SAFETY DATA SHEET
Sulphuric Acid 96%

1. Identification of the substance/preparation and of the company/undertaking

Date issued 18th February 2013
Revision 3
Product name Sulphuric acid 96 %
Chemical name Battery acid, bov, dihydrogensulphate, dipping acid, electrolyte acid, mattling acid
REACH registration no. 01-2119458838-20-0096
CAS no. 7664-93-9
EC no. 231-639-5
Formula H2SO4

Supplier
Company name Goulding Chemicals Ltd.
Postal address Centre Park Road, Marina, Cork, Ireland
Contact Email obriens@gouldings.ie
Tel +353(021)4911611
Fax +353(021)4911660
Emergency telephone (outside of office hours) +353(021)4911619

2. Hazards identification

Classification C; R35
Classification CLP Skin Corr 1A; H314
Description of hazard Causes severe burns.
Other hazards Reacts violently with water. May influence pH in water. In use burnable/explosive mixture of vapour/aerosols may be produced. Danger for burns

3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>Component name</th>
<th>Identification</th>
<th>Classification</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>CAS no.: 7732-18-5</td>
<td></td>
<td>4 %</td>
</tr>
<tr>
<td>Sulphuric acid ..%</td>
<td>CAS no.: 7664-93-9</td>
<td>C; R35</td>
<td>95,9 - 100 %</td>
</tr>
<tr>
<td></td>
<td>EC no.: 231-639-5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Column headings CAS no. = Chemical Abstracts Service;
EU (Einecs or Elincs number)=European inventory of Existing Commercial Chemical Substances;
Ingredient name = Name as specified in the substance list (substances that are not included in the substance list must be translated, if possible).
Contents given in; %, %wt/wt, %vol/wt, %vol/vol, mg/m3, ppb, ppm, weight%, vol%
HH/HF/HE T+ = Very toxic, T = Toxic, C = Corrosive, Xn = Harmful, Xi = Irritating,
E= Explosive, O = Oxidizing, F+ = Extremly flammable, F = Very flammable,
N = Environmental hazard
4. First-aid measures

General

CAUTION! First aid personnel must be aware of own risk during rescue! Remove victim immediately from source of exposure. Provide rest, warmth and fresh air. Burns must be treated by doctors. Place unconscious person on the side in the recovery position and ensure breathing can take place. If heart stops, heart-compression must be carried out. In case of accidents: Call an ambulance immediately! Show the MSDS.

Inhalation

Move the exposed person to fresh air at once. If respiratory problems, artificial respiration/oxygen. Get medical attention.

Skin contact

Remove contaminated clothes and rinse skin thoroughly with water. Continue to rinse for at least 15 minutes and seek medical attention. Chemical burns must be treated by a physician. Use "water gel". Clothes must be washed before re-use.

Eye contact

Immediately flush with plenty of water for up to 15 minutes. Remove any contact lenses and open eyes wide apart. Immediately transport to hospital or eye specialist.

Ingestion

Rinse mouth thoroughly with water and give large amounts of milk or water to people not unconscious. Transport to hospital. Do not give victim anything to drink if he is unconscious. DO NOT INDUCE VOMITING!

5. Fire-fighting measures

Suitable extinguishing media

Water. Foam, carbon dioxide or dry powder. Cool containers exposed to heat with water spray and remove container, if no risk is involved.

Improper extinguishing Media

Water-jet.

Fire and explosion Hazards

It may develop explosive gases in case of fire. Not flammable

Personal protective equipment

Fire brigade must use fresh-air helmet.

Other Information

CO, CO2. In case of fire: CO2, CO are developed SOx

6. Accidental release measures

Personal precautions

Provide adequate ventilation. Wear protective clothing as described in Section 8 of this safety data sheet. Avoid inhalation of vapours and aerosols and contact with skin and eyes. In case of splashes: Wear apron or special protective clothing.

