

# SAFETY DATA SHEET (SDS)

According to 1907/2006/EC, Article 31

Printing Date 04/07/2017

Version number 8

Reviewed on 04/07/2017

## 1 PRODUCT AND COMPANY IDENTIFICATION

**Trade name: 952-D6 Flux-Pen**

**Relevant identified uses of the substance or mixture and uses advised against**

Soldering Flux  
Professional use of Solder

**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 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

**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.  
Carc. 2 H351 Suspected of causing cancer.



GHS07

Acute Tox. 4 H332 Harmful if inhaled.  
Eye Irrit. 2A H319 Causes serious eye irritation.  
Skin Sens. 1 H317 May cause an allergic skin reaction.  
STOT SE 3 H336 May cause drowsiness or dizziness.

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## 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

**Signal word** Danger

#### Hazard-determining components of labeling:

Isopropanol  
methanol  
4-methylpentan-2-one  
Aliphatic ketone  
Rosin

#### Hazard statements

H225 Highly flammable liquid and vapor.  
H332 Harmful if inhaled.  
H319 Causes serious eye irritation.  
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
H317 May cause an allergic skin reaction.  
H351 Suspected of causing cancer.  
H336 May cause drowsiness or dizziness.

#### Precautionary statements

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.  
P280 Wear protective gloves / eye protection / face protection.  
P243 Take precautionary measures against static discharge.  
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.  
P405 Store locked up.  
P403+P233 Store in a well-ventilated place. Keep container tightly closed.  
P403+P235 Store in a well-ventilated place. Keep cool.  
P501 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

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**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: 67-63-0 EINECS: 200-661-7	Isopropanol	⚠ Flam. Liq. 2, H225 ⚠ Eye Irrit. 2A, H319; STOT SE 3, H336	40-55%
CAS: 64-17-5 EINECS: 200-578-6	ethanol	⚠ Flam. Liq. 2, H225	25-40%
Trade Secret	Aliphatic ketone	⚠ Flam. Liq. 3, H226 ⚠ STOT SE 3, H336	3.0-5.0%
CAS: 67-56-1 EINECS: 200-659-6	methanol	⚠ Flam. Liq. 2, H225 ⚠ Acute Tox. 2, H330 ⚠ STOT SE 1, H370	1-<3%
Trade Secret	Proprietary organic acids	⚠ Eye Irrit. 2A, H319	1.0-3.0%
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	0.1-≤1%
Trade Secret	Rosin	⚠ Resp. Sens. 1, H334 ⚠ Skin Sens. 1, H317 Acute Tox. 5, H303; Acute Tox. 5, H313	0.1-<1%

**4 FIRST AID MEASURES**
**4.1 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:** 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.

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

Nitrogen oxides (NOx)

In case of fire, the following can be released:

**5.3 Advice for firefighters**

**Protective equipment:** No special measures required.

**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:**

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.

**Protective Action Criteria for Chemicals**

**PAC-1:**

CAS: 67-63-0	Isopropanol	400 ppm
CAS: 64-17-5	ethanol	1,800 ppm
	Aliphatic ketone	5 ppm
CAS: 67-56-1	methanol	530 ppm
CAS: 108-10-1	4-methylpentan-2-one	75 ppm

**PAC-2:**

CAS: 67-63-0	Isopropanol	2000* ppm
CAS: 64-17-5	ethanol	3300* ppm
	Aliphatic ketone	200 ppm
CAS: 67-56-1	methanol	2,100 ppm
CAS: 108-10-1	4-methylpentan-2-one	500 ppm

**PAC-3:**

CAS: 67-63-0	Isopropanol	12000** ppm
CAS: 64-17-5	ethanol	15000* ppm
	Aliphatic ketone	3000* ppm
CAS: 67-56-1	methanol	7200* ppm
CAS: 108-10-1	4-methylpentan-2-one	3000* ppm

**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.

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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:**

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit.

