1: PRODUCT AND COMPANY IDENTIFICATION

Trade name: 950-E Soldering Flux

Article number: C7-00-950-E

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
Tel (630) 616-4000

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

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

GHS02 Flame

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

GHS08 Health hazard

Resp. Sens. 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

GHS07

Acute Tox. 4 H302 Harmful if swallowed.
Acute Tox. 4 H312 Harmful in contact with skin.
STOT SE 3 H335-H336 May cause respiratory irritation. May cause drowsiness or dizziness.

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

Hazard pictograms

GHS02  GHS07  GHS08

(Contd. on page 2)
Signal word Danger

Hazard-determining components of labeling:
ethanol
isopropanol
methanol
Aliphatic ketone

Hazard statements
Highly flammable liquid and vapor.
Harmful if swallowed or in contact with skin.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause respiratory irritation. May cause drowsiness or dizziness.

Precautionary statements
Keep away from heat/sparks/open flames/hot surfaces. No smoking.
Use explosion-proof electrical/ventilating/lighting/equipment.
[In case of inadequate ventilation] wear respiratory protection.
Avoid breathing dust/fume/gas/mist/vapors/spray
Wear protective gloves / eye protection / face protection.
Wear protective gloves / protective clothing.
Ground/bond container and receiving equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Wash thoroughly after handling.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Specific treatment (see on this label).
In case of fire: Use for extinction: CO2, powder or water spray.
If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
Store locked up.
Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard description:
WHMIS Symbols

Classification system:
NFPA ratings (scale 0 - 4)

Health = 1
Fire = 3
Reactivity = 0

HMIS-ratings (scale 0 - 4)

HEALTH 1
Health = 1

FIRE 3
Fire = 3

REACTIVITY 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.
Solvent mixture

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>Description</th>
<th>% Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 64-17-5</td>
<td>Ethanol</td>
<td>55-70%</td>
</tr>
<tr>
<td>EINECS: 200-578-6</td>
<td>Flam. Liq. 2, H225</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Carc. 1A, H350</td>
<td></td>
</tr>
<tr>
<td>CAS: 67-63-0</td>
<td>Isopropanol</td>
<td>10-25%</td>
</tr>
<tr>
<td>EINECS: 200-661-7</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: 67-56-1</td>
<td>Aliphatic ketone</td>
<td>5-10%</td>
</tr>
<tr>
<td>EINECS: 200-659-6</td>
<td>Flam. Liq. 3, H226</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STOT SE 3, H336</td>
<td></td>
</tr>
<tr>
<td>CAS: 108-10-1</td>
<td>Proprietary organic acids</td>
<td>1.0-3.0%</td>
</tr>
<tr>
<td>EINECS: 203-550-1</td>
<td>Eye Irrit. 2A, H319</td>
<td></td>
</tr>
<tr>
<td>CAS: 4027-16-8</td>
<td>4-methylpentan-2-one</td>
<td>0.1-1%</td>
</tr>
<tr>
<td>EINECS: 215-913-7</td>
<td>Flam. Liq. 2, H225</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Acute Tox. 3, H331; STOT SE 3, H335</td>
<td></td>
</tr>
<tr>
<td>CAS: 4027-16-8</td>
<td>Azole Isomers</td>
<td>0.1-1%</td>
</tr>
<tr>
<td>EINECS: 215-913-7</td>
<td>Acute Tox. 4, H302; Eye Irrit. 2A, H319; Skin Sens. 1, H317; STOT SE 3, H335</td>
<td></td>
</tr>
</tbody>
</table>

4: FIRST AID MEASURES

4.1 Description of first aid measures

General information:
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
Follow general first aid procedures.

After inhalation:
Seek medical treatment.
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
In case of unconsciousness place patient stably in side position for transportation.
Supply fresh air; consult doctor in case of complaints.

After skin contact:
If skin irritation continues, consult a doctor.
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: 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, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

5.2 Special hazards arising from the substance or mixture In case of fire, the following can be released:

5.3 Advice for firefighters
Protective equipment: Wear self-contained respiratory protective device.

6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
Keep away from ignition sources

6.2 Environmental precautions: Do not allow to enter sewers/ surface or ground water.

6.3 Methods and material for containment and cleaning up:
Dispose contaminated material as waste according to item 13.
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.

