SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product name: ELECTROLYTE A2-I
Cat. No. 40900009 (part of Cat. No. 40900008)
Container size: 920 ml

Relevant identified uses of the substance or mixture and uses advised against
Application: For electrolytic preparation of metallographic specimens. (*)

Details of the supplier of the safety data sheet
Supplier: Struers ApS
Pederstrupvej 84
DK-2750 Ballerup
Tel: +45 44 600 800

Responsible for material safety data sheet authoring: Responsible for material safety data sheet authoring: DHI
Any questions to the contents of this material safety data sheet should be sent to: struers@struers.dk

Emergency telephone number
National Capital Poison Center: 1-800-222-1222
Infotrac: 1-800-535-5053
Struers US: 1-440-871-0071
SECTION 2: HAZARDS IDENTIFICATION

Classification of the substance or mixture

OSHA 2012:
- Flammable Liquid Category 2
- Skin Irritant Category 2
- Eye irritant Category 2A

Label elements

Danger

H225 Highly flammable liquid and vapour.
H315 Causes skin irritation.
H319 Causes serious eye irritation.

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 If eye irritation persists: Get medical advice/attention.
P403 + P235 Store in a well-ventilated place. Keep cool.
P501 Dispose of contents/container in accordance with local regulations.

Other hazards

The product is highly flammable, and explosive vapors/air mixtures may be formed even at normal room temperatures. Organic solvents may be absorbed into the body by inhalation and ingestion and cause permanent damage to the nervous system, including the brain.

PBT/vPvB: No information available.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Mixtures

The product contains: organic solvents and water.
SECTION 4: FIRST AID MEASURES

Description of first aid measures

Burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital.

Inhalation: Move into fresh air and keep at rest.

Skin contact: Remove contaminated clothes and rinse skin thoroughly with water.

Eye contact: Immediately flush with plenty of water for at least 15 minutes. Remove any contact lenses and open eyelids widely. If irritation persists: Continue flushing during transport to hospital. Bring along these instructions.

Ingestion: Immediately rinse mouth and drink plenty of water. Keep person under observation. If person becomes uncomfortable seek hospital and bring these instructions. Do not induce vomiting.

Most important symptoms and effects, both acute and delayed

Symptoms/effects: See section 11 for more detailed information on health effects and symptoms.

Indication of any immediate medical attention and special treatment needed

Medical attention/treatments: Treat symptomatically.
SECTION 5: FIREFIGHTING MEASURES

Extinguishing media

Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Cool containers exposed to heat with water spray and remove container, if no risk is involved.

Unsuitable extinguishing media: Do not use water jet as an extinguisher, as this will spread the fire.

Special hazards arising from the substance or mixture

Specific hazards: The product is flammable, and heating may generate vapors which may form explosive vapor/air mixtures. Vapors are heavier than air and may travel along the floor and in the bottom of containers. Vapors may be ignited by a spark, a hot surface or an ember.

Advice for firefighters

Protective equipment for firefighters: Selection of respiratory protection for fire fighting: follow the general fire precautions indicated in the workplace.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Protective equipment: Do not smoke or use open fire, or other sources of ignition. Avoid inhalation of vapors and contact with skin and eyes. For personal protection, see section 8. (*)

Emergency procedures: No specific recommendations. For personal protection, see section 8. (*)

Environmental precautions

Environmental precautions: Do not discharge into drains, water courses or onto the ground.

Methods and material for containment and cleaning up

Spill Cleanup Methods: Large quantities of concentrate should not be discharged into the drain but removed with absorbing material. Absorb spillage with non-combustible, absorbent material.

Reference to other sections

References: For personal protection, see section 8. For waste disposal, see section 13.
SECTION 7: HANDLING AND STORAGE

Precautions for safe handling

Safe handling advice: Avoid inhalation of vapors and contact with skin and eyes. Observe good chemical hygiene practices.

Technical measures: Do not smoke or use open fire or other sources of ignition.

Technical precautions: Local exhaust is recommended.

