# Safety Data Sheet

**Revision Date:** 6/30/2014

**MSDS #:** 10197

**Diethanolamine Buffer Solution**

## 1. PRODUCT AND COMPANY IDENTIFICATION

| Product Description: | Product Code |
|---|---|
| DEA Buffer Solution | 50-80-04 |
| DEA Buffer Solution | 50-80-02 |

**Hazardous Reagent**
Diethanolamine Buffer Solution

**Hazardous Reagent Product code**
Catalog No. listed above

**Recommended Use** Reagent

**Contact Manufacturer** KPL, Inc.
910 Clopper Road
Gaithersburg, Maryland 20878
USA

**Phone #:** 1-301-948-7755
**Fax #:** 1-301-948-0169
**Web:** www.kpl.com
**Email:** kplmsds@seracare.com

**Emergency Telephone Numbers:**

| | | |
|---|---|---|
| AUSTRALIA – POISONS INFORMATION CENTER | Telephone: 13 11 26 | Hours: 24 hours |
| CANADIAN TRANSPORT EMERGENCY CENTER | Telephone: (1 ) 613 996 6666 | Hours: 24 hours/day, 7 days/week |
| UK – THE NATIONAL FOCUS | Telephone: (44) 029 2041 6388 | Hours: 09:00-17:00 GMT |
| USA- NATIONAL RESPONSE CENTER | Telephone: (1 ) 800 424 8802 | Hours: 24 hours/day, 7 days/week |

**CHEMTREC:** CHEMTREC Customer Number:- CCN12505*
For Chemical Emergency Spill, Leak, Fire, Exposure, or Accident
Call CHEMTREC Day or Night
Within USA and Canada: 1-800-424-9300 CCN12505 or
+1 703-527-3887 (collect calls accepted)

## 2. HAZARD IDENTIFICATION

**Hazard Type**
Health Hazard: R22 : Harmful if swallowed. R38 : Irritating to skin. R41 : Risk of serious damage to eyes. R48/22 : Harmful: danger of serious damage to health by prolonged exposure if swallowed. R37 : Irritating to respiratory system.

**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

**Classification**
Acute Tox. 4 : H302
STOT RE 2: H373
Skin Irrit. 2: H315
Eye Dam. 1: H318

**Hazard Statement**
H302: Harmful if swallowed
H373: May cause damage to Skin, Eye or Gastrointestinal tract through prolonged or repeated exposure .
H315: Causes skin irritation
H318: Causes serious eye damage

**Precautionary Statement**
P264: Wash skin thoroughly after handling. | P270: Do not eat, drink or smoke when using this product. | P301 + P312: If Swallowed Call a POISON CENTER or doctor/physician if you feel unwell. | P330 Rinse mouth.

**Symbols of Danger**
GHS08; GHS05; GHS07; Danger

**Data for 100% Hazardous Chemical**

| | |
|---|---|
| ROUTES OF EXPOSURE: | The substance can be absorbed into the body by inhalation of its vapour and by ingestion. |
| INHALATION RISK: | A harmful contamination of the air will not or will only very slowly be reached on evaporation of this substance at 20°C. |
| SHORT-TERM EXPOSURE | The substance is corrosive to the eyes. |
| LONG-TERM EXPOSURE: | Repeated or prolonged contact may cause skin sensitization. The substance may have effects on the liver and kidneys . |

**The product is a Mixture. It May Cause the following symptoms.**

Redness. Pain. Severe deep burns.

Not Available

Not Available

Abdominal pain. Burning sensation.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

| Component | CHEMICAL | % Weight | CAS #: |
|---|---|---|---|
| Diethanolamine Buffer Solution | 2,2'-iminodiethanol | 52.5% | 111-42-2 |

**Classification**

Acute Tox. 4 : H302
STOT RE 2: H373
Skin Irrit. 2: H315
Eye Dam. 1: H318

## 4. FIRST AID MEASURES

**Data for 100% Hazardous Chemical**

| | |
|---|---|
| **Ingestion First Aid:** | Rinse mouth. Give one or two glasses of water to drink. Refer for medical attention. Rest. |
| **Inhalation First Aid:** | Fresh air, rest. |
| **Skin First Aid:** | Remove contaminated clothes. Rinse skin with plenty of water or shower. |
| **Eye First Aid:** | First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor. |

## 5. FIRE FIGHTING MEASURES

**Data For 100% Hazardous Chemical**

| Fire Acute Hazard: | Fire Prevention: | Fire Fighting: |
|---|---|---|
| Combustible. | NO open flames. | Powder, water spray, foam, carbon dioxide. |

**Explosion Acute Hazard:**

| | | |
|---|---|---|
| Not Available | Not Available | Not Available |

**CHEMICAL DANGERS:** The substance decomposes on burning producing toxic fumes . The solution in water is a medium strong base. Reacts violently with strong oxidants , strong acids . Attacks copper, zinc, aluminium, and their alloys.

