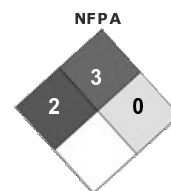


| Personal Protective Equipment                                                     |                                                                                   |                                                                                   | WHMIS Pictograms                                                                  |                                                                                   | DOT Pictograms                                                                      |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |  |
| Chemical Splash Goggles                                                           | Safety Glasses                                                                    | Protective Gloves                                                                 | Flammable                                                                         | D2B Toxic                                                                         | Flammable Liquid                                                                    |

## SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

Product Name: **2331-ZX**  
 Product Code: 2331ZX  
 MSDS Manufacturer Number: 2331-ZX  
 Product Use/Restriction: Soldering flux  
 Manufacturer Name: Kester  
 Address: 800 W. Thorndale Avenue  
 Itasca, IL 60143  
 General Phone Number: (630)-616-4000  
 Customer Service Phone Number: (800)-2KESTER (253-7837)  
 CHEMTREC: CHEMTREC 24-Hour Emergency Telephone Number: (800)424-9300  
 CHEMTREC 24-Hour Emergency Telephone Number: ((Outside of the U.S. and Canada): (703)527-3887  
 Website: msds@kester.com  
 MSDS Creation Date: August 15, 2008  
 MSDS Revision Date: September 30, 2012  
 GHS Class: Highly flammable liquid and vapour



| HMIS                |   |
|---------------------|---|
| Health Hazard       | 2 |
| Fire Hazard         | 3 |
| Reactivity          | 0 |
| Personal Protection | X |

## SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name               | CAS#      | Ingredient Percent | EC Num. |
|-----------------------------|-----------|--------------------|---------|
| Dimethylamine hydrochloride | 506-59-2  | 1 - 5 by weight    |         |
| Glycerine                   | 56-81-5   | 10 - 30 by weight  |         |
| Glycolic Acid               | 79-14-1   | 1 - 5 by weight    |         |
| Lactic Acid                 | 50-21-5   | 1 - 5 by weight    |         |
| Isopropyl alcohol           | 67-63-0   | 60 - 100 by weight |         |
| N,N-Diethanolamine          | 111-42-2  | 5 - 10 by weight   |         |
| Polyalkylene Glycol         | 9038-95-3 | 1 - 5 by weight    |         |

## SECTION 3 - HAZARDS IDENTIFICATION

Emergency Overview: DANGER! Flammable. Severe Irritant. Flux fumes during soldering may cause irritation and damage of mucous membranes and respiratory system.

Route of Exposure: Eyes. Skin. Inhalation. Ingestion.

Potential Health Effects:

Eye: Eye contact may cause severe irritation, redness, tearing, and blurred vision. Smoke during soldering can cause eye irritation.

Skin: Causes severe skin irritation. May cause permanent skin damage.

Inhalation: Inhalation of vapors, fumes or mists of the product causes severe respiratory system irritation.

Ingestion: Harmful if swallowed. Ingestion can cause nausea, vomiting, diarrhea and gastrointestinal irritation.

Chronic Health Effects: Prolonged skin contact causes burns. Repeated or prolonged inhalation may cause toxic effects.

Signs/Symptoms: Overexposure can cause headaches, dizziness, nausea, and vomiting.

Target Organs: Eyes. Skin. Respiratory system. Digestive system.

Aggravation of Pre-Existing Conditions: May aggravate pre-existing respiratory disorders, allergy, eczema, or skin conditions.

|               |                                                                                                                                                       |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Eye Contact:  | Immediately flush eyes with plenty of water for 15 to 20 minutes. Get medical attention, if irritation or symptoms of overexposure persists.          |
| Skin Contact: | Immediately wash skin with soap and plenty of water. Get medical attention if irritation develops or persists.                                        |
| Inhalation:   | If inhaled, remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Seek immediate medical attention. |
| Ingestion:    | If swallowed, do NOT induce vomiting. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person.   |

