1 PRODUCT AND COMPANY IDENTIFICATION

Trade name: 1630 Soldering Flux
Article number: C4-00-1630

Relevant identified uses of the substance or mixture and uses advised against
No further relevant information available.

Application of the substance / the preparation: Soldering flux

1.3 Details of the supplier of the safety data sheet
Manufacturer/Supplier:
Kester Inc.
800 West Thorndale Avenue
Itasca, IL 60143 USA
Tel (630) 616-4000
Tel International 00 1 630 616-4000

ITW Specialty Materials (Suzhou) Co., Ltd.
Heng Qiao Road
Wujian Economic Development Zone
Suzhou, Jiangsu 215200 China
Tel +86 512 82060808

Kester GmbH
Ganghofer Strasse 45
D-82216 Gerlinlnder Germany
Tel +49 (0) 8142 4785 0

Information department: Product Compliance: EHS_Kester@kester.com

1.4 Emergency telephone number:
CHEMTREC 24-Hour Emergency Response Telephone Number : (800) 424-9300
CHEMTREC 24-Hour Emergency Response (Outside US & Canada) Telephone Number : (703) 527-3887

2 HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008

GHS05 Corrosion

Eye Dam. 1   H318  Causes serious eye damage.

GHS07

Acute Tox. 4   H302  Harmful if swallowed.
Acute Tox. 4   H312  Harmful in contact with skin.

Aquatic Acute 2 H401  Toxic to aquatic life.

2.2 Label elements
Labelling according to Regulation (EC) No 1272/2008
The product is classified and labeled according to the CLP regulation.

(Contd. on page 2)
Hazard pictograms

GHS05  GHS07

Signal word Danger

Hazard statements
H302+H312 Harmful if swallowed or in contact with skin.
H318 Causes serious eye damage.
H401 Toxic to aquatic life.

Precautionary statements
P280 Wear protective gloves / eye protection.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
P402+P404 Store in a dry place. Store in a closed container.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard description:
WHMIS Symbols

Classification system:
NFPA ratings (scale 0 - 4)

Health = 3
Fire = 0
Reactivity = 0

HMIS-ratings (scale 0 - 4)

Health = 3
Fire = 0
Reactivity = 0

2.3 Other hazards
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

3 COMPOSITION OF MIXTURE

Description: Mixture of the substances listed below with nonhazardous additions.

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>Description</th>
<th>% Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 7699-45-8</td>
<td>zinc bromide</td>
<td>5-&lt;10%</td>
</tr>
<tr>
<td>EINECS: 231-718-4</td>
<td></td>
<td>Skin Corr. 1B, H314; Eye Dam. 1, H318, Aquatic Acute 1, H400; Aquatic Chronic 1, H410</td>
</tr>
<tr>
<td>CAS: 56-81-5</td>
<td>glycerol</td>
<td>3.0-5.0%</td>
</tr>
<tr>
<td>EINECS: 200-289-5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Trade name: 1630 Soldering Flux

<table>
<thead>
<tr>
<th>CAS: 10035-10-6</th>
<th>Hydrobromic acid</th>
<th>Skin Corr. 1A, H314; Eye Dam. 1, H318; Acute Tox. 4, H332; STOT SE 3, H335</th>
<th>1.0-3.0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>EINECS: 233-113-0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAS: 1336-21-6</td>
<td>ammonia</td>
<td>Skin Corr. 1B, H314; Eye Dam. 1, H318; Aquatic Acute 1, H400</td>
<td>0.1-0.25%</td>
</tr>
<tr>
<td>EINECS: 215-647-6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4 FIRST AID MEASURES

4.1 Description of first aid measures
General information:
Immediately remove any clothing soiled by the product.
Follow general first aid procedures.
After inhalation: Supply fresh air; consult doctor in case of complaints.
After skin contact: Immediately wash with water and soap and rinse thoroughly.
After eye contact: Rinse opened eye for several minutes under running water. Then consult a doctor.
After swallowing:
Drink copious amounts of water and provide fresh air. Immediately call a doctor.
Seek immediate medical advice.
4.2 Most important symptoms and effects, both acute and delayed No further relevant information available.
4.3 Indication of any immediate medical attention and special treatment needed
No further relevant information available.

5 FIREFIGHTING MEASURES

5.1 Extinguishing media
Suitable extinguishing agents:
CO2.
Suitable extinguishing agents:
\( \text{CO}_2 \).
5.2 Special hazards arising from the substance or mixture
In case of fire, the following can be released:
Hydrogen bromide
Zinc oxide
5.3 Advice for firefighters
Protective equipment: No special measures required.

