CARO'S ACID

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Identification of the substance or mixture

Product name: CARO'S ACID
Chemical Name: Peroxymonosulfuric acid
Synonyms: Persulfuric acid, Peroxymonosulfuric acid
Molecular formula: H2SO5
Molecular weight: 114.08 g/mol

1.2. Use of the Substance/Mixture

Recommended use:
- Metal treatment
- Chemical industry
- Wood protection

1.3. Company/Undertaking Identification

Address: SOLVAY INTEROX Pty Ltd
MC-PHERSON STREET, 20-22
AUS- 2019 BANKSMEADOW

Telephone: 61293168000

Telefax: 61293166445

1.4. Emergency and contact telephone numbers

Emergency telephone number: +61 2801 44558 [Carechem 24]

E-mail address: manager.sds@solvay.com

2. HAZARDS IDENTIFICATION

Appearance: liquid
Colour: slightly coloured
Odour: Slightly chlorinated

- Classified as hazardous according to criteria of NOHSC.
- Classified as dangerous goods according to the ADG Code
- Corrosive
- Not combustible.
- Contact with combustible material may cause fire.
- Risk of explosion.
- Risk of violent reaction.
- Hazardous decomposition products
3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Substance name</th>
<th>Concentration (W/W)</th>
<th>Classification</th>
<th>R-phrase(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peroxomonosulfuric acid</td>
<td>&lt; 40 %</td>
<td>O</td>
<td>R 8</td>
</tr>
<tr>
<td>(7722-86-3 / 231-766-6 / - )</td>
<td></td>
<td>C</td>
<td>R35</td>
</tr>
<tr>
<td>Sulfuric acid</td>
<td>&lt; 50 %</td>
<td>C</td>
<td>R35</td>
</tr>
<tr>
<td>(7664-93-9 / 231-639-5 / 016-020-00-8 )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydrogen peroxide</td>
<td>&lt; 5 %</td>
<td>O</td>
<td>R 5</td>
</tr>
<tr>
<td>(7722-84-1 / 231-765-0 / 008-003-00-9 )</td>
<td></td>
<td>C</td>
<td>R35</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Xn</td>
<td>R20/22</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

4.1. Inhalation
- Move to fresh air.
- Oxygen or artificial respiration if needed.
- Victim to lie down in the recovery position, cover and keep him warm.
- Call a physician immediately.

4.2. Eye contact
- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
- In the case of difficulty of opening the lids, administer an analgesic eye wash (oxybuprocaine).
- Call a physician or poison control centre immediately.
- Take victim immediately to hospital.

4.3. Skin contact
- Take off contaminated clothing and shoes immediately.
- Wash off immediately with plenty of water.
- Keep warm and in a quiet place.
- Call a physician or poison control centre immediately.
- Wash contaminated clothing before re-use.

4.4. Ingestion
- Call a physician or poison control centre immediately.
- Take victim immediately to hospital.

If victim is conscious:
- If swallowed, rinse mouth with water (only if the person is conscious).
- Do NOT induce vomiting.

If victim is unconscious but breathing:
- Artificial respiration and/or oxygen may be necessary.

4.5. Notes to physician
- Take victim immediately to hospital.
- Immediate medical attention is required.
- Medical supervision for minimum 48 hours.
5. FIREFIGHTING MEASURES

5.1. Suitable extinguishing media
- Water
- Water spray

5.2. Extinguishing media which shall not be used for safety reasons
- Do not use other extinguishing methods.

5.3. Special exposure hazards in a fire
- Oxidizer
- Oxygen released in thermal decomposition may support combustion
- Contact with combustible material may cause fire.
- Risk of explosion if heated under confinement.
- Hazardous decomposition products formed under fire conditions.

5.4. Special protective equipment for firefighters
- In the event of fire, wear self-contained breathing apparatus.
- Evacuate personnel to safe areas.
- When intervention in close proximity wear acid resistant over suit.
- Clean contaminated surface thoroughly.
- Keep product and empty container away from heat and sources of ignition.
- Cool containers / tanks with water spray.
- Control the use of water due to environmental risk (see section 6).
- Depending on wind direction, warn people of the danger of intoxication, close doors and windows, and switch off the ventilation.

5.5. Other information
- HAZCHEM 1Y, UN 1483

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions
- Use personal protective equipment.
- Keep away from incompatible products
- Keep away from open flames, hot surfaces and sources of ignition.
- Evacuate personnel to safe areas.
- Keep people away from and upwind of spill/leak.
- Wear suitable protective clothing.
- Refer to protective measures listed in sections 7 and 8.

6.2. Environmental precautions
- Should not be released into the environment.
- If the product contaminates rivers and lakes or drains inform respective authorities.