Environmental precautions

Do not contaminate water sources or sewer. Do not discharge into drains, water courses or onto the ground. Contact local authorities in case of spillage to drain/aquatic environment.

Methods for cleaning

Absorb with inert, damp, non-combustible material, then flush area with water. Containers with collected spillage must be properly labelled with correct contents and hazard symbol. Dangerous waste.
7. Handling and storage

Handling
Mechanical ventilation may be required. Do not eat, drink or smoke when using the product. Avoid inhalation of vapours and contact with skin and eyes. Eye wash facilities and emergency shower must be available when handling this product. Wear full protective clothing for prolonged exposure and/or high concentrations. Never pour water into acid/base. Dilute by slowly pouring the product into water while stirring. Avoid splashes.

Storage
Avoid storage with strong oxidizers, bases, metals, halogetonated substances. Closed container. Ventilated area. Original container. Store dry and at temperature below 25°C. Avoid sunlight.

8. Exposure controls/personal protection

Exposure limit values

<table>
<thead>
<tr>
<th>Component name</th>
<th>Identification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>CAS no.: 7732-18-5</td>
<td></td>
</tr>
<tr>
<td>Sulphuric acid</td>
<td>CAS no.: 7664-93-9</td>
<td>8 h.: 0,1 aerosol mg/m³</td>
</tr>
<tr>
<td></td>
<td>EC no.: 231-639-5</td>
<td>K</td>
</tr>
</tbody>
</table>

Exposure controls

Occupational exposure controls
TLV.: Sulphuric acid aerosol: 0,1 mg/m³ Provide eyewash, quick drench. Water and shower must be available. Provide adequate ventilation. Observe Occupational Exposure Limits and minimise the risk of inhalation of vapours.

Respiratory protection
Wear air-supplied mask in confined areas. In case of inadequate ventilation or risk of inhalation damp/mist, suitable respiratory equipment with combination filter (type E2/P2) can be used.

Hand protection
Use gauntlet type rubber gloves. Rubber gloves are recommended. Viton rubber (fluor rubber). Break-through time > 8 hours.

Eye protection
Use approved safety goggles or face shield.

Skin protection (other than of the hands)
Wear appropriate clothing to prevent any possibility of skin contact. Wear rubber footwear. AVOID ALL SKIN AND RESPIRATORY CONTACT!

Other Information
When using do not eat, drink or smoke. Wash at the end of each work shift and before eating, smoking and using the toilet. Isolate contaminated clothing and wash before reuse. Shower after work. Eating, smoking and water fountains prohibited in immediate work area.
9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Oily</td>
</tr>
<tr>
<td>Odour</td>
<td>Slightly pungent odour</td>
</tr>
<tr>
<td>Colour</td>
<td>Colourless Brownish</td>
</tr>
<tr>
<td>Solubility description</td>
<td>Ethanol. Methanol.</td>
</tr>
<tr>
<td>Solubility in water</td>
<td>Soluble.</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>Value: 1.84 g/ml</td>
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<tr>
<td></td>
<td>Comments: 98.3% acid 20°C</td>
</tr>
<tr>
<td>Melting point/melting range</td>
<td>Value: 3°C</td>
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<tr>
<td></td>
<td>Comments: 98.3%</td>
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<tr>
<td>Boiling point</td>
<td>Value: 332.5°C</td>
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<tr>
<td></td>
<td>Comments: 98.3% 760 mmHg</td>
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<tr>
<td>Vapour density</td>
<td>Value: 2.8</td>
</tr>
<tr>
<td></td>
<td>Comments: 98.3%</td>
</tr>
</tbody>
</table>

Other physical and chemical properties

Comments: Molecule weight: 58.07

10. Stability and reactivity

Conditions to avoid: Hygroscopic.

Hazardous decomposition products: Explosive gases/vapours/fumes of: Hydrogen. SO2
Stability: Stable under the prescribed storage conditions.

