

<b>MATERIAL SAFETY DATA SHEET</b>	<b>No: MSDS 01 SULPHURIC ACID 10 – 51%</b> Date Issued : 02-02-2010 Pages : 1 of 8
<b>COMPANY DETAILS</b>	
Name : First National Battery a Division of Metindustrial (Pty) Ltd	
Address : P.O. Box 182 East London, 5200	Emergency telephone no/ +27 43 706 8200 POISON CENTRE: +21 824 468 946 / +27 21 931 6129 JHB METROPOLITAN EMERGENCY SERVICE: +27 11 375 5911 Website : <a href="http://www.battery.co.za">http://www.battery.co.za</a>
Tel. : +27 43 706 8200	
Fax : +27 86 660 4728	
<b>CONTACT:</b> Justin Ward	

## MATERIAL SAFETY DATA SHEET

### SULPHURIC ACID, 10 – 51 %

#### 1. PRODUCTION IDENTIFICATION

<b>TRADE NAME</b>	:	Battery Acid
<b>CHEMICAL FAMILY</b>	:	Mineral Acid, oxidising
<b>CHEMICAL NAME</b>	:	Sulphuric Acid
<b>SYNONYMS</b>	:	Battery electrolyte Oil of vitriol Babcock oil
<b>CHEMICAL ABSTRACT NO.</b>	:	7664-93-9
<b>NIOSH NO.</b>	:	WS 5600000
<b>HAZCHEM CODE</b>	:	2P
<b>UN NO.</b>	:	2796

#### 2. COMPOSITION

<b>HAZARDOUS COMPONENT</b>	:	H <sub>2</sub> SO <sub>4</sub> (10 – 51%)
<b>R. PHRASES</b>	:	R: 35

#### 3. HAZARD IDENTIFICATION

<b>MAIN HAZARD</b>	:	Poison, corrosive
<b>FLAMMABILITY</b>	:	Non flammable
<b>CHEMICAL HAZARD</b>	:	Corrosive
<b>BIOLOGICAL HAZARD</b>	:	May be toxic to aquatic life
<b>REPRODUCTION HAZARD</b>	:	Unknown

**HEALTH EFFECTS**

<b>EYES</b>	:	Corrosive. Contact can cause blurred vision, redness, pain and severe tissue burns. Can cause blindness.
<b>SKIN</b>	:	Corrosive. Symptoms of redness, pain and severe burn can occur. Circulatory collapse with clammy skin, weak and rapid pulse, shallow respiration and scanty urine may follow contact. Circulatory shock is often the immediate cause of death.
<b>INGESTION</b>	:	Corrosive. Swallowing can cause severe burns of the mouth, throat and stomach, leading to death. Can cause sore throat, vomiting and diarrhoea. Circulatory collapse with clammy skin, weak and rapid pulse, shallow respiration and scanty urine. Circulatory shock is often the immediate cause of death.
<b>INHALATION</b>	:	Inhalation produces damaging effects on the mucous membranes and upper respiratory tract. Symptoms may include irritation of the nose and throat and laboured breathing. May cause lung oedema, a medical emergency.
<b>CARCINOGENICITY</b>	:	The International Agency of Research on Cancer (IARC) has classified "strong inorganic acid" as a known human carcinogen (IARC category 1). This classification does not apply to liquid forms of sulphuric acid solution contained within a battery. Inorganic acid mist is not generated under normal use of this product. Misuse of the product, such as overcharging, may result in the generation of sulphuric acid mist.
<b>MUTAGENICITY</b>	:	No information found.
<b>NEUROTOXICISTY</b>	:	No information found

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**4. FIRST AID MEASURES**

<b>EYES</b>	:	Hold eyelids open and immediately rinse With cool running water for at least 15 minutes. Seek medical attention after rinsing.
<b>SKIN</b>	:	Wash thoroughly with soap and water. Rinse for 15 minutes. Discard contaminated clothing. Seek medical attention.
<b>INGESTION</b>	:	Do not induce vomiting. Give plenty of water to drink. Never give anything by mouth to an unconscious person. Call a doctor immediately.

**INHALATION** : Remove to fresh air. If not breathing give artificial respiration. If breathing is difficult give oxygen. Call a doctor immediately.

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## 5. **FIRE FIGHTING MEASURES**

**EXTINGUISHING MEDIA** : Use dry chemical foam or CO<sub>2</sub>. Water spray can be used to cool containers exposed to fire. Avoid the use of water where there is a danger of spreading the acid.

**SPECIAL HAZARDS** (a) Contact with most metals will cause formation of explosive / flammable hydrogen gas.  
(b) Charging of batteries may generate hydrogen a flammable and explosive gas. Keep sparks and other sources of ignition away.

**PROTECTIVE CLOTHING** : Use pressure – demand, self contained breathing apparatus where acid vapour or mist may be present.

