1 Identification

Trade name: 110 Flux Thinner
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
Thinner, Diluent

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 Gernlinden 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.

Skull and crossbones

Acute Tox. 3  H331 Toxic if inhaled.

Health hazard

STOT SE 2  H371 May cause damage to organs.
Trade name: 110 Flux Thinner

(Contd. of page 1)

Eye Irrit. 2A  H319  Causes serious eye irritation.
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  GHS06  GHS07  GHS08

Signal word  Danger

Hazard-determining components of labeling:
methanol
Isopropanol
Aliphatic ketone

Hazard statements
H225 Highly flammable liquid and vapor.
H331 Toxic if inhaled.
H319 Causes serious eye irritation.
H371 May cause damage to organs.
H336 May cause drowsiness or dizziness.

Precautionary statements
P210  Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P243  Take precautionary measures against static discharge.
P260  Do not breathe dust/fume/gas/mist/vapors/spray.
P270  Do not eat, drink or smoke when using this product.
P280  Wear protective gloves/protective clothing/eye protection/face protection.
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.
P308+P311  IF exposed or concerned: Call a poison center/doctor.
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 = 2
Fire = 3
Reactivity = 0

HMIS-ratings (scale 0 - 4)

Health = *2
Fire = 3
Reactivity = 0

Other hazards
Results of PBT and vPvB assessment

PBT: Not applicable.

(Contd. on page 3)
3 Composition/information on ingredients

<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>Flam. Liq. 2, H225</td>
</tr>
<tr>
<td>CAS: 67-63-0</td>
<td>Isopropanol</td>
<td>Flam. Liq. 2, H225</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Eye Irrit. 2A, H319: STOT SE 3, H336</td>
</tr>
<tr>
<td>Trade Secret</td>
<td>Aliphatic ketone</td>
<td>Flam. Liq. 3, H226</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STOT SE 3, H336</td>
</tr>
<tr>
<td>CAS: 67-56-1</td>
<td>methanol</td>
<td>Flam. Liq. 2, H225</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acute Tox. 2, H330</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STOT SE 1, H370</td>
</tr>
</tbody>
</table>

4 First-aid measures

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:
In case of unconsciousness place patient stably in side position for transportation.
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
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: 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 fire with alcohol resistant foam.
For safety reasons unsuitable extinguishing agents: Water with full jet

Special hazards arising from the substance or mixture
Nitrogen oxides (NOx)
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

(Contd. on page 4)
**Trade name:** 110 Flux Thinner

(Contd. of page 3)

**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.
Do not flush with water or aqueous cleansing agents
Absorb with clay, dry sand, or other inert material. Do not use combustible materials such as sawdust. Place in a chemical waste container.

**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: 65-1-7</td>
<td>ethanol</td>
<td>1,800 ppm</td>
</tr>
<tr>
<td>CAS: 67-65-0</td>
<td>isopropyl alcohol</td>
<td>400 ppm</td>
</tr>
<tr>
<td></td>
<td>Aliphatic ketone</td>
<td>5 ppm</td>
</tr>
<tr>
<td>CAS: 67-6-1</td>
<td>methanol</td>
<td>530 ppm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-2:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 65-1-7</td>
<td>ethanol</td>
<td>3,300 ppm</td>
</tr>
<tr>
<td>CAS: 67-65-0</td>
<td>isopropyl alcohol</td>
<td>2,000 ppm</td>
</tr>
<tr>
<td></td>
<td>Aliphatic ketone</td>
<td>200 ppm</td>
</tr>
<tr>
<td>CAS: 67-6-1</td>
<td>methanol</td>
<td>2,100 ppm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-3:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 65-1-7</td>
<td>ethanol</td>
<td>15,000 ppm</td>
</tr>
<tr>
<td>CAS: 67-65-0</td>
<td>isopropyl alcohol</td>
<td>12,000 ppm</td>
</tr>
<tr>
<td></td>
<td>Aliphatic ketone</td>
<td>3,000 ppm</td>
</tr>
<tr>
<td>CAS: 67-6-1</td>
<td>methanol</td>
<td>7,200 ppm</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.