6 ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
6.2 Environmental precautions: Do not allow to enter sewers/surface or ground water.
6.3 Methods and material for containment and cleaning up:
Use neutralizing agent.
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
6.4 Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.
Protective Action Criteria for Chemicals

PAC-1:

<table>
<thead>
<tr>
<th>CAS: 7699-45-8</th>
<th>zinc bromide</th>
<th>6 mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 56-81-5</td>
<td>glycerol</td>
<td>45 mg/m³</td>
</tr>
</tbody>
</table>

(Contd. on page 4)
Trade name: 1630 Soldering Flux

| CAS: 10035-10-6 | Hydrobromic acid | 1.0 ppm |
| CAS: 1336-21-6 | ammonia | 61 ppm |

**PAC-2:**
- CAS: 7699-45-8 | zinc bromide | 66 mg/m³ |
- CAS: 56-81-5 | glycerol | 180 mg/m³ |
- CAS: 10035-10-6 | Hydrobromic acid | 40 ppm |
- CAS: 1336-21-6 | ammonia | 330 ppm |

**PAC-3:**
- CAS: 7699-45-8 | zinc bromide | 400 mg/m³ |
- CAS: 56-81-5 | glycerol | 1,100 mg/m³ |
- CAS: 10035-10-6 | Hydrobromic acid | 120 ppm |
- CAS: 1336-21-6 | ammonia | 2,300 ppm |

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7 HANDLING AND STORAGE

7.1 Precautions for safe handling
- Store in cool, dry place in tightly closed receptacles.
- Prevent formation of aerosols.
- **Information about protection against explosions and fires:** No special measures required.

7.2 Conditions for safe storage, including any incompatibilities
- **Storage:**
  - Requirements to be met by storerooms and receptacles: Store in a cool location.
  - **Information about storage in one common storage facility:** Not required.
  - **Further information about storage conditions:** Keep receptacle tightly sealed.

7.3 Specific end use(s)
- No further relevant information available.

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8 EXPOSURE CONTROLS / PERSONAL PROTECTION

**Additional information about design of technical systems:** No further data; see item 7.

8.1 Control parameters
- **Components with limit values that require monitoring at the workplace:**
  - The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit.
  - At this time, the other constituents have no known exposure limits.

**CAS: 56-81-5 glycerol**
- PEL | Long-term value: 15* 5** mg/m³
- mist; *total dust **respirable fraction
- TLV | TLV withdrawn-insufficient data human occup. exp.

**CAS: 10035-10-6 Hydrobromic acid**
- PEL | Long-term value: 10 mg/m³, 3 ppm
- REL | Ceiling limit value: 10 mg/m³, 3 ppm
- TLV | Ceiling limit value: 6.8 mg/m³, 2 ppm

**Additional information:**
- PEL = Permissible Exposure Limit (OSHA)
- TLV = Threshold Limit Value (ACGIH)
- OSHA = Occupational Safety and Health Administration
- ACGIH = American Conference of Governmental Industrial Hygienists
8.2 Exposure controls
Personal protective equipment:
General protective and hygienic measures:
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
Breathing equipment:
When ventilation is not sufficient to remove fumes from the breathing zone, a safety approved respirator or self-contained breathing apparatus should be worn.
Not necessary if room is well-ventilated.
Use suitable respiratory protective device in case of insufficient ventilation.
Protection of hands:

Protective gloves

Material of gloves:
Nitrile rubber, NBR
Natural rubber, NR
Penetration time of glove material:
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection:

Safety glasses

Body protection:

Apron

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties
General Information
Appearance:
Form: Liquid
Color: Colorless
Odor: Mild
pH-value at 20 °C (68 °F): 1.5
Change in condition
Melting point/Melting range: Undetermined.
Boiling point/Boiling range: 100 °C (212 °F)
Flash point: Not applicable.
Auto igniting: Product is not selfigniting.
10 STABILITY AND REACTIVITY

10.1 Reactivity No further relevant information available.
10.2 Chemical stability
Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
10.3 Possibility of hazardous reactions No dangerous reactions known.
10.4 Conditions to avoid No further relevant information available.
10.5 Incompatible materials: Strong acids, strong oxidizers.
10.6 Hazardous decomposition products: Hydrogen bromide

11 TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
Acute toxicity:
Harmful if swallowed or in contact with skin.
Primary irritant effect:
on the skin: Based on available data, the classification criteria are not met.
on the eye: Causes serious eye damage.
through ingestion: May be harmful if swallowed.
Sensitization: Based on available data, the classification criteria are not met.
Additional toxicological information:

Carcinogenic categories
IARC (International Agency for Research on Cancer)
None of the ingredients is listed.
NTP (National Toxicology Program)
None of the ingredients is listed.
OSHA-Ca (Occupational Safety & Health Administration)
None of the ingredients is listed.