6.3. Methods for cleaning up
- Dam up.
- Soak up with inert absorbent material.
- Prevent product from entering drains.
- Keep in properly labelled containers.
- Keep in suitable, closed containers for disposal.
7. HANDLING AND STORAGE

7.1. Handling
- Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- Use only in well-ventilated areas.
- When diluting, always add the product to water. Never add water to the product.
- Before all operations, passivate the piping circuits and vessels according to the procedure recommended by the producer.
- Keep away from Incompatible products.
- Use only equipment and materials which are compatible with the product.

7.2. Storage
- Storage temperature < -15°C (unstabilized product)
- Storage not recommended. Consult an expert.

7.3. Specific use(s)
- For further information, please contact: Supplier

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Exposure Limit Values

**Peroxomonosulfuric acid**
- US. ACGIH Threshold Limit Values
  Remarks: none established

**Sulfuric acid**
- Australia. OELs. (Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment) 08 2005
  time weighted average = 1 mg/m³
- Australia. OELs. (Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment) 08 2005
  Short term exposure limit = 3 mg/m³
- US. ACGIH Threshold Limit Values 03 2012
  time weighted average = 0.2 mg/m³
  Remarks: Thoracic fraction.
- Australia. OELs. (Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment) 08 2005
  Remarks: Listed

**Hydrogen peroxide**
- US. ACGIH Threshold Limit Values 03 2012
  time weighted average = 1 ppm
- Australia. OELs. (Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment) 08 2005
  time weighted average = 1 ppm
  time weighted average = 1.4 mg/m³
- Australia. OELs. (Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment) 08 2005
  Remarks: Listed
8.2. Exposure controls
- Provide adequate ventilation.
- Apply technical measures to comply with the occupational exposure limits.

8.2.1. Occupational exposure controls

8.2.1.1. Respiratory protection
- Recommended Filter type:
  - NO+P2
- Use only respiratory protection that conforms to international/national standards.
  - Self-contained breathing apparatus in confined spaces/insufficient oxygen/in case of large uncontrolled emissions/in all circumstances when the mask and cartridge do not give adequate protection.

8.2.1.2. Hand protection
- Chemical resistant gloves
- Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).

8.2.1.3. Eye protection
- Chemical resistant goggles must be worn.
- If splashes are likely to occur, wear: Tightly fitting safety goggles, Face-shield

8.2.1.4. Skin and body protection
- Wear chemical resistant oversuit
- If splashes are likely to occur, wear: Apron, Boots

8.2.1.5. Hygiene measures
- Ensure that eyewash stations and safety showers are close to the workstation location.
- Take off contaminated clothing and shoes immediately.
- Wash contaminated clothing before re-use.
- When using do not eat, drink or smoke.
- Wash hands before breaks and at the end of workday.
- Handle in accordance with good industrial hygiene and safety practice.

8.2.2. Environmental exposure controls
- Dispose of rinse water in accordance with local and national regulations.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. General Information (appearance, odour)
- Appearance: liquid
- Colour: slightly coloured
- Odour: Slightly chlorinated

9.2. Important health safety and environmental information
- pH: < 1
- Boiling point/boiling range: Remarks: Not applicable, Decomposition
- Flash point: Remarks: no data available
- Flammability: Remarks: The product is not flammable.
- Explosive properties: Explosion danger.
Material Safety Data Sheet
according to NOHSC:2011(2003)

CARO’S ACID

Revision Date 06/28/2013

Remarks: With certain materials (see section 10).

Oxidizing properties : Remarks: Oxidizer
Relative density / Density : 1.7 - 1.8
Solubility(ies) : Remarks: completely miscible, Water
Partition coefficient: n-octanol/water
Viscosity : 13.3 mPa.s
Temperature: 20 °C

9.3. Other data
Decomposition temperature : >= 100 °C
Remarks: Self-accelerating decomposition with oxygen release starting from 45°C.
Remarks: no data available

10. STABILITY AND REACTIVITY

10.1. Stability
- Stable under recommended storage conditions.
- Potential for exothermic hazard
- Risk of violent reaction.

10.2. Conditions to avoid
- Keep away from direct sunlight.
- To avoid thermal decomposition, do not overheat.
- Contamination
- Keep away from strong bases.

10.3. Materials to avoid
- Metals, Bases, Reducing agents, Acids, Salts of metals, Alcohol, Acetone, Aromatic compounds, Organic materials, Flammable materials
- May be corrosive to metals.

10.4. Hazardous decomposition products
- Oxygen, Sulfuric acid, Hydrogen peroxide

11. TOXICOLOGICAL INFORMATION

11.1 Toxicological data

Acute oral toxicity
- LD50, rat, 2,140 mg/kg (Sulfuric acid)

Acute inhalation toxicity
- LC50, 4 h, rat, 375 mg/m3 (Sulfuric acid)

Skin irritation
- Causes severe burns.
**Eye irritation**  
- Risk of serious damage to eyes.