(Contd. on page 5)
8 Exposure controls/personal protection

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

Control parameters

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS: 64-17-5 ethanol</th>
<th>CAS: 67-63-0 isopropanol</th>
<th>Aliphatic ketone</th>
<th>CAS: 67-56-1 methanol</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEL</td>
<td>Long-term value: 1900 mg/m³, 1000 ppm</td>
<td>Long-term value: 980 mg/m³, 400 ppm</td>
<td>Long-term value: 710 mg/m³, 150 ppm</td>
<td>Long-term value: 260 mg/m³, 200 ppm</td>
</tr>
<tr>
<td>REL</td>
<td>Long-term value: 1900 mg/m³, 1000 ppm</td>
<td>Short-term value: 1225 mg/m³, 500 ppm</td>
<td>Long-term value: 950 mg/m³, 200 ppm</td>
<td>Short-term value: 325 mg/m³, 250 ppm</td>
</tr>
<tr>
<td>TLV</td>
<td>Short-term value: 1880 mg/m³, 1000 ppm</td>
<td>Short-term value: 984 mg/m³, 400 ppm</td>
<td>Short-term value: 712 mg/m³, 150 ppm</td>
<td>Short-term value: 260 mg/m³, 200 ppm</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.
9 Physical and chemical properties

Information on basic physical and chemical properties

General Information
Appearance:
  Form: Liquid
  Color: Colorless
  Odor: Alcohol-like
pH-value: Not determined.

Change in condition
  Melting point/Melting range: Undetermined.
  Boiling point/Boiling range: 82 °C (179.6 °F)

Flash point: 16 °C (60.8 °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 Vol %
  Upper: 15 Vol %

Vapor pressure at 20 °C (68 °F): 59 hPa (44.3 mm Hg)
Density at 20 °C (68 °F): 0.81 g/cm³ (6.76 lbs/gal)

Solubility in / Miscibility with
  Water: Not miscible or difficult to mix.
Solvent content:
  Organic solvents: 96.8 %
  Water: 3.2 %
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>CAS</th>
<th>64-17-5 ethanol</th>
<th>67-63-0 Isopropanol</th>
<th>67-56-1 methanol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral LD50</td>
<td>7,060 mg/kg (rat)</td>
<td>5,045 mg/kg (rat)</td>
<td>5,628 mg/kg (rat)</td>
</tr>
<tr>
<td>Inhalative LC50/4 h</td>
<td>20,000 mg/l (rat)</td>
<td>12,800 mg/kg (rabbit)</td>
<td>0.5 mg/l (ATE)</td>
</tr>
</tbody>
</table>

Primary irritant effect:

on the skin: No irritant effect.

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:

Harmful

Irritant

Carcinogenic categories

IARC (International Agency for Research on Cancer)

<table>
<thead>
<tr>
<th>CAS</th>
<th>64-17-5 ethanol</th>
<th>67-63-0 Isopropanol</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

NTP (National Toxicology Program)

None of the ingredients is listed.
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:
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

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

DOT
Class
Label
ADR
Class

UN1992
Flammable liquids, toxic, n.o.s. (Ethanol, Methanol)
1992 Flammable liquids, toxic, n.o.s. (Ethanol, Methanol)
FLAMMABLE LIQUID, TOXIC, N.O.S. (ETHANOL (ETHYL ALCOHOL), METHANOL)
FLAMMABLE LIQUID, TOXIC, N.O.S. (ETHANOL, METHANOL)

3 Flammable liquids
3
3.6.1
3 Flammable liquids
Safety Data Sheet
acc. to OSHA HCS 29CFR1910.1200

Printing Date 10/18/2017
Version number 8
Reviewed on 10/18/2017

Trade name: 110 Flux Thinner

Label 3+6.1
IMDG
- Flammable liquids 3/6.1

IATA
- Flammable liquids 3 (6.1)

Packing group II
DOT, IMDG, IATA
Marine pollutant: No
Special precautions for user Not applicable.
Danger code (Kemler): 336
EMS Number: F-E-S-D
Stowage Category B
Stowage Code SW2 Clear of living quarters.
Transport in bulk according to Annex II of MARPOL73/78
and the IBC Code
Not applicable.

