1. Product and company identification

Product identifier
Trade name: Redox Buffer 271

Relevant identified uses of the substance or mixture and uses advised against
General use: Buffer solution

Details of the supplier of the safety data sheet
Company name: Hamilton Bonaduz AG
Street/POB-No.: Via Crusch 8
Postal Code, city: 7402 Bonaduz
Switzerland
WWW: www.hamiltoncompany.com
Telephone: +41 58 610 12 76
Telefax: +41 58 610 00 10
Dept. responsible for information: Susanne Näf-Rüdiger,
Telephone: +41 58 610 12 76, E-mail SNaef@hamilton.ch

Emergency phone number
GIZ-Nord, Germany, Telephone: +49 (0)551-19240

2. Hazards identification

Emergency overview
Appearance: Form: liquid
Color: brown
Odor: odorless
Classification: This material is classified as not hazardous.

Regulatory status
This material is not considered hazardous by the U.S. OSHA Hazard Communication Standard (29 CFR 1910.1200) and SIMDUT in Canada.

Hazards not otherwise classified
see section 11: Toxicological information

3. Composition / Information on ingredients

Chemical characterization: Aqueous solution

Hazardous ingredients:

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>Designation</th>
<th>Content</th>
<th>Classification</th>
</tr>
</thead>
</table>
4. First aid measures

In case of inhalation: Provide fresh air. Seek medical attention.
Following skin contact: Remove residues with water. Change contaminated clothing.
In case of skin reactions, consult a physician.
After eye contact: With eyelids open, wash out eyes for several minutes under flowing water.
In case of troubles or persistent symptoms, consult an ophthalmologist.
After swallowing: Rinse mouth and drink large quantities of water. If you feel unwell, seek medical advice.

Most important symptoms/effects, acute and delayed
no data available

Information to physician
Treat symptomatically.

5. Fire fighting measures

Flash point/flash point range: no data available
Auto-ignition temperature: no data available
Suitable extinguishing media: Product is non-combustible. Extinguishing materials should therefore be selected according to surroundings.

Specific hazards arising from the chemical
Fires in the immediate vicinity may cause the development of dangerous vapors.

Protective equipment and precautions for firefighters:
In case of surrounding fires: Wear self-contained breathing apparatus.

6. Accidental release measures

Personal precautions: Wear suitable protective clothing. Avoid contact with skin and eyes.
Environmental precautions: Do not allow to penetrate into soil, waterbodies or drains.
Methods for clean-up: Soak up with absorbent materials such as sand, siliceous earth, acid- or universal binder. Store in special closed containers and dispose of according to ordinance. Wash spill area with plenty of water.

7. Handling and storage

Handling
Advises on safe handling: Avoid prolonged and intensive skin contact.
Specific use(s) Buffer solution

Storage
Requirements for storerooms and containers:
Keep containers tightly closed and at a temperature between 15 °C and 25 °C.
Unsuitable materials: Metals.
8. Exposure controls / personal protection

Exposure guidelines

Occupational exposure limit values:

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>Designation</th>
<th>Type</th>
<th>Limit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>7553-56-2</td>
<td>Iodine</td>
<td>NIOSH: Ceiling</td>
<td>1 mg/m³; 0.1 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA: Ceiling</td>
<td>1 mg/m³; 0.1 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>USA: ACGIH: STEL</td>
<td>0.1 ppm inhalable fraction and vapor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>USA: ACGIH: TWA</td>
<td>0.01 ppm inhalable fraction and vapor</td>
</tr>
</tbody>
</table>

Engineering controls

Provide good ventilation and/or an exhaust system in the work area.
See also information in chapter 7, section storage.

Personal protection equipment (PPE)

Eye/face protection

Tightly sealed goggles according to OSHA Standard - 29 CFR: 1910.133 or ANSI Z87.1-2010.

Skin protection

Wear suitable protective clothing.
Glove material: nitrile rubber-Layer thickness: 0.11 mm.
Breakthrough time: >480 min.
Observe glove manufacturer's instructions concerning penetrability and breakthrough time.

Respiratory protection:

With correct and proper use, and under normal conditions, breathing protection is not required.

General hygiene considerations:

Change contaminated clothing.
Wash hands before breaks and after work.

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance: Form: liquid
Color: brown
Odor: odorless
Odor threshold: no data available
pH value: at 20 °C: 4.0 - 8.0
Melting point/freezing point: no data available
Initial boiling point and boiling range: approx. 100 °C
Flash point/flash point range: no data available
Evaporation rate: no data available
Flammability: no data available
Explosion limits: no data available
Vapor pressure: no data available
Vapor density: no data available
Density: at 20 °C: approx. 1.3 g/mL
Water solubility: at 20 °C: soluble
Partition coefficient: n-octanol/water: no data available
10. Stability and reactivity

Reactivity: no data available

Chemical stability: Product is stable under normal storage conditions.

Possibility of hazardous reactions
No hazardous reactions known.

Conditions to avoid: no data available

Incompatible materials: Metals

Hazardous decomposition products: Fires in the immediate vicinity may cause the development of dangerous vapors.

Thermal decomposition: no data available

11. Toxicological information

Toxicological tests

Toxicological effects:
- Acute toxicity (oral): Lack of data.
- Acute toxicity (dermal): Lack of data.
- Acute toxicity (inhalative): Lack of data.
- Skin corrosion/irritation: Lack of data.
- Eye damage/irritation: Lack of data.
- Sensitisation to the respiratory tract: Lack of data.
- Skin sensitisation: Lack of data.
- Germ cell mutagenicity/Genotoxicity: Lack of data.
- Carcinogenicity: Lack of data.
- Reproductive toxicity: Lack of data.
- Effects on or via lactation: Lack of data.
- Specific target organ toxicity (single exposure): Lack of data.
- Specific target organ toxicity (repeated exposure): Lack of data.
- Aspiration hazard: Lack of data.

12. Ecological information

Ecotoxicity
Further details: no data available

Mobility in soil
no data available
Persistence and degradability
Further details: no data available

Additional ecological information
General information: Do not allow to enter into ground-water, surface water or drains.

13. Disposal considerations

Product
Recommendation: Special waste. Dispose of waste according to applicable legislation.

Contaminated packaging
Recommendation: Dispose of waste according to applicable legislation. Non-contaminated packages may be recycled.

14. Transport information

USA: Department of Transportation (DOT)
Proper shipping name: Not controlled under DOT

Sea transport (IMDG)
Proper shipping name: Not restricted
Marine pollutant: No

Air transport (IATA)
Proper shipping name: Not restricted

Further information
No dangerous good in sense of these transport regulations.

15. Regulatory information

U.S. Federal Regulations
Iodine: TSCA Inventory: listed
TSCA HPVC: not listed
NIOSH Recommendations:
Occupational Health Guideline: 0342*

National regulations - Great Britain
Hazchem-Code: -
16. Other information

Hazard rating systems:

NFPA Hazard Rating:
- Health: 1 (Slight)
- Fire: 0 (Minimal)
- Reactivity: 0 (Minimal)

HMIS Version III Rating:
- Health: 1 (Slight)
- Flammability: 0 (Minimal)
- Physical Hazard: 0 (Minimal)
- Personal Protection: B

Reason of change: General revision (Regulation (EU) No 2015/830)

Date of first version: 12/14/2010

Department issuing data sheet
Contact person: see section 1: Dept. responsible for information

The information in this data sheet has been established to our best knowledge and was up-to-date at time of revision. It does not represent a guarantee for the properties of the product described in terms of the legal warranty regulations.