Safety Data Sheet

TRADE NAME AQUARIS RM

1. IDENTIFICATION OF THE PRODUCT / INTRODUCTION OF THE COMPANY

<table>
<thead>
<tr>
<th>Chemical properties</th>
<th>Liquid acidic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range of application</td>
<td>Cleaning agent for RO-membranes</td>
</tr>
</tbody>
</table>

Company Identification

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(24 h-emergency telephone) National 145

2. INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical description</th>
<th>Substance</th>
<th>CAS-No.</th>
<th>Masse %</th>
<th>Classification No. EINECS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lactic acid</td>
<td>79-33-4</td>
<td>50-100%</td>
<td>R 38-41, Xi</td>
<td>201-196-2</td>
</tr>
<tr>
<td>Citric acid</td>
<td>5949-29-1</td>
<td>10-25%</td>
<td>R 36/38, Xi</td>
<td>201-069-1</td>
</tr>
</tbody>
</table>

3. HAZARDS IDENTIFICATION

<table>
<thead>
<tr>
<th>Hazard description</th>
<th>Xi Irritation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Irritating to eyes and skin. Risk of serious damage to eyes.</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

<table>
<thead>
<tr>
<th>General recommendations</th>
<th>Remove contaminated clothing immediately and wash before re-use.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>Fresh air. Seek medical advice.</td>
</tr>
<tr>
<td>Skin contact</td>
<td>Wash affected skin with plenty of running water and soap. Seek medical advice if necessary.</td>
</tr>
<tr>
<td>Eye contact</td>
<td>Flush eyes with plenty of running water for at least 15 minutes – immediately while keeping the eyelids wide open. Consult with an ophthalmologist immediately in all cases.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>Rinse mouth and make victim drink plenty of water. Do not attempt to neutralize. Do not induce vomiting. Fresh air. Call immediately medical advice.</td>
</tr>
</tbody>
</table>
5. FIRE FIGHTING MEASURES

<table>
<thead>
<tr>
<th>Suitable extinguishing agents</th>
<th>CO$_2$, quicklime or water jet. Big fire: water jet or alcohol constant foam.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special hazards caused by the material, its products of combustion or resulting gases</td>
<td>Irritating gaze and steam.</td>
</tr>
<tr>
<td>Protective equipment</td>
<td>In all cases wear self-contained breathing apparatus and full protective acid resistant suit.</td>
</tr>
</tbody>
</table>

6. ACCIDENTAL RELEASE MEASURES

| Personal protection | Wear protective clothing. Keep unprotected persons away. |
| Environmental precautions | Do not allow to enter sewers, rivers, soils without neutralization. |
| Procedures | Dam large quantities of liquid with sand or earth and take up with liquid-absorbent material. Collect the product with suitable means. Place everything into a closed, labelled container compatible with the product. |

7. HANDLING AND STORAGE

| Handling | Open container carefully. Avoid formation of aerosol. |
| Protection of fire and explosion | No special measures necessary. |
| Storage | Keep container tightly closed. Store in dry and cool area. Protect from heat and direct sun. Acid resistant floor. |
| Requirements for storage | Do not store with alkalis. |

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION EQUIPMENT

| Occupational Exposure Limits | None. |
| Respiratory protection | Use A1P2 breathing-protection half mask in case of contact with aerosols. |
| Hand protection | Protective gloves – acid resistant. Following material: Caoutchouc – NR (0.5 mm) (use unpowdered and allergy tested products), polychloroprene – CR (0.5 mm), nitrile caoutchouc/nitrile latex – NBR (0.35 mm), butyl caoutchouc – BR (0.5 mm), fluorine caoutchouc – FKM (0.4 mm), polyvinyl chloride – PVC (0.5 mm) |
| Eye protection | Use tight-fitting protective goggles. |
| Body protection | Wear acid resistant clothings. |
| Hygiene measures | Do not eat/drink while working. Wash hands/face after work/before breaks. |