Conditions for safe storage, including any incompatibilities


Storage conditions: Store in a cool and well-ventilated place. Avoid contact with oxidizing agents.

Specific end use(s)

Specific use(s): No information available.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Occupational exposure limits:

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>Chemical name</th>
<th>As</th>
<th>Exposure limits</th>
<th>Type</th>
<th>Notes</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-17-5</td>
<td>Ethyl alcohol</td>
<td></td>
<td>1000 ppm</td>
<td>1900 mg/m3</td>
<td>TWA</td>
<td>-</td>
</tr>
<tr>
<td>111-76-2</td>
<td>2-Butoxyethanol</td>
<td></td>
<td>50 ppm</td>
<td>240 mg/m3</td>
<td>TWA</td>
<td>Skin</td>
</tr>
<tr>
<td>111-76-2</td>
<td>2-Butoxyethanol</td>
<td></td>
<td>20 ppm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>64-17-5</td>
<td>Ethanol</td>
<td></td>
<td>1000 ppm</td>
<td>STEL</td>
<td>A3; BEI</td>
<td>ACGIH</td>
</tr>
</tbody>
</table>

Notes:

A3: Confirmed Animal Carcinogen with Unknown Relevance to Humans.
Skin: Danger of cutaneous absorption. (ACGIH)
Skin: Skin absorption. (OSHA)

Exposure controls

Engineering measures: Provide adequate ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of vapors.

Personal protection: Personal protection equipment should be chosen according to the ANSI standards and in discussion with the supplier of the personal protective equipment.

Respiratory equipment: In case of inadequate ventilation and work of brief duration, use suitable respiratory equipment. Use respiratory equipment with gas filter, type A2.

Hand protection: Wear protective gloves. Nitrile gloves are recommended. The most suitable glove must be chosen in consultation with the gloves supplier, who can inform about the breakthrough time of the glove material.

Eye protection: Risk of splashes: Wear goggles/face shield.

Skin protection: Wear apron or protective clothing in case of splashes.

Environmental Exposure Controls: Not available.
### SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

**Information on basic physical and chemical properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Form:</strong></td>
<td>Liquid</td>
</tr>
<tr>
<td><strong>Color:</strong></td>
<td>Colorless</td>
</tr>
<tr>
<td><strong>Odor:</strong></td>
<td>odor of alcohol</td>
</tr>
<tr>
<td><strong>Odor threshold:</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>pH:</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Melting point:</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Boiling point:</strong></td>
<td>85°C</td>
</tr>
<tr>
<td><strong>Flash point:</strong></td>
<td>12°C</td>
</tr>
<tr>
<td><strong>Evaporation rate:</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Flammability (solid, gas):</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Explosion limits:</strong></td>
<td>2 - 12 vol%</td>
</tr>
<tr>
<td><strong>Vapor pressure:</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Vapor density:</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Relative density:</strong></td>
<td>0.83</td>
</tr>
<tr>
<td><strong>Solubility:</strong></td>
<td>Miscible with water</td>
</tr>
<tr>
<td><strong>Partition coefficient (n-octanol/water):</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Auto-ignition temperature (°F):</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Decomposition temperature (°F):</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Viscosity:</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Explosive properties:</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Oxidizing properties:</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Other information</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Other data:</strong></td>
<td>Volatile Organic Compound (VOC): 747 g/l (calculated)</td>
</tr>
</tbody>
</table>
SECTION 10: STABILITY AND REACTIVITY

Reactivity

Reactivity: No data available.

Chemical stability

Stability: Stable under normal temperature conditions.

Possibility of hazardous reactions

Hazardous Reactions: No data available.

Conditions to avoid

Conditions/materials to avoid: Avoid exposing to heat and contact with strong oxidizing substances.

Incompatible materials

Incompatible materials: No information available.