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## 6. **ACCIDENTAL RELEASE MEASURES**

**PERSONAL PRECAUTIONS** : Wear acid resistant boots, face-shield, chemical splash goggles and acid resistant gloves.

**ENVIRONMENTAL PRECAUTIONS** : Do not release un-neutralised acid. Do not flush lead contaminated acid to sewer even if it is neutralised.

**SMALL SPILLS** : Neutralise with soda ash or lime. Cover spill and mix well until pH is neutral. Do not use organic material such as saw dust. Collect into sealable container and dispose of as hazardous waste.

**LARGE SPILLS** : Contain and collect as much as possible in suitable containers. Dam and neutralise with soda ash or lime. Absorb with sand or vermiculite and collect in sealable containers. Do not use organic material such as sawdust. Dispose of as hazardous waste.

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## 7. **HANDLING AND STORAGE**

**SUITABLE MATERIAL HANDLING/ STORAGE PRECAUTIONS** : Plastic jerry cans  
(1) Store containers in a cool dry place  
(2) Do not stack containers more than 4 high.  
(3) An eyewash fountain and safety shower should be located in or near the storage areas used for lead acid batteries or acid containers. Such areas should be equipped with acid proof floors and a sump to collect, neutralise and bag spills for correct disposal.

- (4) When diluting acid always add acid to water, not water to acid as this will cause a violent reaction. Small quantities of water may be added to battery acid safely.
- (5) Handle lead acid batteries and containers of acid carefully to avoid spilling the acid.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>OCCUPATIONAL EXPOSURE LIMIT</b>	:	1 mg/m <sup>3</sup> TWA 3 mg/m <sup>3</sup> STEL (15 min max / 8 hr shift)
<b>ENGINEERING CONTROL</b>	:	A system of local and general exhaust is recommended to maintain concentration of sulphuric acid mist below 1mg/ m <sup>3</sup> when forming or charging batteries.
<b>RESPIRTORY PROTECTION</b>	:	None required under normal handling and conditions. If acid spillage occurs in a confined space or the TWA limit is exceeded then an approved respiration for protection against acid mist can be used.
<b>EYE AND FACE PROTECTION</b>	:	Chemical splash goggles in combination with a chemical face shield offer best protection.
<b>HAND, ARM AND BODY PROTECTION</b>	:	Wear long sleeved shirt and trousers made of synthetic material, impermeable, acid resistant apron and gauntlet type gloves.
<b>OTHER PROTECTION</b>	:	Use safety shoes or boots with rubber or neoprene and steel toe caps over socks. Place pants legs over shoes / boots to keep acid out of boots. All footwear must meet the requirements of ANSI Z41.1 Revision 1972.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>APPEARANCE</b>	:	Clear oily liquid.
<b>ODOUR</b>	:	Odourless
<b>pH</b>	:	1N solution (ca. 5 % w/w) = 0.3 0.1N solution (ca 0.5% w/w) = 1.2 0.01N solution (ca. 0.05 % w/w) = 2.1
<b>BOILING POINT</b>	:	110°C (Decomposes 340°C)
<b>MELTING POINT</b>	:	- 64°C
<b>FLASH POINT</b>	:	N/A
<b>FLAMMABILITY</b>	:	Non flammable

<b>AUTO FLAMMABILITY</b>	:	N/A
<b>EXPLOSIVE PROPERTIES</b>	:	Will generate explosive hydrogen gas on contact with most metals. Hydrogen gas liberated during charging of batteries.
<b>OXIDISING PROPERTIES</b>	:	N/A
<b>VAPOUR PRESSURE</b>	:	11.7 mm/Hg at 20°C
<b>DENSITY</b>	:	3.4 (Air = 1)
<b>SOLUBILITY – WATER</b>	:	100 %
<b>SOLUBILITY – SOLVENT</b>	:	N/A
<b>SOLUBILITY COEFFICIENT</b>	:	N/A
<b>SPECIFIC GRAVITY</b>	:	1.4 (50%) 1.07 (10%)

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## 10. **STABILITY AND REACTIVITY**

<b>CONDITIONS TO AVOID</b>	:	Heat, moisture and incompatibles. Prevent smoking, fires and any other source of ignition around lead acid batteries. Battery electrolyte will react with water to produce heat. Can react with oxidising or reducing agent. Do not allow acid to mix with any material unless the material is a known compatible.
<b>INCOMPATIBLE MATERIALS</b>	:	Water, potassium chlorate, potassium perchlorate, potassium permanganate, sodium, lithium, bases, organic material, halogens, metal acetylides, oxides and hydrides, metals, strong oxidising or reducing agents.
<b>HAZARDOUS DECOMPOSITION PRODUCTS</b>	:	Toxic fumes of oxides or sulphur when heated to decomposition. Will react with water or steam to produce toxic and corrosive fumes. Reacts with carbonates to generate carbon dioxide gas and with cyanides and sulphides to produce poisonous hydrogen cyanide and hydrogen sulphide.