## SECTION 5 - FIRE FIGHTING MEASURES

|                                  |                                                                                                                                                   |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Flash Point:                     | 18 °C (64 °F)                                                                                                                                     |
| Auto Ignition Temperature:       | 370.0 °C (698 °F)                                                                                                                                 |
| Lower Flammable/Explosive Limit: | 0.9 Vol %                                                                                                                                         |
| Upper Flammable/Explosive Limit: | 12.0 Vol %                                                                                                                                        |
| Extinguishing Media:             | Use alcohol resistant foam, carbon dioxide, dry chemical, or water fog or spray when fighting fires involving this material.                      |
| Unsuitable Media:                | Do not use a solid water stream as it may scatter and spread fire.                                                                                |
| Protective Equipment:            | As in any fire, wear Self-Contained Breathing Apparatus (SCBA), MSHA/NIOSH (approved or equivalent) and full protective gear.                     |
| Hazardous Combustion Byproducts: | Oxides of carbon, oxides of nitrogen, aliphatic aldehydes, and other organic substances may be formed during combustion.. Hydrogen chloride (HCl) |

### **NFPA Ratings:**

|                    |   |
|--------------------|---|
| NFPA Health:       | 2 |
| NFPA Flammability: | 3 |
| NFPA Reactivity:   | 0 |
| NFPA Other:        |   |

## SECTION 6 - ACCIDENTAL RELEASE MEASURES

|                            |                                                                                                                                                                                                                                                  |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Personnel Precautions:     | Evacuate area and keep unnecessary and unprotected personnel from entering the spill area. Avoid breathing vapor, aerosol or mist. Avoid contact with skin, eyes and clothing.                                                                   |
| Environmental Precautions: | Avoid runoff into storm sewers, ditches, and waterways.                                                                                                                                                                                          |
| Methods for containment:   | Contain spills with an inert absorbent material such as soil, sand or oil dry.                                                                                                                                                                   |
| Methods for cleanup:       | Remove all sources of ignition. Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container. Provide ventilation. Collect spill with a non-sparking tool. Place into a suitable container for disposal. |

## SECTION 7 - HANDLING and STORAGE

|                              |                                                                                                                                                                                                                                                                        |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Handling:                    | Use with adequate ventilation. Avoid breathing vapor and fumes. Use only in accordance with directions. To reduce potential for static discharge, bond and ground containers when transferring material.                                                               |
| Storage:                     | Store in a cool, dry, well ventilated area away from sources of heat, combustible materials, direct sunlight, and incompatible substances. Keep container tightly closed when not in use.                                                                              |
| Special Handling Procedures: | DANGER! Rags, steel wool and waste soaked with this product may spontaneously catch fire if improperly discarded or stored. To avoid a spontaneous combustion fire, immediately after use, place rags, steel wool or waste in a sealed, water-filled, metal container. |
| Hygiene Practices:           | Wash thoroughly after handling. Avoid inhaling vapors, mists, or fumes.                                                                                                                                                                                                |

## SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION - EXPOSURE GUIDELINES

|                       |                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Engineering Controls: | Use appropriate engineering control such as process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Where such systems are not effective wear suitable personal protective equipment, which performs satisfactorily and meets OSHA or other recognized standards. |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Eye/Face Protection: Tightly fitting safety goggles. Wear a face shield also when splash hazard exist.

Hand Protection Description: Wear appropriate protective gloves. Consult glove manufacturer's data for permeability data. Nitrile rubber or natural rubber gloves are recommended.

Respiratory Protection: A NIOSH approved air-purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.