**Sensitisation**  
- no data available

**Chronic toxicity**  
- Inhalation, Prolonged exposure, Various species, Target Organs: Respiratory system, observed effect, (Sulfuric acid)

**Carcinogenicity**  
- Animal testing did not show any carcinogenic effects, (Sulfuric acid)

**Reproductive toxicity**  
- Effect on fertility, foetotoxic effect, no observed effect, (Sulfuric acid)

**Possible hazards (summary)**  
- no data available

### 11.2. Health effects

**Inhalation**  
- Corrosive to respiratory system  
- In case of repeated or prolonged exposure: risk of erosion of the tooth enamel.  
- Symptoms: Breathing difficulties, Cough, chemical pneumonitis, pulmonary oedema.  
- Repeated or prolonged exposure: Nose bleeding, chronic bronchitis, sore throat.

**Eye contact**  
- Causes severe burns.  
- Small amounts splashed into eyes can cause irreversible tissue damage and blindness.  
- Symptoms: Redness, Lachrymation, Swelling of tissue, Burn.

**Skin contact**  
- Causes severe burns.  
- Symptoms: Redness, Swelling of tissue, Burn.

**Ingestion**  
- If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach.  
- Symptoms: Nausea, Abdominal pain, Bloody vomiting, Diarrhoea, Suffocation, Cough, Severe shortness of breath.  
- Risk of: Respiratory disorder.

### 12. ECOLOGICAL INFORMATION

#### 12.1. Ecotoxicity effects

**Acute toxicity**  
- Fishes, Lepomis macrochirus, LC50, 96 h, 16 - 28 mg/l (Sulfuric acid)  
- Crustaceans, Daphnia magna, LC50, 24 h, 29 mg/l (Sulfuric acid)

#### 12.2. Mobility

- Remarks: high mobility.

#### 12.3. Persistence and degradability

**Abiotic degradation**  
- Result: no data available

**Biodegradation**  
- Result: ionization/neutralization
12.4. Bioaccumulative potential
   - Remarks: Does not bioaccumulate.

12.5. Other adverse effects
   - no data available

12.6. Possible hazards (summary)
   - no data available

13. DISPOSAL CONSIDERATIONS

13.1. Waste from residues / unused products
   - Solutions with low pH-value must be neutralized before discharge.
   - Dispose of wastes in an approved waste disposal facility.
   - In accordance with local and national regulations.

13.2. Packaging treatment
   - Where possible recycling is preferred to disposal or incineration.
   - Clean container with water.
   - Dispose of as unused product.
   - In accordance with local and national regulations.

14. TRANSPORT INFORMATION

Remarks:
   - Not transported (manufactured and used on site)

15. REGULATORY INFORMATION

15.1. Labels
   - Hazardous components which must be listed on the label: Peroxomonosulfuric acid / Sulfuric acid
   - Classified as hazardous according to criteria of NOHSC.

Symbol(s)       | Oxidising | Corrosive
R-phrase(s)     | R 8       | Causes severe burns.
R35             |           |
S-phrase(s)     | S36/37/39 | Wear suitable protective clothing, gloves and eye/face protection.
S26             |           |
S45             |           |

15.2. Other information
   - The percentage concentration of the solution has to be indicated next to the product name.
15.3. Inventory Information

<table>
<thead>
<tr>
<th>Country/Inventory Name</th>
<th>Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA. Toxic Substances Control Act (TSCA)</td>
<td>-</td>
</tr>
<tr>
<td>Australia. Inventory of Chemical Substances (AICS)</td>
<td>-</td>
</tr>
<tr>
<td>Canada. Non-Domestic Substances List (NDSL)</td>
<td>-</td>
</tr>
<tr>
<td>Korea. Existing Chemicals Inventory (KECI KR)</td>
<td>-</td>
</tr>
<tr>
<td>EU list of existing chemical substances (EINECS)</td>
<td>-</td>
</tr>
<tr>
<td>Japan. Inventory of Existing &amp; New Chemical Substances (ENCS)</td>
<td>-</td>
</tr>
<tr>
<td>Inventory of Existing Chemical Substances (China) (IECS)</td>
<td>-</td>
</tr>
<tr>
<td>Philippine. Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>-</td>
</tr>
<tr>
<td>New Zealand. Inventory of Chemicals (NZIOC)</td>
<td>-</td>
</tr>
</tbody>
</table>

One or more components not listed on inventory.

16. OTHER INFORMATION

16.1. Administrative information

- Update
  - This data sheet contains changes from the previous version in section(s): 1.4, 4.5, 5.5, 8.2, 10, 15.1
- Distribute new edition to clients

16.2. Text of R phrases mentioned in Section 3

- R 5: Heating may cause an explosion.
- R 8: Contact with combustible material may cause fire.
- R20/22: Harmful by inhalation and if swallowed.
- R35: Causes severe burns.

The information given corresponds to the current state of our knowledge and experience of the product, and is not exhaustive. This applies to product which conforms to the specification, unless otherwise stated. In this case of combinations and mixtures one must make sure that no new dangers can arise. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and protection of human welfare and the environment.