1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers
Product name: Barritt’s Reagent A
Product Number: 29333
Brand: Sigma-Aldrich

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified uses: Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet
Company: Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA
Telephone: +1 800-325-5832
Fax: +1 800-325-5052

1.4 Emergency telephone number
Emergency Phone #: (314) 776-6555

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Flammable liquids (Category 2), H225
Serious eye damage (Category 1), H318
Acute aquatic toxicity (Category 3), H402
Chronic aquatic toxicity (Category 3), H412

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements
Pictogram

Signal word: Danger

Hazard statement(s)
H225: Highly flammable liquid and vapour.
H318: Causes serious eye damage.
H412: Harmful to aquatic life with long lasting effects.

Precautionary statement(s)
P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P233: Keep container tightly closed.
P240: Ground/bond container and receiving equipment.
P241: Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242: Use only non-sparking tools.
P243: Take precautionary measures against static discharge.
P273: Avoid release to the environment.
P280: Wear protective gloves/ eye protection/ face protection.
P303 + P361 + P353  IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305 + P351 + P338 + P310  IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.
P370 + P378  In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P403 + P235  Store in a well-ventilated place. Keep cool.
P501  Dispose of contents/container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures
Synonyms: Voges-Proskauer Test with Barritt’s Reagent A
VP1 Reagent

Hazardous components

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>Flam. Liq. 2; Eye Irrit. 2A;</td>
<td>&gt;= 90 - &lt;= 100%</td>
</tr>
<tr>
<td></td>
<td>H225, H319</td>
<td>&lt;= 100%</td>
</tr>
<tr>
<td>CAS-No.</td>
<td>64-17-5</td>
<td></td>
</tr>
<tr>
<td>EC-No.</td>
<td>200-578-6</td>
<td></td>
</tr>
<tr>
<td>Index-No.</td>
<td>603-002-00-5</td>
<td></td>
</tr>
<tr>
<td>1-Naphthol</td>
<td>Acute Tox. 4; Acute Tox. 3;</td>
<td>&gt;= 5 - &lt; 10%</td>
</tr>
<tr>
<td></td>
<td>Skin Irrit. 2; Eye Dam. 1;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STOT SE 3; Aquatic Acute 2;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aquatic Chronic 2; H302, H311, H315, H318, H335, H411</td>
<td></td>
</tr>
<tr>
<td>CAS-No.</td>
<td>90-15-3</td>
<td></td>
</tr>
<tr>
<td>EC-No.</td>
<td>201-969-4</td>
<td></td>
</tr>
<tr>
<td>Index-No.</td>
<td>604-029-00-5</td>
<td></td>
</tr>
</tbody>
</table>

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available
5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Carbon oxides

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information

Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. For personal protection see section 8.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

6.4 Reference to other sections

For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid inhalation of vapour or mist. Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Storage class (TRGS 510): Flammable liquids

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>64-17-5</td>
<td>TWA</td>
<td>1,000,000,000 ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
</tbody>
</table>

Remarks
Upper Respiratory Tract irritation
Confirmed animal carcinogen with unknown relevance to humans
### 8.2 Exposure controls

**Appropriate engineering controls**
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

**Personal protective equipment**

**Eye/face protection**
Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Skin protection**
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

**Body Protection**
Complete suit protecting against chemicals, Flame retardant antistatic protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory protection**
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Control of environmental exposure**
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

#### 9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Appearance</td>
<td>Form: clear, liquid</td>
</tr>
<tr>
<td>b) Odour</td>
<td>No data available</td>
</tr>
<tr>
<td>c) Odour Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>d) pH</td>
<td>No data available</td>
</tr>
<tr>
<td>e) Melting point/freezing</td>
<td>No data available</td>
</tr>
<tr>
<td>f) Melting point/freezing</td>
<td>No data available</td>
</tr>
<tr>
<td>g) Boiling point</td>
<td>No data available</td>
</tr>
<tr>
<td>h) Density</td>
<td>No data available</td>
</tr>
<tr>
<td>i) Flash Point</td>
<td>No data available</td>
</tr>
<tr>
<td>j) Vapour Pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>k) Viscosity</td>
<td>No data available</td>
</tr>
<tr>
<td>l) Specific Gravity</td>
<td>No data available</td>
</tr>
<tr>
<td>m) Solubility in water</td>
<td>No data available</td>
</tr>
<tr>
<td>n) Solubility in organic solvents</td>
<td>No data available</td>
</tr>
<tr>
<td>o) Stability</td>
<td>No data available</td>
</tr>
<tr>
<td>p) Solvent Recovery</td>
<td>No data available</td>
</tr>
<tr>
<td>q) Solvent Recovery</td>
<td>No data available</td>
</tr>
<tr>
<td>r) Solvent Recovery</td>
<td>No data available</td>
</tr>
<tr>
<td>s) Solvent Recovery</td>
<td>No data available</td>
</tr>
<tr>
<td>t) Solvent Recovery</td>
<td>No data available</td>
</tr>
<tr>
<td>u) Solvent Recovery</td>
<td>No data available</td>
</tr>
<tr>
<td>v) Solvent Recovery</td>
<td>No data available</td>
</tr>
<tr>
<td>w) Solvent Recovery</td>
<td>No data available</td>
</tr>
<tr>
<td>x) Solvent Recovery</td>
<td>No data available</td>
</tr>
<tr>
<td>y) Solvent Recovery</td>
<td>No data available</td>
</tr>
<tr>
<td>z) Solvent Recovery</td>
<td>No data available</td>
</tr>
</tbody>
</table>

