SPI Supplies Division
Structure Probe, Inc.
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Manufacturer's CAGE: 1P573

Safety Data Sheet

Date Effective: October 3, 2016

02824-AA, 02824-AB
SPI Chem™ DMAE 2-Dimethylaminoethanol

Component of
02680-AB SPI-Chem™ Low Viscosity Kit
02682-AB SPI-Chem™ Ultra-Low Viscosity Kit

Section 1.1: Identification

Chemical Name/Synonyms ..... 2-Dimethylaminoethanol; NN-Dimethylethanolamine; DMAE

Product or Trade Name ..... DMAE; 2-Dimethylaminoethanol

CAS #'s 108-01-0
RTECS#..... KK6125000

Chemical Formula..... $(CH_3)_2NCH_2CH_2OH$

Section 1.2: Relevant Uses/Restrictions

Laboratory chemical for embedding microscopy samples.

Section 1.3: Supplier of the Safety Data Sheet

SPI Supplies Division
Structure Probe, Inc.
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Section 1.4: Emergency telephone number

Emergencies
Contacting CHEMTREC:

24 Hour Emergency Use Only #'s...
Worldwide phone: 1-(703)-741-5970
Toll-free phone: 1-(800)-424-9300 USA + Canada only

Section 2: Hazard Identification

2.1 Classification of the substance

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Acute toxicity – Oral (Category 4)

Acute toxicity –Dermal (Category 4)
Acute toxicity – Inhalation (gases) (Category 3)
Skin corrosion/irritation (Category 1)
Serious eye damage/eye irritation (Category 1)
Flammable liquids (Category 3)

2.2 Label elements

Pictogram

Signal Word: Danger

Hazard statements:

H301 Harmful if swallowed.
H312 Harmful in contact with skin.
H331 Toxic if inhaled.
H314 Causes severe skin burns and eye damage.
H226 Flammable liquid and vapor
H333 May be harmful if inhaled.
H402 Harmful to aquatic life.
H412 Harmful to aquatic life with long lasting effects.

Precautionary statements:

P264 Wash face, hands and any exposed skin thoroughly after handling.
P270 So not eat, drink
P380 Wear protective gloves protective clothing, eye protection/face protection.
P271 Use only outdoors or in a well-ventilated area.
P260 Do not breathe dust/fume/gas/mist/vapors/spray.
P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ventilating/lighting/ equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P235 Keep cool.
P370 + 378 In case of fire: Use CO2, dry chemical, or foam to extinguish.
P305 + 351 + 338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact Lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CNTER or doctor/physician.
P312 Call a POISON CENTER or doctor/physician if you feel unwell.
P363 Wash contaminated clothing before reuse.
P303 + 361 + 353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + 340 + 310 IF INHALED: Remove victim to fresh air and keep at rest in a position Comfortable for breathing. Immediately call a POISON CENTER or Doctor/physician.

P301 + 312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P330 Rinse mouth.
P331 Do NOT induce vomiting.
P405 Store locked up.
P403 + 233 Store in a well-ventilated place. Keep container tightly closed.
P501 dispose of contents/container to an approved waste disposal plant.

Unknown percentage statements (if needed): Not applicable.

2.3 Other Hazards:

Hazardous Material Information System USA
Health 3
Fire Hazard 2
Reactivity 0
Personal Protection .....

NFPA Rating (estimated)
Health 3
Flammability..... 2
Reactivity 0

Section 3: Composition

3.1 Substances:

2-Dimethylaminoethanol	CAS# 108-01-0	EC# 203-542-8	100%

Section 4: First Aid Measures

4.1 Description of first aid measures:

General Advice: Poison information centers in each State capital city can provide additional assistance for scheduled poisons (13 1126).

Skin contact: Wash off immediately with soap and plenty of water. Continue flushing with plenty of water for at least 15 minutes. Remove all contaminated clothes and shoes. Immediate medical attention is required. Call a physician or Poison Control Center immediately.

Eye contact: Flush eye with water for 15 minutes. Immediate medical attention is required. Consult a Physician immediately.

Inhalation: Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give Oxygen. WARNING! It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled or ingested material is toxic, infectious, or corrosive. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Immediate medical attention is required.

4.2 Most important symptoms and effects, both acute and delayed
Causes severe skin burns.
Causes eye damage.
Harmful if swallowed.

Harmful in contact with skin.
Toxic by inhalation.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician: Treat symptomatically.

4.4 Protection of first-aiders

First-Aid providers: Avoid exposure to blood or body fluids.
Wear gloves and other necessary protective clothing.
Dispose of contaminated clothing and equipment as bio-hazardous waste.

Section 5: Fire Fighting Measures

5.1 Suitable extinguishing media: Carbon dioxide (CO2), dry chemical, alcohol-resistant foam, water spray.

Unsuitable extinguishing media: Do not use a solid (straight) water stream as it may scatter and spread the fire.