12 ECOLOGICAL INFORMATION

12.1 Toxicity
Aquatic toxicity: No further relevant information available.

(Contd. on page 7)
13 DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Recommendation:
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

Uncleaned packagings:
Recommendation: Disposal must be made according to official regulations.

14 TRANSPORT INFORMATION

14.1 UN-Number
DOT, ADR, IMDG, IATA
14 UN proper shipping name
DOT UN3264

Corrosive liquid, acidic, inorganic, n.o.s. (Hydrogen bromide, zinc bromide)

ADR 3264 Corrosive liquid, acidic, inorganic, n.o.s. (Hydrogen bromide, zinc bromide)

IMDG, IATA CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (HYDROGEN BROMIDE, zinc bromide)

14.3 Transport hazard class(es)

DOT

Class 8 Corrosive substances
Label 8

ADR, IMDG, IATA

Class 8 Corrosive substances
Label 8

14.4 Packing group
DOT, IMDG, IATA III

Marine pollutant: No

14.6 Special precautions for user Not applicable.

EMS Number: F-A,S-B
Trade name: 1630 Soldering Flux

Segregation groups
14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
Acids
Not applicable.

Transport/Additional information:

ADR
Exempted quantities (EQ)
Code: E1
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 1000 ml

UN "Model Regulation":
UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
(HYDROGEN BROMIDE, ZINC BROMIDE), 8, III

15 REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
China: Inventory of Existing Chemical Substances in China (IECSC)
Korea: Korea Existing Chemicals List (ECL)
Europe: European Inventory of Existing Commercial Chemical Substances (EINECS)
Japan: Inventory of Existing and New Chemical Substances (ENCS)
Philippines: Philippine Inventory of Chemicals and Chemical Substances (PICCS)
USA: TSCA (Toxic Substances Control Act) TSCA Inventory of Chemical Substances

USA The following information relates to product regulation specific to the USA.

SARA (Superfund Amendments and Reauthorization Act)

Section 355 (extremely hazardous substances):
None of the ingredient is listed.

Section 313 (Specific toxic chemical listings):
CAS: 7699-45-8 zinc bromide
CAS: T336-21-6 ammonia

Chemicals known to cause cancer:
None of the ingredients is listed.

Chemicals known to cause reproductive toxicity:
None of the ingredients is listed.

Carcinogenic categories

EPA (Environmental Protection Agency)
CAS: 7699-45-8 zinc bromide
D, I, II

NIOSH-Ca (National Institute for Occupational Safety and Health)
None of the ingredients is listed.

CANADA:
Not classified.
Workplace Hazardous Materials Identification (WHMIS):
This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulation (CPR) and the Safety Data Sheet (SDS) contains all of the information required by the CPR.

Labelling according to Regulation (EC) No 1272/2008
The product is classified and labeled according to the CLP regulation.
Trade name: 1630 Soldering Flux

Hazard pictograms

GHS05  GHS07

Signal word Danger

Hazard statements
H302+H312 Harmful if swallowed or in contact with skin.
H318 Causes serious eye damage.
H401 Toxic to aquatic life.

Precautionary statements
P280 Wear protective gloves / eye protection.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P301+P312 IF SWALLOWED: Call a POISON CENTER/dorctor if you feel unwell.
P402+P404 Store in a dry place. Store in a closed container.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 OTHER INFORMATION

The information contained herein is based on data considered accurate and is offered solely for information, consideration and investigation. Kester extends no warranties, makes no representations and assumes no responsibility as to the accuracy, completeness or suitability of this data for any purchaser’s use. The data on this Material Safety Data Sheet relates only to this product and does not relate to use with any other material or in any process. All chemical products should be used only by, or under the direction of, technically qualified personnel who are aware of the hazards involved and the necessity for reasonable care in handling. Hazard communication regulations require that employees must be trained on how to use a Material Safety Data Sheet as a source for hazard information.

Department issuing Safety Data Sheet (SDS): Product Compliance / EHS Department
Contact: EHS_Kester@kester.com
Date of preparation / last revision 01/11/2017 / 7

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
WHMIS: Workplace Hazardous Materials Information System (Canada)
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Acute Tox. 4: Acute toxicity – Category 4
Skin Corr. 1A: Skin corrosion/irritation – Category 1A
Skin Corr. 1B: Skin corrosion/irritation – Category 1B
Eye Dam. 1: Serious eye damage/eye irritation – Category 1
STOT SE 2: Specific target organ toxicity (single exposure) – Category 3
Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1
Aquatic Acute 2: Hazardous to the aquatic environment - acute aquatic hazard – Category 2

(Contd. of page 8)

(Contd. on page 10)
### Trade name: 1630 Soldering Flux

Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1

*Data compared to the previous version altered.*