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**11. TOXICOLOGICAL INFORMATION**

<b>ACUTE TOXICITY</b>	:	Exposure to high concentration of battery electrolyte mist causes severe irritation of the eyes, respiratory tract and skin. It may also cause teeth erosion, mouth soreness or breathing difficulties. Contact with battery electrolyte may irritate the skin and mucous membranes and may cause irreparable corneal damage and blindness as well as facial scarring which includes the eyelids.
<b>CHRONIC TOXICITY</b>	:	Repeated or prolonged exposure to battery electrolyte may cause skin irritation. Repeated or prolonged exposure to mist may erode the teeth, cause dermatitis, chronic irritation of eyes, mouth and stomach and chronic inflammation of the nose, throat and bronchial tubes.
<b>CARCINOGENICITY</b>	:	See section 3.
<b>MUTAGENICITY</b>	:	Not known.
<b>REPRODUCTIVE HAZARDS</b>	:	Not known

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**12. ECOLOGICAL INFORMATION**

<b>AQUATIC TOXICITY</b>	:	Toxic to aquatic life Fish, daphnia, algae
<b>BIODEGRADABILITY</b>	:	When released into the soil this material may leach into ground water. When released into the air this material may be removed from the atmosphere to a moderate extent by wet deposition and dry deposition.
<b>BIOACCUMULATION</b>	:	Not known
<b>MOBILITY</b>	:	Not known

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**13 DISPOSAL CONSIDERATION**

<b>DISPOSAL METHODS</b>	:	Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and disposed of at any approved waste facility (Department of Environmental Affairs and Tourism) Processing, use or contamination of this product (e.g. Lead) may change the waste management options.
<b>DISPOSAL OF PACKAGING</b>	:	Dispose of container and unused contents in accordance with legal requirements. Containers of this material may be hazardous when empty since they retain product residues. Observe all warnings and precautions listed for the product.

**14. TRANSPORT INFORMATION**

**UN NO.** : 2796  
**SUBSTANCE IDENTITY NO.** : Sulphuric acid, not more than 51%  
7664 – 93 - 9

**LAND**

**PROPER SHIPPING NAME** : Battery acid  
(Sulphuric acid less than 51%)  
**HAZARD CLASS** : 8  
**PACKAGING GROUP** : II  
**EXEMPT QUANTITY** : < 200 kg

**SEA**

**PROPER SHIPPING NAME** : Battery acid  
**HAZARD CLASS** : 8  
**PACKAGING GROUP** : II  
**UN NO.** : 2796  
**EXEMPT QUANTITY** : < 200 kg  
(Sulphuric acid less than 51 %)

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**15. REGULATORY INFORMATION**

**RISK PHRASES** : R: 35  
**SAFETY PHRASES** : S :(1/2)-26-30-45

**ADDITIONAL LEGISLATION** : 1. Hazardous Chemical Substance  
Regulations of Occupational  
Health and Safety Act No. 85 of  
1983.  
2. National Road Traffic Act Chapter  
VIII for Transportation of Dangerous  
Goods

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**16. OTHER INFORMATION**

**NFPA RATINGS** : Health 3  
Flammability 0  
Reactivity 2  
Other – water reactive

**LABEL HAZARD  
WARNING** : Poison – Danger  
: Corrosive liquid and mist cause severe  
burns to all body tissue. May be fatal if swallowed  
or contacted with skin. Harmful if inhaled. Affects  
teeth. Water reactive. Cancer hazard. Strong  
inorganic mists containing sulphuric acid can  
cause cancer. See section 3.

**LABEL PRECAUTION** : Do not get in eyes, on skin or on clothing. Do not  
breathe mist. Keep container closed. Use only  
with adequate ventilation. Wash thoroughly after  
handling. Do not allow uncontrolled contact with  
water. Keep locked up and out of reach of  
children.

**LABEL FIRST AID**

:

In all cases call a physician immediately.  
In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.  
Wash clothes before re-use.  
Excess acid on skin can be neutralised with a 2% bicarbonate of soda solution.  
If swallowed DO NOT INDUCE VOMITTING.  
Give large quantities of water.  
Never give anything by mouth to an unconscious person. If inhaled remove to fresh air.  
If not breathing give artificial respiration.  
If breathing is difficult – give oxygen.

First National Battery provides the information in this MSDS in good faith. However, First National Battery makes no representations as to its comprehensiveness or accuracy. This MSDS is intended, as a guide, for the appropriate precautionary handling of the material by a properly trained person using it.

Individuals receiving this information must exercise their independent judgement in determining its appropriateness for a particular process. First National Battery will not accept responsibility for damages resulting from use of or reliance upon this information.

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