Other Protective: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

PPE Pictograms:



**EXPOSURE GUIDELINES**

**Glycerine :**

Guideline ACGIH: TLV-TWA: 10 mg/m3  
 Guideline OSHA: PEL-TWA: 5 mg/m3

**Isopropyl alcohol :**

Guideline ACGIH: TLV-STEL: 400 ppm  
 TLV-STEL: 400 ppm  
 Guideline OSHA: PEL-TWA: 400 ppm

**N,N-Diethanolamine :**

Guideline ACGIH: TLV-TWA: 2 mg/m3

**SECTION 9 - PHYSICAL and CHEMICAL PROPERTIES**

Physical State Appearance: Liquid.

Color: Amber.

Odor: Alcohol-like

Boiling Point: 82 °C (180 °F)

Melting Point: Not determined.

Density: 0.899 g/cm<sup>3</sup> (at 20 °C (68 °F))

Vapor Pressure: 33 hPa (25 mm Hg) (at 20 °C (68 °F))

pH: 6.7 (at 20 °C (68 °F))

Flash Point: 18 °C (64 °F)

Auto Ignition Temperature: 370.0 °C (698 °F)

**SECTION 10 - STABILITY and REACTIVITY**

Chemical Stability: Stable under normal temperatures and pressures.

Hazardous Polymerization: Not reported.

Conditions to Avoid: Keep away from heat, ignition sources and incompatible materials.

Incompatible Materials: Oxidizing agents. Strong acids and alkalis.

Special Decomposition Products: Carbon monoxide and carbon dioxide Hydrogen chloride (HCl) Nitrogen oxides

**SECTION 11 - TOXICOLOGICAL INFORMATION**

**Dimethylamine hydrochloride :**

RTECS Number: IQ0220000

Ingestion: Oral - Mouse LD50 : 8100 mg/kg [Details of toxic effects not reported other than lethal dose value]  
 Oral - Rat LD50 : 1070 mg/kg [Details of toxic effects not reported other than lethal dose value] (RTECS)

**Glycerine :**

RTECS Number: MA8050000

Eye: Eye - Rabbit Standard Draize test.: 500 mg/24H (RTECS)

Skin: Administration onto the skin - Rabbit Standard Draize test.: 500 mg/24H (RTECS)

Ingestion: Oral - Rat LD50: 12600 mg/kg [Behavioral - General anesthetic  
 Behavioral - Muscle weakness Liver - Other changes]

**Glycolic Acid :**

RTECS Number: MC5250000

Eye: Eye - Rabbit Standard Draize test.: 2 mg [severe] (RTECS)

Inhalation: Inhalation - Rat LC50 : 7.1 ug/m<sup>3</sup>/4H [Sense Organs and Special Senses (Olfaction) - effect, not otherwise specified Lungs, Thorax, or Respiration - Dyspnea Nutritional and Gross Metabolic - Weight loss or decreased weight gain] (RTECS)

Ingestion: Oral - Rat LD50 : 1950 mg/kg [Behavioral - Somnolence (general depressed activity) Gastrointestinal - Other changes Kidney, Ureter, Bladder - Other changes] (RTECS)

**Isopropyl alcohol:**

RTECS Number: NT8050000

Eye: Eye - Rabbit Standard Draize test.: 100 mg  
Eye - Rabbit Standard Draize test.: 10 mg  
Eye - Rabbit Standard Draize test.: 100 mg/24H (RTECS)

Skin: Administration onto the skin - Rabbit Standard Draize test.: 500 mg  
Administration onto the skin - Rabbit LD50: 12800 mg/kg [Details of toxic effects not reported other than lethal dose value] (RTECS)

Inhalation: Inhalation - Rat LC50: 16000 ppm/8H [Details of toxic effects not reported other than lethal dose value]  
Inhalation - Mouse LC50: 53000 mg/m<sup>3</sup> [Behavioral - General anesthetic Lungs, Thorax, or Respiration - Other changes]  
Inhalation - Rat LC50: 72600 mg/m<sup>3</sup> [Behavioral - General anesthetic Lungs, Thorax, or Respiration - Other changes] (RTECS)

