Safety Data Sheet
acc. to OSHA HCS 29CFR1910.1200

Printing Date 06/02/2017 Version number 6 Reviewed on 06/02/2017

*
1 Identification

Trade name: 951 Soldering Flux and Flux Pen
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 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

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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.

Eye Irrit. 2A H319 Causes serious eye irritation.
STOT SE 3 H336 May cause drowsiness or dizziness.

(Contd. on page 2)

Safety Data Sheet
acc. to OSHA HCS 29CFR1910.1200

Printing Date 06/02/2017 Version number 6 Reviewed on 06/02/2017

Trade name: 951 Soldering Flux and Flux Pen

(Contd. of page 1)

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

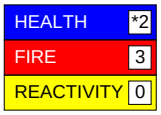
Hazard-determining components of labeling:
methanol
Isopropanol
Aliphatic ketone
Hazard statements
H225 Highly flammable liquid and vapor.
H331 Toxic if inhaled.
H319 Causes serious eye irritation.
H371 May cause damage to organs.
H336 May cause drowsiness or dizziness.
Precautionary statements

P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P243	Take precautionary measures against static discharge.
P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P264	Wash thoroughly after handling.
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.
P403+P235	Store in a well-ventilated place. Keep cool.
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.
vPvB: Not applicable.

(Contd. on page 3)

Safety Data Sheet
acc. to OSHA HCS 29CFR1910.1200

Printing Date 06/02/2017 Version number 6 Reviewed on 06/02/2017

Trade name: 951 Soldering Flux and Flux Pen

(Contd. of page 2)

*
3 Composition/information on ingredients

Description: Mixture of the substances listed below with nonhazardous additions.

CAS No.	Description		% Range
CAS: 64-17-5	ethanol	Flam. Liq. 2, H225	55-70%
CAS: 67-63-0	Isopropanol	Flam. Liq. 2, H225 Eye Irrit. 2A, H319; STOT SE 3, H336	10-25%
Trade Secret	Aliphatic ketone	Flam. Liq. 3, H226 STOT SE 3, H336	5-<10%
CAS: 67-56-1	methanol	Flam. Liq. 2, H225 Acute Tox. 2, H330 STOT SE 1, H370	5-<10%
Trade Secret	Proprietary Carboxylic Acid	Eye Irrit. 2A, H319	1.0-3.0%

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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 fires with water spray or alcohol resistant foam.
For safety reasons unsuitable extinguishing agents: Water with full jet
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.

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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 product to reach sewage system or any water course.
Do not allow to enter sewers/ surface or ground water.

(Contd. on page 4)

Safety Data Sheet
acc. to OSHA HCS 29CFR1910.1200

Printing Date 06/02/2017 Version number 6 Reviewed on 06/02/2017

Trade name: 951 Soldering Flux and Flux Pen

(Contd. of page 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
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:		
CAS: 64-17-5	ethanol	1,800 ppm
CAS: 67-63-0	Isopropanol	400 ppm
	Aliphatic ketone	5 ppm
CAS: 67-56-1	methanol	530 ppm
PAC-2:		
CAS: 64-17-5	ethanol	3300* ppm
CAS: 67-63-0	Isopropanol	2000* ppm
	Aliphatic ketone	200 ppm
CAS: 67-56-1	methanol	2,100 ppm
PAC-3:		
CAS: 64-17-5	ethanol	15000* ppm
CAS: 67-63-0	Isopropanol	12000** ppm
	Aliphatic ketone	3000* ppm
CAS: 67-56-1	methanol	7200* ppm

7 Handling and storage

Handling:
Precautions for safe handling 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: Not required.
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.

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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.

(Contd. on page 5)

Safety Data Sheet
acc. to OSHA HCS 29CFR1910.1200

Printing Date 06/02/2017 Version number 6 Reviewed on 06/02/2017

Trade name: 951 Soldering Flux and Flux Pen

(Contd. of page 4)

At this time, the remaining constituent has no known exposure limits.