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.

7: HANDLING AND STORAGE

7.1 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.

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: Store away from oxidizing agents.
Further information about storage conditions:
Keep receptacle tightly sealed.
Store in cool, dry conditions in well sealed receptacles.

7.3 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.

8.1 Control parameters

Components with limit values that require monitoring at the workplace:

- 64-17-5 ethanol

PEL Long-term value: 1900 mg/m³, 1000 ppm
Trade name: 950-E Soldering Flux

<table>
<thead>
<tr>
<th>REL</th>
<th>Long-term value: 1900 mg/m³, 1000 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>TLV</td>
<td>Short-term value: 1880 mg/m³, 1000 ppm</td>
</tr>
</tbody>
</table>

**67-63-0 Isopropanol**

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

**Aliphatic ketone**

<table>
<thead>
<tr>
<th>PEL</th>
<th>Long-term value: 710 mg/m³, 150 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>REL</td>
<td>Short-term value: 950 mg/m³, 200 ppm</td>
</tr>
<tr>
<td></td>
<td>Long-term value: 710 mg/m³, 150 ppm</td>
</tr>
<tr>
<td>TLV</td>
<td>Short-term value: (950) NIC-712 mg/m³, (200) NIC-150 ppm</td>
</tr>
<tr>
<td></td>
<td>Long-term value: (713) NIC-238 mg/m³, (150) NIC-50 ppm</td>
</tr>
</tbody>
</table>

**67-56-1 methanol**

<table>
<thead>
<tr>
<th>PEL</th>
<th>Long-term value: 260 mg/m³, 200 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>REL</td>
<td>Short-term value: 325 mg/m³, 250 ppm</td>
</tr>
<tr>
<td></td>
<td>Long-term value: 260 mg/m³, 200 ppm</td>
</tr>
<tr>
<td>Skin</td>
<td></td>
</tr>
<tr>
<td>TLV</td>
<td>Short-term value: 328 mg/m³, 250 ppm</td>
</tr>
<tr>
<td></td>
<td>Long-term value: 262 mg/m³, 200 ppm</td>
</tr>
<tr>
<td>Skin; BEI</td>
<td></td>
</tr>
</tbody>
</table>

**Proprietary organic acids**

| TLV  | Long-term value: 5 mg/m³ |

**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.
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: Not determined.

Change in condition
Melting point/Melting range: Undetermined.
Boiling point/Boiling range: 78 °C (172 °F)
Flash point: 18 °C (64 °F)
Ignition temperature: 370 °C (698 °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: 2.0 Vol %
Upper: 15.0 Vol %

Vapor pressure at 20 °C (68 °F): 59 hPa (44 mm Hg)
Density at 20 °C (68 °F): 0.81 g/cm³ (6.759 lbs/gal)
Solubility in / Miscibility with
Water: Fully miscible.

Solvent content:
Organic solvents: 93.0 %
Water: 4.9 %
Solids content: 9.3 %

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.
11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity:
Harmful if swallowed or in contact with skin.

LD/LC50 values that are relevant for classification:

<table>
<thead>
<tr>
<th></th>
<th>LD50</th>
<th>LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>5628 mg/kg (rat)</td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td>15800 mg/kg (rabbit)</td>
<td></td>
</tr>
</tbody>
</table>

Primary irritant effect:
- on the skin: Based on available data, the classification criteria are not met.
- on the eye: Based on available data, the classification criteria are not met.
- 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:
May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Additional toxicological information:

Carcinogenic categories

<table>
<thead>
<tr>
<th>IARC (International Agency for Research on Cancer)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>64-17-5 ethanol</td>
<td>1</td>
</tr>
<tr>
<td>67-63-0 Isopropanol</td>
<td>3</td>
</tr>
<tr>
<td>108-10-1 4-methylpentan-2-one</td>
<td>2B</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>OSHA-Ca (Occupational Safety &amp; Health Administration)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients is listed.</td>
<td></td>
</tr>
</tbody>
</table>

12: ECOLOGICAL INFORMATION

12.1 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.

