1 Identification

Trade name: 2220-VF Soldering Flux
Relevant identified uses of the substance or mixture and uses advised against
No further relevant information available.

Details of the supplier of the safety data sheet
Manufacturer/Supplier:
Kester Inc.
800 West Throldale 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
Wujiang Economic Development Zone
Suzhou, Jiangsu 215200 China
Tel +86 512 82060808

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

Information department: Product Compliance: EHS_Kester@kester.com
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 Hazard(s) identification

Classification of the substance or mixture

Corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.
Eye Dam. 1 H318 Causes serious eye damage.

Label elements
GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).
Hazard pictograms

GHS05

Signal word Danger

Hazard-determining components of labeling:
Glycolic Acid

Hazard statements
H314 Causes severe skin burns and eye damage.

Precautionary statements
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

(Contd. on page 2)
Trade name: 2220-VF Soldering Flux

P304+P340  IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P321 Specific treatment (see on this label).
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Classification system:
NFPA ratings (scale 0 - 4)

Health = 3
Fire = 0
Reactivity = 0

HMIS-ratings (scale 0 - 4)

Health = 3
Fire = 0
Reactivity = 0

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

3 Composition/information on ingredients

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>Trade Secret</td>
<td>Proprietary Polyol</td>
<td>10-25%</td>
</tr>
<tr>
<td></td>
<td>◆ Skin Irrit. 2, H315</td>
<td></td>
</tr>
<tr>
<td>CAS: 79-14-1</td>
<td>Glycolic Acid</td>
<td>3.0-5.0%</td>
</tr>
<tr>
<td></td>
<td>◆ Skin Corr. 1B, H314; Eye Dam. 1, H318</td>
<td></td>
</tr>
<tr>
<td></td>
<td>◆ Acute Tox. 4, H302</td>
<td></td>
</tr>
<tr>
<td>Trade Secret</td>
<td>Organic Salt</td>
<td>3.0-5.0%</td>
</tr>
<tr>
<td></td>
<td>◆ Acute Tox. 4, H302; Skin Irrit. 2, H315; Eye Irrit. 2A, H319</td>
<td></td>
</tr>
<tr>
<td>CAS: 56-81-5</td>
<td>glycerol</td>
<td>3.0-5.0%</td>
</tr>
<tr>
<td>Trade Secret</td>
<td>Amine Salt</td>
<td>3.0-5.0%</td>
</tr>
<tr>
<td></td>
<td>◆ Acute Tox. 4; H302; Skin Irrit. 2; H315; Eye Irrit. 2A; H319; STOT SE 3; H335</td>
<td></td>
</tr>
</tbody>
</table>

4 First-aid measures

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: Seek immediate medical advice.

Information for doctor:
Most important symptoms and effects, both acute and delayed No further relevant information available.
5 Fire-fighting measures

Extinguishing media  
Suitable extinguishing agents:  
CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.  
Special hazards arising from the substance or mixture In case of fire, the following can be released:  
Advice for firefighters  
Protective equipment: No special measures required.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures  
Wear protective equipment. Keep unprotected persons away.  
Ensure adequate ventilation  
Environmental precautions: Do not allow to enter sewers/ surface or ground water.  
Methods and material for containment and cleaning up:  
Dispose contaminated material as waste according to item 13.  
Ensure adequate ventilation.  
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

<table>
<thead>
<tr>
<th>PAC-1:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 79-14-1</td>
<td>Glycolic Acid</td>
<td>25 mg/m3</td>
</tr>
<tr>
<td>Organic Salt</td>
<td>1.4 mg/m3</td>
<td></td>
</tr>
<tr>
<td>CAS: 56-81-5</td>
<td>glycerol</td>
<td>45 mg/m3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-2:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 79-14-1</td>
<td>Glycolic Acid</td>
<td>280 mg/m3</td>
</tr>
<tr>
<td>Organic Salt</td>
<td>16 mg/m3</td>
<td></td>
</tr>
<tr>
<td>CAS: 56-81-5</td>
<td>glycerol</td>
<td>180 mg/m3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-3:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 79-14-1</td>
<td>Glycolic Acid</td>
<td>390 mg/m3</td>
</tr>
<tr>
<td>Organic Salt</td>
<td>94 mg/m3</td>
<td></td>
</tr>
<tr>
<td>CAS: 56-81-5</td>
<td>glycerol</td>
<td>1,100 mg/m3</td>
</tr>
</tbody>
</table>

7 Handling and storage

Handling:  
Precautions for safe handling Prevent formation of aerosols.  
Information about protection against explosions and fires: No special measures required.  

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.