**PHYSICAL DANGERS:** The vapour is heavier than air.

## 6. ACCIDENTAL RELEASE MEASURES

| | |
|---|---|
| **Personal Precautions** | Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. For personal protection see section 8. |
| **Environmental Precautions** | Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided. |
| **Method of Containment** | Keep in suitable, closed containers for disposal. |
| **Methods of Clean-up** | Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal. |
| **Other Information** | For disposal see section 13. |

**Data for 100% Hazardous Chemical**

| | |
|---|---|
| **SPILLAGE DISPOSAL** | Sweep spilled substance into sealable containers; if appropriate, moisten first to prevent dusting. Then remove to safe place. (Extra personal protection: A/P2 filter respirator for organic vapour and harmful dust.) |

## 7. HANDLING AND STORAGE

**Handling:** Wear appropriate PPE. See section 8

**Storage:** Separated from strong oxidants and acids. Store at 2 - 8°C.

**Data for 100% Hazardous Chemical**

| | |
|---|---|
| **STORAGE** | Separated from strong oxidants, and acids. Dry. |

## 8. EXPOSURE CONTROL

**Data for 100% Hazardous Chemical**

| | |
|---|---|
| **•INHALATION** | Local exhaust or breathing protection. |
| **•EYES** | Safety goggles, or eye protection in combination with breathing protection. |
| **•SKIN** | Protective gloves. Protective clothing. |
| **•INGESTION** | Do not eat, drink, or smoke during work. |

**Engineering Controls** Data for 100% 2,2'-iminodiethanol: 8.6 EPA Reportable Quantity: 100 pounds
EPA Pollution Category: B
RCRA Waste Number: Not listed
EPA FWPCA List: Not listed

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance** Clear, Colorless solution

**Physical State** Liquid **pH:** 9.3 - 9.5

**Data for 100% Hazardous Chemical**

| | | | | | |
|---|---|---|---|---|---|
| Boiling point: °C | Melting point: 28°C | Relative density (water = 1): 1.09 (liquid) | Solubility in water: | very good | Vapour pressure, Pa at 20°C: <1 |
| Relative vapour density (air = 1): 3.65 | Flash point: 134°C o.c. | Auto-ignition temperature: 662°C | Explosive limits, vol% in air: 1.7-9.8 | Octanol/water partition coefficient as log Pow: -1.43 | |

## 10. STABILITY AND REACTIVITY

**Chemical Stability** Stable under normal conditions. Stability During Transport: Stable

**Incompatibility Materials to Avoid** Potentially Incompatible Absorbents

Use caution: Liquids with this reactive group classification have been known to react with the absorbents listed below.
•Cellulose-Based Absorbents
•Mineral-Based & Clay-Based Absorbents

**Hazardous Decomposition Products** Flammable gaseous hydrogen is generated by amines in combination with strong reducing agents, such as hydrides.

**Hazardous Polymerization** Polymerization: Not pertinent Inhibitor of Polymerization: Not pertinent

**Data for 100% Hazardous Chemical**

| | |
|---|---|
| **CHEMICAL DANGERS:** | The substance decomposes on burning producing toxic fumes . The solution in water is a medium strong base. Reacts violently with strong oxidants , strong acids . Attacks copper, zinc, aluminium, and their alloys. |
| **PHYSICAL DANGERS:** | The vapour is heavier than air. |

## 11. TOXICOLOGY MEASURES

**Acute Toxicity**

The toxicological risks are minor due to the low concentration of hazardous ingredients. The following toxicological information is for the hazardous ingredient in pure form.

