hazard Categories

Immediate Hazard – Yes

Delayed Hazard – No

Fire Hazard – No

Pressure Hazard – No

Reactivity Hazard – No

SARA 302 Extremely hazardous substance

Chemical Name	CAS Number	Reportable Quantity	Threshold Planning Quantity	Threshold Planning Quantity – Lower value	Threshold Planning Quantity – upper value
Sulfuric Acid (dilute)	7664-93-9	1000	1000 lbs		
Section 311/312	Yes				

Hazard Chemical:

Section 313 (TRI Reporting)

Chemical Name	CAS Number	% by weight
Sulfuric Acid (Dilute)	7664-93-9	~35

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Sulfuric Acid (Dilute) (CAS 7664-93-9)

Safe Drinking Water Act (SDWA)

Not regulated

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Sulfuric Acid (Dilute) (CAS 6552
7664-93-9)

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Sulfuric Acid (Dilute) (CAS 20 % WV
7664-93-9)

DEA Exempt Chemical Mixtures Code Number

Sulfuric Acid (Dilute) (CAS 6552
7664-93-9)

US State Regulations

US. Massachusetts RTK – Substance List

Sulfuric Acid (Dilute) (CAS 7664-93-9)

US New Jersey Worker and Community Right-to-know Act

Sulfuric Acid (Dilute) (CAS 7664-93-9)

US Pennsylvania Worker and Community Right-to-know Law

Sulfuric Acid (Dilute) (CAS 7664-93-9)

US Rhode Island RTK

Sulfuric Acid (Dilute) (CAS 7664-93-9)

US. California Proposition 65

WARNING: This product contains chemicals known to the State of California to cause cancer.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Sulfuric Acid (Dilute) (CAS 7664-93-9)

International Inventories

Country(s) or Region	Inventory Name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

* A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. OTHER INFORMATION

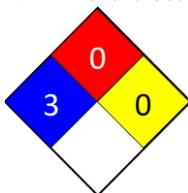
Issue Date: 04/01/2015

Revision Date: 12/07/2015

Version #: 02

Further information: NFPA Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3=Serious 4 = Severe

NFPA ratings



Disclaimer

Johnson Controls Battery Group, Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.