

## 1: PRODUCT AND COMPANY IDENTIFICATION

**Trade name:** 951 Flux Pen

**Article number:** C7-00-951

**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

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**Signal word** Danger**Hazard-determining components of labeling:**

ethanol  
Isopropanol  
Aliphatic ketone  
methanol

**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.  
Wear protective gloves / eye protection.  
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.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
In case of fire: Use for extinction: CO<sub>2</sub>, powder or water spray.  
Collect spillage. Absorb liquid components with liquid-binding material.  
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)****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.

CAS No.	Description	% Range
CAS: 64-17-5 EINECS: 200-578-6	ethanol	 Flam. Liq. 2, H225  Carc. 1A, H350 55-70%
CAS: 67-63-0 EINECS: 200-661-7	Isopropanol	 Flam. Liq. 2, H225  Eye Irrit. 2A, H319; STOT SE 3, H336 10-25%

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	Aliphatic ketone	 Flam. Liq. 3, H226  STOT SE 3, H336	
CAS: 67-56-1 EINECS: 200-659-6	methanol	 Flam. Liq. 2, H225  Acute Tox. 2, H330  STOT SE 1, H370	5-10%
	Proprietary organic acids	 Eye Irrit. 2A, H319	
CAS: 108-10-1 EINECS: 203-550-1	4-methylpentan-2-one	 Flam. Liq. 2, H225  Acute Tox. 3, H331  Carc. 2, H351  Eye Irrit. 2A, H319; STOT SE 3, H335	≤1.0%
CAS: 7732-18-5 EINECS: 231-791-2	Water		3.0-5.0%

**Additional information:**

This solder product does not contain any Substance of Very High Concern (SVHC) on the European Chemicals Agency (ECHA) candidate list.

This product will be heated to a temperature of 217C (Celsius) during soldering. All volatile substances will evaporate and not remain on the finished circuit board.

**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:**

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.

**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:**

CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

**For safety reasons unsuitable extinguishing agents:** Water with full jet

**5.2 Special hazards arising from the substance or mixture**

Nitrogen oxides (NO<sub>x</sub>)

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

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**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.

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.

**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/m<sup>3</sup>, 1000 ppm

REL Long-term value: 1900 mg/m<sup>3</sup>, 1000 ppm

TLV Short-term value: 1880 mg/m<sup>3</sup>, 1000 ppm

##### 67-63-0 Isopropanol

PEL Long-term value: 980 mg/m<sup>3</sup>, 400 ppm

REL Short-term value: 1225 mg/m<sup>3</sup>, 500 ppm  
Long-term value: 980 mg/m<sup>3</sup>, 400 ppm

TLV Short-term value: 984 mg/m<sup>3</sup>, 400 ppm  
Long-term value: 492 mg/m<sup>3</sup>, 200 ppm  
BEI

##### Aliphatic ketone

PEL Long-term value: 710 mg/m<sup>3</sup>, 150 ppm

REL Short-term value: 950 mg/m<sup>3</sup>, 200 ppm  
Long-term value: 710 mg/m<sup>3</sup>, 150 ppm

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TLV	Short-term value: (950) NIC-712 mg/m <sup>3</sup> , (200) NIC-150 ppm Long-term value: (713) NIC-238 mg/m <sup>3</sup> , (150) NIC-50 ppm
<b>67-56-1 methanol</b>	
PEL	Long-term value: 260 mg/m <sup>3</sup> , 200 ppm
REL	Short-term value: 325 mg/m <sup>3</sup> , 250 ppm Long-term value: 260 mg/m <sup>3</sup> , 200 ppm Skin
TLV	Short-term value: 328 mg/m <sup>3</sup> , 250 ppm Long-term value: 262 mg/m <sup>3</sup> , 200 ppm Skin; BEI
<b>Proprietary organic acids</b>	
TLV	Long-term value: 5 mg/m <sup>3</sup>

**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:**

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



Face Shield with Safety Glasses when refilling.