**LD50 Oral** Data for 100% 2,2'-iminodiethanol: Species Rat:

Value: 680 mg/kg
Reference: National Technical Information Service. Vol. OTS0516797,

**LD50 Dermal** Data for 100% 2,2'-iminodiethanol: Species: Rabbit
Value: 8380 mg/kg
Reference: National Technical Information Service. Vol. OTS0516797

**LC50 Inhalation** Not Available

**Chronic Toxicity**

**Carcinogenicity** IARC: 2B - Group 2B: Possibly carcinogenic to humans (Diethanolamine)
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a
known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a
carcinogen or potential carcinogen by OSHA.

**Irritation** Data for 100% 2,2'-iminodiethanol: Skin corrosion/irritation
Skin - rabbit
Result: Mild skin irritation - 24 h
(Draize Test)
Serious eye damage/eye irritation
Eyes - rabbit
Result: Severe eye irritation - 24 h

**Corrosivity** Not Available.

**Sensitization** Not Available

**Neurological Effects** Not Available

**Mutagenic Effects** Not Available

**Reproductive Effects** Not Available

**Developmental Effects** Not Available

**Target Organ Effects** Eyes, Skin, Gastrointestinal tract

**Other adverse effects** Data for 100% 2,2'-iminodiethanol: - Additional Information
RTECS: KL2975000
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Liver - Irregularities - Based on Human Evidence
Liver - Irregularities - Based on Human Evidence

## 12. ECOLOGICAL MEASURES

**Ecotoxicity**

Data for 100% 2,2'-iminodiethanol: LC50 Fish (96 hours)

Minimum: 100 mg/l
Maximum: 4710 mg/l
Median: 1480 mg/l

Study number: 5

Reference for median:

Mayes, M.A., H.C. Alexander, and D.C. Dill 1983. A Study to Assess the Influence of Age on the Response of Fathead Minnows in Static Acute Toxicity Tests. Bull.Environ.Contam.Toxicol. 31(2):139-147

**Persistence/Degradability**

Data for 100% 2,2'-iminodiethanol: TESTED FOR BIODEGRADABILITY EMPLOYING BACTERIUM ISOLATED FROM CUTTING FLUID & A SEWAGE POPULATION. SHOWED THAT DIETHANOLAMINE WAS DEGRADABLE, BEING OXIDIZED TO MEANINGFUL EXTENT.
[GANNON JE ET AL; MICROBIAL DEGRADATION OF DIETHANOLAMINE AND RELATED COMPOUNDS; MICROBIS 23(91) 7 (1978)] **PEER REVIEWED**

**Mobility in Environmental Media**

Data for 100% 2,2'-iminodiethanol: A soil adsorption coefficient (Koc) of 4 was estimated for diethanolamine based on a log Kow of -1.43(1,2,SRC). This Koc value and the complete solubility of DEA in water suggests that this compound would be extremely mobile in soil and would not adsorb appreciably to suspended solids and sediments in water(3,4,SRC). However, diethanolamine is a base (pKa 8.97 at 25 deg C(5)) and may exist in the protonated form under environmental conditions (pH 5-9). Protonation may result in greater adsorption and less mobility than its water solubility or log Kow indicate. Futhermore, diethanolamine has been shown to adsorb to humic acid which may be contained in soils and sediments(6). The adsorption of diethanolamine on humic acid changed very slightly from pH 4-8, (40-45% adsorption)(6).
[(1) Hansch C, Leo AJ; Medchem Project Issue no. 26 Claremont, CA: Pomona College (1985) (2) Lyman WJ et al; Handbook of Chemical Property Estimation Methods NY: McGraw-Hill p. 4-9 (1982) (3) Dow Chemical; The Alkanolamines Handbook Midland, MI: Dow Chemical (1980) (4) Swann RL et al; Res Rev 85: 17-28 (1983) (5) Chremos G, Zimmerman HJKR; Texas J Sci 11; 467-70 (1959) (6) Sithole BB, Guy RD; Environ Int 11: 499-504 (1985)] **PEER REVIEWED**

**Bioaccumulation/ Accumulation**

Data for 100% 2,2'-iminodiethanol: A bioconcentration factor (BCF) of <1 was estimated for diethanolamine (DEA) based on a log Kow of - 1.43(1,2,SRC). This BCF value and complete solubility of DEA in water suggest that this compound does not bioconcentrate significantly in aquatic organisms(3,SRC).
[(1) Hansch C, Leo AJ; Medchem Project Issue no. 26 Claremont, CA: Pomona College (1985) (2) Lyman WJ et al; Handbook of Chemical Property Estimation Methods NY: McGraw-Hill p. 5-5 (1982) (3) Dow Chemical; The Alkanolamines Handbook Midland, MI: Dow Chemical (1980)] **PEER REVIEWED**

## 13. DISPOSAL MEASURES

**Waste Disposal Method:**

Observe all Federal, State and Local laws concerning health and pollution.
SMALL DRY SPILL: With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

SMALL SPILL: Take up with sand or other non-combustible absorbent material and place into containers for later disposal.