12.5 Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

13: DISPOSAL CONSIDERATIONS

13.1 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.

(Contd. on page 8)
SAFETY DATA SHEET (SDS)
According to 1907/2006/EC, Article 31

Printing Date 12/09/2015
Version number 7
Reviewed on 12/09/2015

Trade name: 950-E Soldering Flux

Uncleaned packagings:
Recommendation: Disposal must be made according to official regulations.
Recommended cleansing agent: Water, if necessary with cleansing agents.

14: TRANSPORT INFORMATION

14.1 UN-Number
DOT, ADR, IMDG, IATA
14.2 UN proper shipping name
DOT
ADR
IMDG
IATA
14.3 Transport hazard class(es)

DOT

Class: 3 Flammable liquids
Label: 3, 6.1

ADR

Class: 3 Flammable liquids
Label: 3+6.1

IMDG

Class: 3 Flammable liquids
Label: 3/6.1

IATA

Class: 3 Flammable liquids
Label: 3 (6.1)

14.4 Packing group
DOT, IMDG, IATA
Marine pollutant:

14.6 Special precautions for user
Danger code (Kepler):
EMS Number:

(Contd. of page 7)

(Contd. on page 9)
### 15: REGULATORY INFORMATION

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

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

**SARA (Superfund Amendments and Reauthorization Act)**

<table>
<thead>
<tr>
<th>Section 355 (extremely hazardous substances):</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredient is listed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section 313 (Specific toxic chemical listings):</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-63-0</td>
</tr>
<tr>
<td>67-56-1</td>
</tr>
<tr>
<td>108-10-1</td>
</tr>
</tbody>
</table>

**TSCA (Toxic Substances Control Act):** Kester certifies that all components listed below for the subject finished product are on the TSCA Inventory of Chemical Substances and are not subject to any chemical specific regulation under TSCA Section 12(b) export notification requirements delineated at 40 CFR part 707, subpart D.

All ingredients are listed or exempt from listing.

**California Proposition 65**

**Chemicals known to cause cancer:**

- 4-methylpentan-2-one

**Chemicals known to cause reproductive toxicity:**

None of the ingredients is listed.

**Carcinogenic categories**

**EPA (Environmental Protection Agency)**

| 108-10-1 | 4-methylpentan-2-one |

**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.

Hazard pictograms

GHS02  GHS07  GHS08

Signal word Danger

Hazard-determining components of labeling:
ethanol
isopropanol
methanol
Aliphatic ketone

Hazard statements
Highly flammable liquid and vapor.
Harmful if swallowed or in contact with skin.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause respiratory irritation. May cause drowsiness or dizziness.

Precautionary statements
Keep away from heat/sparks/open flames/hot surfaces. No smoking.
Use explosion-proof electrical/ventilating/lighting/equipment.
[In case of inadequate ventilation] wear respiratory protection.
Avoid breathing dust/fume/gas/mist/vapors/spray
Wear protective gloves / eye protection / face protection.
Wear protective gloves / protective clothing.
Ground/bond container and receiving equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Wash thoroughly after handling.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Specific treatment (see on this label).
In case of fire: Use for extinction: CO2, powder or water spray.
If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
Store locked up.
Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
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 12/09/2015 / 6
Abbreviations and acronyms:
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IATA: DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
ICAO: International Civil Aviation Organisation
ICAO-TI: Technical Instructions by the "International Civil Aviation Organisation" (ICAO)
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)
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. 2: Flammable liquids, Hazard Category 2
Flam. Liq. 3: Flammable liquids, Hazard Category 3
Acute Tox. 4: Acute toxicity, Hazard Category 4
Acute Tox. 2: Acute toxicity, Hazard Category 2
Acute Tox. 3: Acute toxicity, Hazard Category 3
Eye Irrit. 2A: Serious eye damage/eye irritation, Hazard Category 2A
Resp. Sens. 1: Sensitisation - Respiratr., Hazard Category 1
Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
Carc. 1A: Carcinogenicity, Hazard Category 1A
Carc. 2: Carcinogenicity, Hazard Category 2
STOT SE 1: Specific target organ toxicity - Single exposure, Hazard Category 1
STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3
* Data compared to the previous version altered.