1 Identification

Trade name: 2120 Soldering Flux
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

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
Wujiang Economic Development Zone
Suzhou, Jiangsu 215200 China
Tel +86 512 82060808

Kester GmbH
Ganghofer Strasse 45
D-82216 Gerlintden 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

Flame

Flam. Liq. 2  H225  Highly flammable liquid and vapor.

Corrosion

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

STOT SE 3  H336  May cause drowsiness or dizziness.

Label elements

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

- GHS02
- GHS05
- GHS07

Signal word: Danger

Hazard-determining components of labeling:
- Glycolic Acid
- Isopropyl Alcohol

Hazard statements:
- H225 Highly flammable liquid and vapor.
- H314 Causes severe skin burns and eye damage.
- H336 May cause drowsiness or dizziness.

Precautionary statements:
- P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P261 Avoid breathing dust/fume/gas/mist/vapors/spray
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- P303 + P361 + P333 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.
- P312 Call a POISON CENTER/doctor if you feel unwell.
- P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
- 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: 1
  - Fire: 3
  - Reactivity: 0
- HMIS-ratings (scale 0 - 4)
  - Health: 1
  - Fire: 3
  - Reactivity: 0

Other hazards:
- Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.
Trade name: 2120 Soldering Flux (Contd. of page 2)

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>Description</th>
<th>% Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 67-63-0</td>
<td>Isopropanol</td>
<td>70-85%</td>
</tr>
<tr>
<td></td>
<td>▶ Flam. Liq. 2; H225</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▶ Eye Irrit. 2A; H319; STOT SE 3, H336</td>
<td></td>
</tr>
<tr>
<td>CAS: 79-14-1</td>
<td>Glycolic Acid</td>
<td>5-10%</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>CAS: 111-75-2</td>
<td>2-butoxyethanol</td>
<td>5-10%</td>
</tr>
<tr>
<td></td>
<td>▶ Acute Tox. 4, H302; Acute Tox. 4, H312; Acute Tox. 4, H332; Skin Irrit. 2; H315; Eye Irrit. 1; H227</td>
<td></td>
</tr>
<tr>
<td>Trade Secret</td>
<td>Organic Acids</td>
<td>3-5%</td>
</tr>
<tr>
<td></td>
<td>▶ Skin Irrit. 2; H315; Eye Irrit. 2A; H319; STOT SE 3, H335</td>
<td></td>
</tr>
<tr>
<td>CAS: 124-68-5</td>
<td>2-amino-2-methylpropanol</td>
<td>≥1-%2.5%</td>
</tr>
<tr>
<td></td>
<td>▶ Skin Irrit. 2; H315; Eye Irrit. 2A; H319; Aquatic Acute 3, H402; Aquatic Chronic 3, H412</td>
<td></td>
</tr>
</tbody>
</table>

4 First-aid measures

Description of first aid measures
General information: 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. If symptoms persist, consult a doctor.
After swallowing:
Induce vomiting, if person is conscious. Seek medical help.
Seek immediate medical advice.
Information for doctor:
Most important symptoms and effects, both acute and delayed No further relevant information available.
Indication of any immediate medical attention and special treatment needed 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
Keep away from ignition sources
Environmental precautions: Do not allow to enter sewers/ surface or ground water.
Methods and material for containment and cleaning up:
Ensure adequate ventilation.
Absorb with clay, dry sand, or other inert material. Do not use combustible materials such as sawdust. Place in a chemical waste container.