Transport/Additional information:
DOT
Quantity limitations
On passenger aircraft/rail: 1 L
On cargo aircraft only: 60 L

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

IMDG
Limited quantities (LQ)
1L
Excepted quantities (EQ)
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 500 ml

UN "Model Regulation":
UN 1992 FLAMMABLE LIQUIDS, TOXIC, N.O.S. (ETHANOL, METHANOL), 3 (6.1), II

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
Trade name: 110 Flux Thinner

**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>
<th>None of the ingredient is listed.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Section 313 (Specific toxic chemical listings):</strong></td>
<td></td>
</tr>
<tr>
<td>CAS: 67-63-0 Isopropanol</td>
<td></td>
</tr>
<tr>
<td>CAS: 67-56-1 Methanol</td>
<td></td>
</tr>
</tbody>
</table>

**California Proposition 65**

<table>
<thead>
<tr>
<th>Chemicals known to cause cancer:</th>
<th>None of the ingredients is listed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemicals known to cause reproductive toxicity:</td>
<td>None of the ingredients is listed.</td>
</tr>
</tbody>
</table>

**Carcinogenic categories**

**EPA (Environmental Protection Agency)**

<table>
<thead>
<tr>
<th>None of the ingredients is listed.</th>
</tr>
</thead>
</table>

**NIOSH-Ca (National Institute for Occupational Safety and Health)**

<table>
<thead>
<tr>
<th>None of the ingredients is listed.</th>
</tr>
</thead>
</table>

**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**

![Hazard pictograms](image)

**Signal word** Danger

**Hazard-determining components of labeling:**

- Methanol
- Isopropanol
- Aliphatic ketone

**Hazard statements**

- H225 Highly flammable liquid and vapor.
- H331 Toxic if inhaled.
- H319 Causes serious eye irritation.
- H371 May cause damage to organs.
- H336 May cause drowsiness or dizziness.

**Precautionary statements**

- P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- P243 Take precautionary measures against static discharge.
- P260 Do not breathe dust/fume/gas/mist/vapors/spray.
- P270 Do not eat, drink or smoke when using this product.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
Trade name: 110 Flux Thinner

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>P304+P340</td>
<td>IF INHALED: Remove person to fresh air and keep comfortable for breathing.</td>
</tr>
<tr>
<td>P305+P351+P338</td>
<td>IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</td>
</tr>
<tr>
<td>P308+P311</td>
<td>IF exposed or concerned: Call a poison center/doctor.</td>
</tr>
<tr>
<td>P403+P233</td>
<td>Store in a well-ventilated place. Keep container tightly closed.</td>
</tr>
<tr>
<td>P405</td>
<td>Store locked up.</td>
</tr>
<tr>
<td>P501</td>
<td>Dispose of contents/container in accordance with local/regional/national/international regulations.</td>
</tr>
</tbody>
</table>

**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:**
- RID: Reglement 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  
- 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. 2: Flammable liquids – Category 2  
- Flam. Liq. 3: Flammable liquids – Category 3
- Acute Tox. 2: Acute toxicity – Category 2  
- Acute Tox. 3: Acute toxicity – Category 3
- Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
- STOT SE 1: Specific target organ toxicity (single exposure) – Category 1
- STOT SE 2: Specific target organ toxicity (single exposure) – Category 2
- STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

*Data compared to the previous version altered.