---

The value in mg/m³ is approximate.
Point  

f) Initial boiling point and boiling range  No data available  
g) Flash point  14 °C (57 °F)  
h) Evaporation rate  No data available  
i) Flammability (solid, gas)  No data available  
j) Upper/lower flammability or explosive limits  Upper explosion limit: 19 %(V)  
       Lower explosion limit: 3.3 %(V)  
k) Vapour pressure  No data available  
l) Vapour density  No data available  
m) Relative density  No data available  
n) Water solubility  No data available  
o) Partition coefficient: n-octanol/water  No data available  
p) Auto-ignition temperature  No data available  
q) Decomposition temperature  No data available  
r) Viscosity  No data available  
s) Explosive properties  No data available  
t) Oxidizing properties  No data available  

9.2 Other safety information  
No data available  

10. STABILITY AND REACTIVITY  

10.1 Reactivity  
No data available  

10.2 Chemical stability  
Stable under recommended storage conditions.  

10.3 Possibility of hazardous reactions  
Vapours may form explosive mixture with air.  

10.4 Conditions to avoid  
Avoid moisture.  
Heat, flames and sparks.  

10.5 Incompatible materials  
Peroxides  

10.6 Hazardous decomposition products  
Other decomposition products - No data available  
In the event of fire: see section 5  

11. TOXICOLOGICAL INFORMATION  

11.1 Information on toxicological effects  

Acute toxicity  
Inhalation: No data available  
No data available
Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitisation
No data available

Germ cell mutagenicity
No data available

Carcinogenicity
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Additional Information
RTECS: Not available

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Stomach - Irregularities - Based on Human Evidence
Stomach - Irregularities - Based on Human Evidence
Stomach - Irregularities - Based on Human Evidence (1-Naphthol)

12. ECOLOGICAL INFORMATION

12.1 Toxicity
No data available

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Harmful to aquatic life with long lasting effects.
13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN number: 1170  Class: 3  Packing group: II
Proper shipping name: Ethanol solutions
Reportable Quantity (RQ):
Poison Inhalation Hazard: No

IMDG
UN number: 1170  Class: 3  Packing group: II  EMS-No: F-E, S-D
Proper shipping name: ETHANOL SOLUTION

IATA
UN number: 1170  Class: 3  Packing group: II
Proper shipping name: Ethanol solution

15. REGULATORY INFORMATION

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components
CAS-No.  Revision Date
Ethanol  64-17-5  2007-03-01

Pennsylvania Right To Know Components
CAS-No.  Revision Date
Ethanol  64-17-5  2007-03-01
1-Naphthol  90-15-3

New Jersey Right To Know Components
CAS-No.  Revision Date
Ethanol  64-17-5  2007-03-01
1-Naphthol  90-15-3

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.
Acute Tox.  Acute toxicity  
Aquatic Acute  Acute aquatic toxicity  
Aquatic Chronic  Chronic aquatic toxicity  
Eye Dam.  Serious eye damage  
Eye Irrit.  Eye irritation  
Flam. Liq.  Flammable liquids  
H225  Highly flammable liquid and vapour.  
H302  Harmful if swallowed.  
H311  Toxic in contact with skin.  
H315  Causes skin irritation.  
H318  Causes serious eye damage.  
H319  Causes serious eye irritation.  
H335  May cause respiratory irritation.  
H402  Harmful to aquatic life.  
H411  Toxic to aquatic life with long lasting effects.  
H412  Harmful to aquatic life with long lasting effects.  
Skin Irrit.  Skin irritation  
STOT SE  Specific target organ toxicity - single exposure  

HMIS Rating
Health hazard: 3
Chronic Health Hazard: *
Flammability: 3
Physical Hazard 0

NFPA Rating
Health hazard: 3
Fire Hazard: 3
Reactivity Hazard: 0

Further information
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Preparation Information
Sigma-Aldrich Corporation
Product Safety – Americas Region
1-800-521-8956
Version: 3.6  Revision Date: 07/10/2015  Print Date: 07/21/2016