(Contd. on page 4)
8 Exposure controls/personal protection

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

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

CAS: 56-81-5 glycerol

<table>
<thead>
<tr>
<th>PEL</th>
<th>Long-term value: 15* 5** mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mist; *total dust **respirable fraction</td>
</tr>
<tr>
<td>TLV</td>
<td>TLV withdrawn-insufficient data human occup. exp.</td>
</tr>
</tbody>
</table>

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

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
9 Physical and chemical properties

Information on basic physical and chemical properties
General Information
Appearance:
    Form: Liquid
    Color: Amber colored
    Odor: Mild
pH-value at 20 °C (68 °F): <2
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.
Danger of explosion: Product does not present an explosion hazard.
Vapor pressure at 20 °C (68 °F): 23 hPa (17 mm Hg)
Density at 20 °C (68 °F): 1.06 g/cm³ (8.846 lbs/gal)
Solubility in / Miscibility with
    Water: Not miscible or difficult to mix.
Solvent content:
    Organic solvents: 3.0 %
    Water: 73.1 %
    Solids content: 11.6 %

10 Stability and reactivity

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

11 Toxicological information

Information on toxicological effects
Acute toxicity:
LD/LC50 values that are relevant for classification:

<table>
<thead>
<tr>
<th>Proprietary Polyl</th>
<th>Oral</th>
<th>LD50</th>
<th>&gt;5000 mg/kg (rat)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dermal</td>
<td>LD50</td>
<td>&gt;2000 mg/kg (rabbit)</td>
</tr>
</tbody>
</table>
Primary irritant effect:
on the skin: Caustic effect on skin and mucous membranes.
### Trade name: 2220-VF Soldering Flux

**on the eye:** Irritating effect.

**Sensitization:** Sensitization possible through inhalation.

**Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
- **Corrosive**
- Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

**Carcinogenic categories**

<table>
<thead>
<tr>
<th>IARC (International Agency for Research on Cancer)</th>
<th>None of the ingredients is listed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTP (National Toxicology Program)</td>
<td>None of the ingredients is listed.</td>
</tr>
<tr>
<td>OSHA-Ca (Occupational Safety &amp; Health Administration)</td>
<td>None of the ingredients is listed.</td>
</tr>
</tbody>
</table>

### 12 Ecological information

**Toxicity**

Aquatic toxicity: No further relevant information available.

**Additional ecological information:**

**General notes:**
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Must not reach bodies of water or drainage ditch undiluted or unneutralized.

**Results of PBT and vPvB assessment**

PBT: Not applicable.

vPvB: Not applicable.

### 13 Disposal considerations

**Waste treatment methods**

**Recommendation:**
Disposal must be made according to official regulations.
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

<table>
<thead>
<tr>
<th>UN-Number</th>
<th>UN3265</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT, ADR, IMDG, IATA</td>
<td>Corrosive liquid, acidic, organic, n.o.s.(glycolic acid)</td>
</tr>
<tr>
<td>UN proper shipping name</td>
<td>3285 Corrosive liquid, acidic, organic, n.o.s.(glycolic acid)</td>
</tr>
<tr>
<td>DOT</td>
<td>CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (glycolic acid)</td>
</tr>
<tr>
<td>ADR</td>
<td>(Contd. on page 7)</td>
</tr>
<tr>
<td>IMDG, IATA</td>
<td>(Contd. on page 7)</td>
</tr>
</tbody>
</table>
## Transport hazard class(es)

**DOT**

<table>
<thead>
<tr>
<th>Class</th>
<th>8 Corrosive substances</th>
</tr>
</thead>
</table>

**ADR, IMDG, IATA**

<table>
<thead>
<tr>
<th>Class</th>
<th>8 Corrosive substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packing group</td>
<td>II</td>
</tr>
<tr>
<td>DOT, IMDG, IATA</td>
<td>II</td>
</tr>
<tr>
<td>Marine pollutant:</td>
<td>No</td>
</tr>
<tr>
<td>Special precautions for user</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>EMS Number:</td>
<td>F-A,S-B</td>
</tr>
<tr>
<td>Segregation groups</td>
<td>Acids</td>
</tr>
<tr>
<td>Stowage Category</td>
<td>B</td>
</tr>
<tr>
<td>Stowage Code</td>
<td>SW2 Clear of living quarters.</td>
</tr>
</tbody>
</table>

**Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**

<table>
<thead>
<tr>
<th>Transport/Additional information:</th>
<th>Not applicable.</th>
</tr>
</thead>
</table>

**DOT**

| Quantity limitations | On passenger aircraft/rail: 5 L  
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>On cargo aircraft only: 60 L</td>
</tr>
</tbody>
</table>

**ADR**

| Excepted quantities (EQ) | Code: E2  
|--------------------------|-----------------|
|                         | Maximum net quantity per inner packaging: 30 ml  
|                         | Maximum net quantity per outer packaging: 500 ml |

**IMDG**

<table>
<thead>
<tr>
<th>Limited quantities (LQ)</th>
<th>5L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excepted quantities (EQ)</td>
<td>Maximum net quantity per inner packaging: 30 ml</td>
</tr>
<tr>
<td>UN &quot;Model Regulation&quot;:</td>
<td>UN 3265 CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S., (glycolic acid)8, II</td>
</tr>
</tbody>
</table>

## 15 Regulatory information

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

All ingredients are listed on the following Government Inventories:

- **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): None of the ingredients is listed.

California Proposition 65
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) None of the ingredients is listed.

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.

GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).

Hazard pictograms

GHS05

Signal word Danger

Hazard-determining components of labeling:
Glycolic Acid

Hazard statements
H314 Causes severe skin burns and eye damage.

Precautionary statements
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P321 Specific treatment (see on this label).
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

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
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
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)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
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. 1B: Skin corrosion/irritation – Category 1B
Skin Irrit. 2: Skin corrosion/irritation – Category 2
Eye Dam. 1: Serious eye damage/eye irritation – Category 1
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
* Data compared to the previous version altered.