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

**CAS: 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

**CAS: 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

**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
TLV	Short-term value: 712 mg/m <sup>3</sup> , 150 ppm Long-term value: 238 mg/m <sup>3</sup> , 50 ppm

**CAS: 67-56-1 methanol**

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

**Proprietary organic acids**

TLV	Long-term value: 5 mg/m <sup>3</sup>
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**CAS: 108-10-1 4-methylpentan-2-one**

PEL	Long-term value: 410 mg/m <sup>3</sup> , 100 ppm
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REL	Short-term value: 300 mg/m <sup>3</sup> , 75 ppm Long-term value: 205 mg/m <sup>3</sup> , 50 ppm
TLV	Short-term value: 307 mg/m <sup>3</sup> , 75 ppm Long-term value: 82 mg/m <sup>3</sup> , 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

**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.

**Eye protection:**



Safety glasses

**9 PHYSICAL AND CHEMICAL PROPERTIES**

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

**General Information**

**Appearance:**

**Form:** Liquid  
**Color:** Colorless  
**Odor:** Alcohol-like

**pH-value at 20 °C (68 °F):** 3.3

**Change in condition**

**Melting point/Melting range:** Undetermined.

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**Boiling point/Boiling range:** 78 °C (172 °F)  
**Flash point:** < 23 °C (< 73 °F)  
**Ignition temperature:** 399 °C (750 °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/cm<sup>3</sup> (6.759 lbs/gal)  
**Solubility in / Miscibility with Water:** Fully miscible.  
**Solvent content:**  
**Organic solvents:** 94.7 %  
**Water:** 2.0 %  
**Solids content:** 3.5 %

**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 inhaled.

**LD/LC50 values that are relevant for classification:**

**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: 64-17-5 ethanol**

Oral	LD50	7060 mg/kg (rat)
Inhalative	LC50/4 h	20000 mg/l (rat)

**CAS: 67-56-1 methanol**

Oral	LD50	5628 mg/kg (rat)
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Dermal	LD50	15800 mg/kg (rabbit)
Inhalative	LC50/4 h	0.5 mg/l (ATE)

**Primary irritant effect:**

**on the skin:** Based on available data, the classification criteria are not met.

**on the eye:**

Causes serious eye irritation.

**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.

May cause an allergic skin reaction.

**Additional toxicological information:**

**Carcinogenic categories**

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

**Recommended cleansing agent:** Water, if necessary with cleansing agents.



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**14 TRANSPORT INFORMATION**

**14.1 UN-Number**  
DOT, ADR, IMDG, IATA UN1987

**14.2 UN proper shipping name**  
DOT Alcohols, n.o.s. (Isopropanol, Ethanol)  
ADR 1987 Alcohols, n.o.s. (Isopropanol, Ethanol)  
IMDG ALCOHOLS, N.O.S. (ISOPROPANOL (ISOPROPYL ALCOHOL), ETHANOL (ETHYL ALCOHOL))  
IATA ALCOHOLS, N.O.S. (ISOPROPANOL (ISOPROPYL ALCOHOL), ETHANOL)

**14.3 Transport hazard class(es)**

DOT



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

ADR, IMDG, IATA



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

**14.4 Packing group**

DOT, IMDG, IATA II

Marine pollutant: No

**14.6 Special precautions for user** Not applicable.

**Danger code (Kemler):** 33

**EMS Number:** F-E,S-D

**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

**Quantity limitations** On passenger aircraft/rail: 5 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

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UN "Model Regulation":

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

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## 15 REGULATORY INFORMATION

### 15.1 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: 67-56-1	methanol
CAS: 108-10-1	4-methylpentan-2-one

##### 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)

CAS: 108-10-1	4-methylpentan-2-one	I
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##### 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:

Isopropanol  
 methanol

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4-methylpentan-2-one

Aliphatic ketone

Rosin

**Hazard statements**

H225 Highly flammable liquid and vapor.

H332 Harmful if inhaled.

H319 Causes serious eye irritation.

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

H317 May cause an allergic skin reaction.

H351 Suspected of causing cancer.

H336 May cause drowsiness or dizziness.

**Precautionary statements**

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.

P280 Wear protective gloves / eye protection / face protection.

P243 Take precautionary measures against static discharge.

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.

P405 Store locked up.

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

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

P501 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** 04/07/2017 / 7**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 &amp; Health

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US

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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. 5: Acute toxicity – Category 5  
Acute Tox. 2: Acute toxicity – Category 2  
Acute Tox. 3: Acute toxicity – Category 3  
Acute Tox. 4: Acute toxicity – Category 4  
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A  
Resp. Sens. 1: Respiratory sensitisation – Category 1  
Skin Sens. 1: Skin sensitisation – Category 1  
Carc. 2: Carcinogenicity – Category 2  
Carc. 2: Carcinogenicity – Category 2  
STOT SE 1: Specific target organ toxicity (single exposure) – Category 1  
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

**\* Data compared to the previous version altered.**

US