(Contd. on page 4)
Trade name: 2120 Soldering Flux

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:</th>
<th>Chemical</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-63-0</td>
<td>Isopropanol</td>
<td>400 ppm</td>
</tr>
<tr>
<td>79-14-1</td>
<td>Glycolic Acid</td>
<td>25 mg/m³</td>
</tr>
<tr>
<td>111-76-2</td>
<td>2-butoxyethanol</td>
<td>60 ppm</td>
</tr>
<tr>
<td>124-68-5</td>
<td>2-amino-2-methylpropanol</td>
<td>17 mg/m³</td>
</tr>
</tbody>
</table>

PAC-2:

<table>
<thead>
<tr>
<th>CAS:</th>
<th>Chemical</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-63-0</td>
<td>Isopropanol</td>
<td>2000* ppm</td>
</tr>
<tr>
<td>79-14-1</td>
<td>Glycolic Acid</td>
<td>280 mg/m³</td>
</tr>
<tr>
<td>111-76-2</td>
<td>2-butoxyethanol</td>
<td>120 ppm</td>
</tr>
<tr>
<td>124-68-5</td>
<td>2-amino-2-methylpropanol</td>
<td>190 mg/m³</td>
</tr>
</tbody>
</table>

PAC-3:

<table>
<thead>
<tr>
<th>CAS:</th>
<th>Chemical</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-63-0</td>
<td>Isopropanol</td>
<td>12000** ppm</td>
</tr>
<tr>
<td>79-14-1</td>
<td>Glycolic Acid</td>
<td>390 mg/m³</td>
</tr>
<tr>
<td>111-76-2</td>
<td>2-butoxyethanol</td>
<td>700 ppm</td>
</tr>
<tr>
<td>124-68-5</td>
<td>2-amino-2-methylpropanol</td>
<td>570 mg/m³</td>
</tr>
</tbody>
</table>

7 Handling and storage

Handling:
Precautions for safe handling
Store in cool, dry place in tightly closed receptacles.
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.

Information about protection against explosions and fires:
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.

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: Store away from oxidizing agents.
Further information about storage conditions:
Keep receptacle tightly sealed.
Store in cool, dry conditions in well sealed receptacles.
Specific end use(s) No further relevant information available.

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 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.
Trade name: 2120 Soldering Flux

CAS: 67-63-0 Isopropanol

<table>
<thead>
<tr>
<th></th>
<th>Long-term value: 980 mg/m³, 400 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEL</td>
<td>Long-term value: 980 mg/m³, 400 ppm</td>
</tr>
<tr>
<td>REL</td>
<td>Short-term value: 1225 mg/m³, 500 ppm</td>
</tr>
<tr>
<td>TLV</td>
<td>Short-term value: 984 mg/m³, 400 ppm</td>
</tr>
<tr>
<td></td>
<td>Long-term value: 492 mg/m³, 200 ppm</td>
</tr>
<tr>
<td></td>
<td>BEI</td>
</tr>
</tbody>
</table>

CAS: 111-76-2 2-butoxyethanol

|        | Long-term value: 240 mg/m³, 50 ppm |
|        | Skin                              |
| PEL    | Long-term value: 24 mg/m³, 5 ppm   |
| REL    | Skin                              |
| TLV    | Long-term value: 97 mg/m³, 20 ppm  |
|        | BEI                               |

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: Colorless
  Odor: Mild
pH-value: Not determined.
Change in condition
  Melting point/Melting range: Undetermined.
  Boiling point/Boiling range: 78°C (172.4 °F)
Flash point: < 23°C (<73.4 °F)
Ignition temperature: 240°C (464 °F)
Auto igniting: Product is not selfigniting.
Danger of explosion: Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
Explosion limits:
  Lower: 2 Vol %
  Upper: 12 Vol %
Vapor pressure at 20°C (68 °F): 43hPa (32.3 mm Hg)
Density at 20°C (68 °F): 0.86g/cm³ (7.18 lbs/gal)
Solubility in / Miscibility with
  Water: Fully miscible.
Solvent content:
  Organic solvents: 79.5%
  Water: 6.5%
  Solids content: 9.5%

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:
  When heated to soldering temperatures, solvents will be evaporated and organic material may release aliphatic aldehydes and acids.
11 Toxicological information

Information on toxicological effects

Acute toxicity:

<table>
<thead>
<tr>
<th>CAS: 67-63-0 Isopropanol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral LD50 5,045 mg/kg (rat)</td>
</tr>
<tr>
<td>Dermal LD50 12,800 mg/kg (rabbit)</td>
</tr>
<tr>
<td>Inhalative LC50/4 h 30 mg/l (rat)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAS: 79-14-1 Glycolic Acid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral LD50 1,950 mg/kg (rat)</td>
</tr>
</tbody>
</table>

Primary irritant effect:
- on the skin: Irritant to skin and mucous membranes.
- on the eye: Irritating effect.

through inhalation:
Vapors during use may irritate mucous membranes and respiratory system. High concentrations can cause headache, dizziness, and nausea.

through ingestion:
May cause gastrointestinal irritation.

Sensitization: Sensitization possible through inhalation.

Additional toxicological information:
The product shows the following dangers according to internally approved calculation methods for preparations:
- Irritant

Carcinogenic categories

<table>
<thead>
<tr>
<th>IARC (International Agency for Research on Cancer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 67-63-0 Isopropanol</td>
</tr>
<tr>
<td>CAS: 111-76-2 2-butoxyethanol</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NTP (National Toxicology Program)</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients is listed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OSHA-Ca (Occupational Safety &amp; Health Administration)</th>
</tr>
</thead>
<tbody>
<tr>
<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.

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

13 Disposal considerations

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

<table>
<thead>
<tr>
<th>UN-Number</th>
<th>UN1120</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT, ADR, IMDG, IATA</td>
<td></td>
</tr>
<tr>
<td>UN proper shipping name</td>
<td></td>
</tr>
<tr>
<td>DOT</td>
<td>Butanols</td>
</tr>
<tr>
<td>ADR</td>
<td>1120 Butanols</td>
</tr>
<tr>
<td>IMDG, IATA</td>
<td>BUTANOLS</td>
</tr>
<tr>
<td>Transport hazard class(es)</td>
<td></td>
</tr>
</tbody>
</table>

#### DOT

<table>
<thead>
<tr>
<th>Class</th>
<th>3 Flammable liquids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label</td>
<td>3</td>
</tr>
</tbody>
</table>

#### ADR, IMDG, IATA

<table>
<thead>
<tr>
<th>Class</th>
<th>3 Flammable liquids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label</td>
<td>3</td>
</tr>
<tr>
<td>Packing group</td>
<td>II</td>
</tr>
<tr>
<td>DOT, IMDG, IATA</td>
<td></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>Danger code (Kemier):</td>
<td>33</td>
</tr>
<tr>
<td>EMS Number:</td>
<td>F-E,S-D</td>
</tr>
<tr>
<td>Stowage Category</td>
<td>B</td>
</tr>
<tr>
<td>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

#### Transport/Additional information:

| DOT
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity limitations</td>
</tr>
</tbody>
</table>

#### ADR

<table>
<thead>
<tr>
<th>Excepted quantities (EQ)</th>
<th>Code: E2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum net quantity per inner packaging:</td>
<td>30 ml</td>
</tr>
<tr>
<td>Maximum net quantity per outer packaging:</td>
<td>500 ml</td>
</tr>
</tbody>
</table>

#### IMDG

<table>
<thead>
<tr>
<th>Limited quantities (LQ)</th>
<th>1L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exected quantities (EQ)</td>
<td>Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml</td>
</tr>
</tbody>
</table>

(Contd. on page 9)
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):
CAS: 67-63-0 Isopropanol
CAS: 111-76-2 2-butoxyethanol

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)
CAS: 111-76-2 2-butoxyethanol NL

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

CANADA:
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

GHS02  GHS05  GHS07

Signal word Danger

Hazard-determining components of labeling:
Glycolic Acid
Isopropanol
Trade name: 2120 Soldering Flux

(Contd. of page 9)

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
Flam. Liq. 1: Flammable liquids – Category 1
Flam. Liq. 2: Flammable liquids – Category 2
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
Aquatic Acute 3: Hazardous to the aquatic environment - acute aquatic hazard – Category 3
Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3

* Data compared to the previous version altered.