11. Toxicological information

Toxicological Information:

LD50 oral Value: 2440 mg/kg
Test animal species: rat
Comments: LD50

Components' toxicological data

Other information regarding health hazards

General: Causes severe burns.
Inhalation: Aerosols may be corrosive. Vapours are corrosive. After 24-36 hours, injured persons may develop serious shortness of breath and lung oedema. May give damage over time to teeth. Serious damage to the lining of nose, throat and lungs.
Skin contact: Strongly corrosive. May cause deep tissue damage. May give wounds which are difficult to heal.
Eye contact: Strongly corrosive. Causes severe pains and serious eye damage. Immediate first aid is imperative. Risk of serious damage to eyes.
Ingestion: May have a corrosive effect on the digestive canal. Strongly corrosive. Even small amounts may cause very severe internal damage and may be fatal. Diarrhoea.
Chronic effects: May give permanent damage to eyes if first aid is not carried out at once.
12. Ecological information

Toxicological Information:
Acute aquatic, fish
Value: < 100 mg/l
Method of testing: LC50
Duration: 96 hours

Acute aquatic, algae
Value: 24 mg/l
Method of testing: EC50
Algae, species: Selenastrum capricornutum
Duration: 72 hours

Aquatic, comments
Crustaceans: LC 50/48 : 10-100 mg/l
Prawn : LC50/48 hours: 80-90 mg/l

Components' toxicological data
Other ecological information
Ecotoxicity
Large amounts of the product may affect the acidity (pH-factor) in water with possible risk of harmful effects to aquatic organisms.

Bioaccumulative potential
Will not bio-accumulate. Log Pow: <3

Other adverse effects/Remarks
Pollute earth and water.

13. Disposal considerations

EWC waste code
EWC: 060101 sulphuric acid and sulphurous acid

Product classified as hazardous waste
Yes

Packaging classified as hazardous waste
Yes

Specify the appropriate methods of Disposal
Recover and reclaim or recycle, if practical.
Absorb in vermiculite or dry sand, dispose in licensed special waste.

14. Transport information

Proper Shipping Name
Sulphuric acid 96 %

Product name (national)
Sulphuric acid 96%
Status: Yes
UN no.: 1830
Class: 8
Hazard no.: 80
Packing group: II

Dangerous goods ADR
Status: Yes
UN no.: 1830
Class: 8

Dangerous goods RID
Status: Yes
UN no.: 1830
Class: 8

Dangerous goods IMDG
Status: Yes
UN no.: 1830
Class: 8

Dangerous goods ICAO/IATA
Status: Yes
UN no.: 1830
Class: 8
15. Regulatory information

HAZARD SYMBOL

Composition on the label: Water: 4 %, Sulphuric acid .%: 95.9 - 100 %
EC no.: 231-639-5
R phrases: R35 Causes severe burns.
S phrases: S2 Keep out of the reach of children. S51 Use only in well-ventilated areas.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S30 Never add water to this product. S36/37/39 Wear suitable protective clothing, gloves and eye/face protection. S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

HAZARD PICTOGRAM (CLP)

Signal word: Danger
Hazard statements: H314 Causes Severe skin burns and eye damage.
Precautionary statements: P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P264 Wash thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face 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.
P301 + P310 IF SWALLOWED: 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.


Declaration no.: 30962
15. Regulatory information continued

Relevant Statutory Instruments

ADR 2011

16. Other information

List of relevant R phrases (under headings 2 and 3).

R35 Causes severe burns.

Note:
The information contained in this data sheet is copied from the safety data sheet provided by the manufacturer. The information is given in good faith and to the best of our knowledge but no guarantee, implied or otherwise, is made.

Revision History

<table>
<thead>
<tr>
<th>Changes</th>
<th>Responsible</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rev.1: SDS re-issued.</td>
<td>M.Cronin</td>
<td>13th Jan.11</td>
</tr>
<tr>
<td>Rev. 3: SDS re-issued</td>
<td>S. O'Brien</td>
<td>18th Feb. 13</td>
</tr>
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