Ingestion: Oral - Rat LD50: 5045 mg/kg [Behavioral - Altered sleep time (including change in righting reflex) Behavioral - Somnolence (general depressed activity)]  
Oral - Mouse LD50: 3600 mg/kg [Behavioral - Altered sleep time (including change in righting reflex) Behavioral - Somnolence (general depressed activity)]  
Oral - Mouse LD50: 3600 mg/kg [Behavioral - General anesthetic]  
Oral - Rat LD50: 5000 mg/kg [Behavioral - General anesthetic] (RTECS)

**N,N-Diethanolamine :**

RTECS Number: KL2975000

Eye: Eye - Rabbit Standard Draize test.: 5500 mg  
Eye - Rabbit Standard Draize test.: 750 ug/24H (RTECS)

Skin: Administration onto the skin - Rabbit Open irritation test: 50 mg  
Administration onto the skin - Rabbit Standard Draize test.: 500 mg/24H  
Administration onto the skin - Rabbit LD50: 7640 uL/kg [Behavioral - Ataxia Musculoskeletal - Other changes Skin and Appendages - Dermatitis, other (After systemic exposure)]  
Administration onto the skin - Guinea pig LD50: 11900 uL/kg [Details of toxic effects not reported other than lethal dose value] (RTECS)

Ingestion: Oral - Rat LD50: 620 uL/kg [Sense Organs and Special Senses (Eye) - Lacrimation Behavioral - Tremor Skin and Appendages - Hair]  
Oral - Mouse LD50: 3300 mg/kg [Behavioral - Somnolence (general depressed activity) Behavioral - Excitement Behavioral - Muscle contraction or spasticity] (RTECS)

**SECTION 12 - ECOLOGICAL INFORMATION**

Ecotoxicity: No ecotoxicity data was found for the product.

Environmental Fate: No environmental information found for this product.

**SECTION 13 - DISPOSAL CONSIDERATIONS**

Waste Disposal: Consult with the US EPA Guidelines listed in 40 CFR Part 261.3 for the classifications of hazardous waste prior to disposal. Furthermore, consult with your state and local waste requirements or guidelines, if applicable, to ensure compliance. Arrange disposal in accordance to the EPA and/or state and local guidelines.

**SECTION 14 - TRANSPORT INFORMATION**

DOT Shipping Name: Isopropanol, mixture

DOT UN Number: UN1219

DOT Hazard Class: 3

DOT Packing Group: II

IATA Shipping Name: Isopropanol, mixture

IATA UN Number: UN1219

IATA Hazard Class: 3



IMDG UN Number : UN1219  
 IMDG Shipping Name : Isopropanol, mixture  
 IMDG Hazard Class : 3  
 IMDG Packing Group : II  
 RID UN Number : UN1219  
 RID Shipping Name : Isopropanol, mixture  
 RID Hazard Class : 3  
 RID Packing Group : II

**SECTION 15 - REGULATORY INFORMATION**

Canada Reg. Status: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by the Controlled Products Regulations.  
 Canada WHMIS: Controlled - Class: B2 Flammable Liquid  
 Controlled - Class: D2B Toxic

**Dimethylamine hydrochloride :**

TSCA Inventory Status: Listed  
 Canada DSL: Listed

**Glycerine :**

TSCA Inventory Status: Listed  
 Canada DSL: Listed

**Glycolic Acid :**

TSCA Inventory Status: Listed  
 Canada DSL: Listed

**Isopropyl alcohol :**

TSCA Inventory Status: Listed  
 Canada DSL: Listed

**N,N-Diethanolamine :**

TSCA Inventory Status: Listed  
 Canada DSL: Listed

GHS Pictograms:



**SECTION 16 - ADDITIONAL INFORMATION**

General Use: Soldering flux  
 HMIS Health Hazard: 2  
 HMIS Fire Hazard: 3  
 HMIS Reactivity: 0  
 HMIS Personal Protection: X  
 MSDS Creation Date: August 15, 2008  
 MSDS Revision Date: September 30, 2012

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