CAS: 64-17-5 ethanol	
PEL	Long-term value: 1900 mg/m³, 1000 ppm
REL	Long-term value: 1900 mg/m³, 1000 ppm
TLV	Short-term value: 1880 mg/m³, 1000 ppm
CAS: 67-63-0 Isopropanol	
PEL	Long-term value: 980 mg/m³, 400 ppm
REL	Short-term value: 1225 mg/m³, 500 ppm Long-term value: 980 mg/m³, 400 ppm
TLV	Short-term value: 984 mg/m³, 400 ppm Long-term value: 492 mg/m³, 200 ppm BEI
Aliphatic ketone	
PEL	Long-term value: 710 mg/m³, 150 ppm
REL	Long-term value: 950 mg/m³, 200 ppm
TLV	Short-term value: 712 mg/m³, 150 ppm Long-term value: 238 mg/m³, 50 ppm
CAS: 67-56-1 methanol	
PEL	Long-term value: 260 mg/m³, 200 ppm
REL	Short-term value: 325 mg/m³, 250 ppm Long-term value: 260 mg/m³, 200 ppm Skin
TLV	Short-term value: 328 mg/m³, 250 ppm Long-term value: 262 mg/m³, 200 ppm Skin; 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

(Contd. on page 6)

Safety Data Sheet
acc. to OSHA HCS 29CFR1910.1200

Printing Date 06/02/2017 Version number 6 Reviewed on 06/02/2017

Trade name: 951 Soldering Flux and Flux Pen

(Contd. of page 5)

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

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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:	78 °C (172 °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:	2.0 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:	Not miscible or difficult to mix.
Solvent content:	
Organic solvents:	94.8 %
Water:	3.1 %
Solids content:	2.0 %

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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.

(Contd. on page 7)

Safety Data Sheet
acc. to OSHA HCS 29CFR1910.1200

Printing Date 06/02/2017 Version number 6 Reviewed on 06/02/2017

Trade name: 951 Soldering Flux and Flux Pen

(Contd. of page 6)

Hazardous decomposition products: No dangerous decomposition products known.

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11 Toxicological information

Information on toxicological effects
Acute toxicity:

LD/LC50 values that are relevant for classification:		
CAS: 64-17-5 ethanol		
Oral	LD50	7060 mg/kg (rat)
Inhalative	LC50/4 h	20000 mg/l (rat)
CAS: 67-63-0 Isopropanol		
Oral	LD50	5045 mg/kg (rat)
Dermal	LD50	12800 mg/kg (rabbit)
Inhalative	LC50/4 h	30 mg/l (rat)
CAS: 67-56-1 methanol		
Oral	LD50	5628 mg/kg (rat)
Dermal	LD50	15800 mg/kg (rabbit)
Inhalative	LC50/4 h	0.5 mg/l (ATE)

Primary irritant effect:
on the skin: No irritant effect.
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:
Harmful
Irritant

Carcinogenic categories

IARC (International Agency for Research on Cancer)		
CAS: 64-17-5	ethanol	1
CAS: 67-63-0	Isopropanol	3

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

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.

(Contd. on page 8)

Safety Data Sheet
acc. to OSHA HCS 29CFR1910.1200

Printing Date 06/02/2017 Version number 6 Reviewed on 06/02/2017

Trade name: 951 Soldering Flux and Flux Pen

(Contd. of page 7)

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.

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14 Transport information

UN-Number	
DOT, ADR, IMDG, IATA	UN1992
UN proper shipping name	
DOT	Flammable liquids, toxic, n.o.s. (Ethanol, Methanol)
ADR	1992 Flammable liquids, toxic, n.o.s. (Ethanol, Methanol)
IMDG	FLAMMABLE LIQUID, TOXIC, N.O.S. (ETHANOL (ETHYL ALCOHOL), METHANOL)
IATA	FLAMMABLE LIQUID, TOXIC, N.O.S. (ETHANOL, METHANOL)

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

(Contd. on page 9)

Safety Data Sheet
acc. to OSHA HCS 29CFR1910.1200

Printing Date 06/02/2017 Version number 6 Reviewed on 06/02/2017

Trade name: 951 Soldering Flux and Flux Pen

(Contd. of page 8)

IATA

Class	3 Flammable liquids
Label	3 (6.1)
Packing group	
DOT, IMDG, IATA	II
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

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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.

(Contd. on page 10)

Safety Data Sheet
acc. to OSHA HCS 29CFR1910.1200

Printing Date 06/02/2017 Version number 6 Reviewed on 06/02/2017

Trade name: 951 Soldering Flux and Flux Pen

(Contd. of page 9)

Section 313 (Specific toxic chemical listings):	
CAS: 67-63-0	Isopropanol
CAS: 67-56-1	methanol

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

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.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P243 Take precautionary measures against static discharge.
P260 Do not breathe dust/fume/gas/mist/vapors/spray.
P264 Wash thoroughly after handling.
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.

(Contd. on page 11)

Safety Data Sheet
acc. to OSHA HCS 29CFR1910.1200

Printing Date 06/02/2017 Version number 6 Reviewed on 06/02/2017

Trade name: 951 Soldering Flux and Flux Pen

(Contd. of page 10)

P403+P235 Store in a well-ventilated place. Keep cool.
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 responsibilty 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: 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
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.**