9. PHYSICAL AND CHEMICAL PROPERTIES

| Physical state | liquid |
| Colour | yellowish |
| Odour | odourless |
**DATA RELEVANT FOR SAFETY:**

- Melting point: n. a.
- Boiling point: n. a.
- Ignition temperature: 1000°C (DIN 51794)
- Self inflammation: n.a.
- Explosive properties: n. a.
- Vapour Pressure: $T=20°C$ 23.0 hPa (DIN 51754)
- Density: $T=20°C$ 1.223 g/cm$^3$
- Solubility in water: $T=25°C$ completely miscible
- pH-value: $T=20°C$ <1.0
- Refractivity index: 1.417-1.4247

**10. STABILITY AND REACTIVITY**

- Conditions/materials to avoid: No overheating.
- Dangerous reactions: Keep away from highly acidic or alkaline substances
- Hazardous decomposition products: Irritating gaze/aerosol.

**11. TOXICOLOGICAL INFORMATION**

**ACUTE TOXICITY**

- Lactic acid: 79-33-4
  - $LD_{50}$ (oral, rat): $>3730$ mg/kg
  - $LD_{50}$ (dermal, rabbit): $>2000$ mg/kg

- Citric acid: 5949-29-1
  - $LD_{50}$ (oral, mouse): $>5040$ mg/kg
  - $LD_{50}$ (oral, rat): $>3000$ mg/kg

**Primary effects:**

- Skin contact: Irritating to skin and mucous membranes.
- Eye contact: The liquid splashed in the eyes may cause irritation and reversible damage.
- Sensitization: No sensitization known.
- Ingestion: Burns of mouth, oesophagus and gastrointestinal tract. Risk of perforation in the oesophagus and stomach.

**12. ECOLOGICAL INFORMATION**

- Persistence and degradability: Products is degradable.

- Citric acid: 5949-29-1 - waterfree
  - $EC_{50}$/16 h: $>10000$ mg/l (Pseudomonas putida)
  - $EC_{50}$/72 h: 120 mg/l (Daphnia magna)
  - $IC_{50}$/7 d: 640 mg/l (Scenedesmus quadricauda)
  - $LC_{50}$/96 h: 440-760 mg/l (Leuciscus idus)

- Lactic acid: 79-33-4
  - $EC_{50}$/48 h: 240 mg/l (Daphnia magna)
  - $IC_{50}$/72 h: 3500 mg/l (Algen)
  - $LC_{50}$/96 h: 320 mg/l (Brachydanio rerio)

- Aquatic toxicity: Toxic on fish and plankton. Harmful effect due to pH shift.
- Behaviour in sewage plant: Do not allow to enter sewage system without neutralization. A harmful effect on aquatic organisms/activated sludge cannot be excluded in case of improper handling or disposal.

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13. DISPOSAL CONSIDERATIONS

Product
Recommendations  Contact the local authorities in charge or approved waste disposal company

Contaminated packaging
Recommendations  Disposal in compliance with official regulations. Handle contaminated packaging like the substance itself. If not officially specified differently, non-contaminated packaging may be treated like household waste or recycled.

Cleansing agent  Water

14. TRANSPORT INFORMATION

Not subject to transport regulations.

15. REGULATORY INFORMATION

Markings according to EU guidelines
Danger symbol  Xi  Irritating

Risk Statement  R 38  Irritating to skin.
R 41  Risk of serious damage to eyes.

Safety Statement  S 26  In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 27/28  In case of contact with skin take off immediately all contaminated clothing and wash immediately with plenty of water.
S 45  In case of accident or if you feel unwell, seek medical advice immediately (Show the label where possible).
S 64  If swallowed, rinse mouth with water (only if the person is conscious).

Water hazard class  WGK 1: slightly polluting substance

16. OTHER INFORMATION

Date of issue  25.7.2001
n.a. = not applicable
Relevant R-phrase  R 36  Irritating to eyes.

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

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