LARGE SPILL: Dike far ahead of liquid spill for later disposal. Cover powder spill with plastic sheet or tarp to minimize spreading. Prevent entry into waterways, sewers, basements or confined areas.

**Contaminated Packaging:**

Observe all Federal, State and Local laws concerning health and pollution. Do not touch or walk through spilled material. Stop leak if you can do it without risk.

**US EPA Waste Number:**

Data for 100% 2,2'-iminodiethanol: EPA Reportable Quantity: 100 pounds
EPA Pollution Category: B
RCRA Waste Number: Not listed
EPA FWPCA List: Not listed

## 14. TRANSPORTATION MEASURES

**DOT:** Data for 100% 2,2'-iminodiethanol: DOT (US)
UN number: 3077 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Diethanolamine)
Reportable Quantity (RQ): 100 lbs
Marine pollutant: No
Poison Inhalation Hazard: No

**IATA:** Not Available

**ADR (road)/ RID (rail):** Not Available

**IMDG (sea):** Not Available

**General Transport Regulations** Not Applicable

## 15. REGULATORY MEASURES

**This product is a mixture that may contain one or more hazardous chemicals. The hazardous ingredients listed are only those as required by 29 CFR 1910.1200 g 2.C1.**

**SARA 313**

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:
Diethanolamine CAS-No. 111-42-2 Revision Date 2011-07-01

**Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (See 40 CFR 61)**

Listed: Diethanolamine CAS-No. 111-42-2

**State Regulations**

**California Proposition 65:**

This product contains the following Proposition 65 chemicals: Diethanolamine
Type of Toxicity: Cancer
CAS NO. 111-42-2
Date Listed: June 22, 2012

**State Right to Know Act**

| **Chemical Name** | **2,2'-iminodiethanol** |
|---|---|
| **Massachusetts** | Listed |
| **New Jersey** | Listed |
| **Pennsylvania** | Listed |
| **New York** | Listed |
| **Rhode Island** | Listed |

**International Inventories**

| **Chemical Name** | **2,2'-iminodiethanol** |
|---|---|
| **TSCA** | |
| **DSL** | Listed |
| **NDSL** | Not Listed |
| **EINECS** | Listed |
| **CHINA** | Listed |
| **KECL** | Listed |
| **JAPAN:** | Listed |
| **AICS** | Listed |

**EU Regulations**

| | |
|---|---|
| **Annex I Index#** | 603-070-00-6 |
| **Classification** | Acute Tox. 4 : H302<br>STOT RE 2: H373<br>Skin Irrit. 2: H315<br>Eye Dam. 1: H318 |
| **Risk Phrases** | H302: Harmful if swallowed<br>H373: May cause damage to Skin, Eye or Gastrointestinal tract through prolonged or repeated exposure .<br>H315: Causes skin irritation<br>H318: Causes serious eye damage |
| **Safety Phrases** | P264: Wash skin thoroughly after handling. \| P270: Do not eat, drink or smoke when using this product. \| P301 + P312: If Swallowed Call a POISON CENTER or doctor/physician if you feel unwell. \| P330 Rinse mouth. |
| **Symbols and Indications of Danger** | GHS08; GHS05; GHS07; Danger |
| **Specific Concentration Limits** | Not Available |
| **Export and Import** | This substance is not listed in the Annex I of Regulation (EC) No 649/2012. |
| **European Priority List** | This substance is not listed in a priority list (as foreseen under Council Regulation (EEC) No 793/93 on the evaluation and control of the risks of existing substances.). |

## 16. OTHER INFORMATION

**The above information is believed to be correct, but does not purport to be all inclusive and shall be used only as a guide. KPL shall not be held liable for any damage resulting from handling or from contact with the above product. Users should make their own investigations to determine the suitability of the information for their particular purposes. This material is sold for research purposes and is intended as laboratory reagents only. It is not intended for food, drug, household, agricultural or cosmetic use. Its use must be supervised by a technically qualified individual experienced in handling potentially hazardous chemicals.**

**Revision Date: 6/30/2014**