Hazardous decomposition products

Hazardous decomposition products: None in particular.
SECTION 11: TOXICOLOGICAL INFORMATION

**Information on toxicological effects**

- **Acute Toxicity (Oral):** Based on available data, the classification criteria are not met.
- **Acute Toxicity (Dermal):** Based on available data, the classification criteria are not met.
- **Acute Toxicity (Inhalation):** Based on available data, the classification criteria are not met.
- **Skin Corrosion/Irritation:** Causes skin irritation.
- **Serious eye damage/irritation:** Causes serious eye irritation.
- **Respiratory or skin sensitization:** Based on available data, the classification criteria are not met.
- **Germ cell mutagenicity:** Based on available data, the classification criteria are not met.
- **Carcinogenicity:** Based on available data, the classification criteria are not met. National Toxicology Program (NTP): No. IARC Cancer Review: Group 3 for 2-Butoxyethanol. OSHA: No.
- **Reproductive Toxicity:** Based on available data, the classification criteria are not met.
- **STOT - Single exposure:** Based on available data, the classification criteria are not met.
- **STOT - Repeated exposure:** Based on available data, the classification criteria are not met.
- **Aspiration hazard:** Based on available data, the classification criteria are not met.
- **Inhalation:** Vapors may irritate throat and respiratory system and cause coughing. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea. In serious cases, unconsciousness and permanent damage to the brain and liver may be seen.
- **Skin contact:** Contains butoxyethanol which may penetrate the skin.
- **Ingestion:** May irritate and cause malaise.
- **Specific effects:** The product contains butoxyethanol which is suspected of having harmful long-term effects on the kidneys and nervous system.

SECTION 12: ECOLOGICAL INFORMATION

**Toxicity**

- **Ecotoxicity:** The environmental hazard of the product is considered to be limited.

**Persistence and degradability**

- **Degradability:** The product is potentially degradable. BOD20 ≥ 78%

**Bioaccumulative potential**

- **Bioaccumulative potential:** The product is not bioaccumulating.

**Mobility in soil**

- **Mobility:** No data available.

**Results of PBT and vPvB assessment**

- **PBT/vPvB:** No information available.

**Other adverse effects**

- **Other adverse effects:** No information available.
SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues: Dispose of waste and residues in accordance with local authority requirements. Waste is classified as hazardous waste.
EWC-code: 16 05 08
READY-TO-USE MIXTURE: EWC-code: 16 05 06

Contaminated packaging: Dispose of waste and residues in accordance with local authority requirements.

SECTION 14: TRANSPORT INFORMATION

The product is covered by international regulation on the transport of dangerous goods (IMDG, IATA).

UN number

UN-No: 1993

UN proper shipping name

Proper Shipping Name: FLAMMABLE LIQUID, N.O.S (Ethanol, 2-Butoxyethanol mixture)

Additional IMDG information:
EmS: F-E, S-E (*)
MFAG: 1

Transport hazard class(es)

Class: 3

Packing group

PG: II

Environmental hazards

Marine pollutant: No.
Environmentally Hazardous substance: No.

Special precautions for user

Special precautions: None known.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Transport in bulk: Not relevant.
SECTION 15: REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

Special provisions: As a general rule, persons under 18 years of age are not allowed to work with this product. Users must be carefully instructed in the proper work procedure, the dangerous properties of the product and the necessary safety instructions.

TSCA: Listed.

NFPA Rating: Health: 2  Fire: 3  Reactivity: 0  Other:

National regulation: Europe/USA:

This Material Safety Data Sheet has been prepared according to the EU-regulation.
NIOSH Pocket Guide to Chemical Hazards.

SECTION 16: OTHER INFORMATION

The user must be instructed in the proper work procedure and be familiar with the contents of these instructions.

The following sections contain revisions or new statements: 1, 6, 9, 14.
The (*) indicates the changes made with respect to the previous version.

Approved by DHI.

Additional information: Classification according to HCS 2012:
Calculation method.

The information on this data sheet represents our current data and is reliable provided that the product is used under the prescribed conditions and in accordance with the application specified on the packaging and/or in the technical guidance literature. Any other use of the product which involves using the product in combination with any other product or any other process is the responsibility of the user.

Made by DHI - Environment and Toxicology, Agern Allé 5, DK-2970 Hørsholm, Denmark.