**9: PHYSICAL AND CHEMICAL PROPERTIES**

**9.1 Information on basic physical and chemical properties**

**General Information**

**Appearance:**

**Form:** Liquid  
**Color:** Colorless

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<b>Odor:</b>	Alcohol-like
<b>pH-value:</b>	Not determined.
<b>Change in condition</b>	
<b>Melting point/Melting range:</b>	Undetermined.
<b>Boiling point/Boiling range:</b>	78 °C (172 °F)
<b>Flash point:</b>	18 °C (64 °F)
<b>Ignition temperature:</b>	370 °C (698 °F)
<b>Auto igniting:</b>	Product is not selfigniting.
<b>Danger of explosion:</b>	Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
<b>Explosion limits:</b>	
<b>Lower:</b>	2.0 Vol %
<b>Upper:</b>	15.0 Vol %
<b>Vapor pressure at 20 °C (68 °F):</b>	59 hPa (44 mm Hg)
<b>Density at 20 °C (68 °F):</b>	0.81 g/cm <sup>3</sup> (6.759 lbs/gal)
<b>Solubility in / Miscibility with Water:</b>	Not miscible or difficult to mix.
<b>Solvent content:</b>	
<b>Organic solvents:</b>	93.1 %
<b>Water:</b>	4.9 %
<b>Solids content:</b>	2.0 %

## 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:

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

## 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:

##### 67-56-1 methanol

Oral	LD50	5628 mg/kg (rat)
Dermal	LD50	15800 mg/kg (rabbit)

#### 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.

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**SAFETY DATA SHEET (SDS)**  
According to 1907/2006/EC, Article 31

Version number 7

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**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**

**IARC (International Agency for Research on Cancer)**

64-17-5	ethanol	1
67-63-0	Isopropanol	3
108-10-1	4-methylpentan-2-one	2B

**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.

**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.

**Uncleaned packagings:**

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

**14: TRANSPORT INFORMATION**

**14.1 UN-Number**

DOT, ADR, IMDG, IATA

UN1987

**14.2 UN proper shipping name**

DOT, IATA

ADR

IMDG

Alcohols, n.o.s. (Ethanol, Isopropanol)

1987 Alcohols, n.o.s. (Ethanol, Isopropanol)

ALCOHOLS, N.O.S. (ETHANOL (ETHYL ALCOHOL), ISOPROPANOL (ISOPROPYL ALCOHOL))

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**14.3 Transport hazard class(es)**

DOT



**Class** 3 Flammable liquids  
Not regulated.  
**Label** 3

ADR, IMDG, IATA



**Class** 3 Flammable liquids  
**Label** 3

**14.4 Packing group**

DOT, IMDG, IATA

Marine pollutant: No

**14.6 Special precautions for user** Not applicable.**Stowage Category** B**14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.**Transport/Additional information:**

DOT

**Remarks:** 951 Flux Pens Excepted Quantity Packaging: Maximum of 80 flux pens or 4 cartons on 20 each can be shipped per box.

ADR

**Excepted quantities (EQ)**

Code: E2

Maximum net quantity per inner packaging: 30 ml

Maximum net quantity per outer packaging: 500 ml

**Remarks:**

951 Flux Pens Excepted Quantity Packaging: Maximum of 80 flux pens or 4 cartons on 20 each can be shipped per box.

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 1987 ALCOHOLS, N.O.S. (ETHANOL, ISOPROPANOL), 3, II

**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

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US



Trade name: 951 Flux Pen

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**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):**

67-56-1 | methanol

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

**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:**

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

Aliphatic ketone

methanol

**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.

Wear protective gloves / eye protection.

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

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**Trade name: 951 Flux Pen**

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IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 In case of fire: Use for extinction: CO<sub>2</sub>, powder or water spray.  
 Collect spillage. Absorb liquid components with liquid-binding material.  
 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** 11/17/2015 / 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)  
 ICAO: International Civil Aviation Organisation  
 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  
 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 - Respirat., 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.**