5.2 Special hazards arising from the substance or mixture:

Flammable.
May be ignited by heat, sparks or flames.
Container explosion may occur under fire conditions or when heated.
Vapor may travel considerable distance to source of ignition and flash back.
Vapors may for explosive mixtures with air.
Most vapors are heavier than air. They will spread along the ground and collect in low or confined areas (sewers, basements, tanks).

Hazardous combustion products: No information available.

5.3 Advice for firefighters

Specific methods: Water mist may be used to cool closed containers. For larger fires, use water spray or fog. Cool containers with flooding quantities of water until well after fire is out. dike fire-control water for later disposal; do not scatter the material.

Special protective equipment and precautions for firefighters:

As in any fire, wear self-contained breathing apparatus, pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Section 6: Accidental Release Measures

6.1 Personal precautions: Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Remove all sources of ignition. Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use spark-proof tools and explosion-proof equipment. In case of large spill, water spray or vapor suppressing foam may be used to reduce vapors, but may not prevent ignition in closed spaces.

6.2 Environmental precautions: Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Prevent entry into waterways, sewers, basements or confined areas.

6.3 Methods and material for containment and cleaning up:

Methods for containment: Stop leak if you can do it without risk. Absorb spill with inert material (e.g. vermiculite, dry sand or earth). In case of large spill, dike if needed. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up: Use appropriate tools to put the spilled material in a suitable chemical waste disposal container. Use only non-sparking tools. Clean contaminated surface thoroughly

6.4 Reference to other sections:

See Section 7 for information on handling and storage.
See Section 13 for information on disposal.

Section 7: Handling and Storage

7.1 Precautions for safe handling:

Technical measures / Precautions: Provide sufficient air exchange and/or exhaust in work rooms. Remove all sources of ignition. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Keep away from incompatible materials.

Safe Handling Advice: Wear personal protective equipment. Use only in well-ventilated areas. Avoid contact with skin, eyes and clothing. Keep away from heat and sources of ignition. Do not breathe vapors or spray mist. Do not ingest. When using do not smoke. Handle in accordance with good industrial hygiene and safety practice.

7.2 Conditions for safe storage, including any incompatibilities:

Technical Measures / Storage Conditions: Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Store away from incompatible materials. Keep away from heat and sources of ignition.

Incompatible Materials: Oxidizing agents.

7.3 Specific end uses

Laboratory chemical for embedding microscopy samples.
This material not being offered for clinical or diagnostic applications, agricultural uses or for human or animal consumption.

Section 8: Exposure Controls and Personal Protection

8.1 Control parameter and Personal Protection:

Workplace exposure limits

United States:
Component: CAS# 108-01-0 OSHA: none NIOSH: none ACGIH: none AIAH WHEEL: none

Canada:
Component: CAS# 108-01-0
Alberta: none British Columbia: none Ontario: 3ppm TWA Quebec: none
11 mg/m^3 TWA

Mexico:
Component: CAS# 108-01-0: none

Australia:
Component: CASE 108-01-0 6 ppm STEL 22 mg/m^3 STEL 7.4 mg/m^3 TWA

Biological limit values: No information given.

8.2 Exposure controls:

8.2.1 Appropriate engineering controls:

Engineering measures to reduce exposure: Ensure adequate ventilation. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors and mist below their respective threshold limit value.

8.2.2 Individual protection measures:

Eye protection: Goggles or Safety Glasses with side-shields.
Skin and body protection: Chemical resistant apron. Gloves. Long sleeved clothing.
Respiratory protection: Vapor respirator. Be sure to use an approved/certified respirator or equivalent.

8.2.3 Environmental exposure controls:

Hygiene measures: Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink, or smoke.

Section 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties:

Appearance: Colorless to pale yellow liquid

Odor: Amine-like

Odor threshold: No information available

pH: No information available

Melting point/Freezing point: -70 to -59 °C (-94 to -74.2 °F)

Boiling point/Boiling point range: 133 to 139 °C (271.4 to 282.2 °F)

Flash Point:

40 °C (104 °F) Closed Cup

40.556 °C (105 °F) Open Cup

Evaporation rate: No information available

Flammability (solid, gas): Flammable

Upper/lower flammability or explosive limits (%):

Upper: 11.9

Lower: 1.6

Vapor Pressure: No information available

Vapor density: 3.03

Relative density: No information available

Specific gravity: 0.8866

Solubility:

Soluble in acetone

Soluble in cold water

Soluble in diethyl ether

Partition coefficient (n-octanol/water): No information available

auto-ignition temperature: 295 °C (563 °F)

Decomposition temperature: No information available

Viscosity: No information available

Explosive properties: No information available

Oxidizing Properties: No information available

9.2 Other information: No additional relevant information available.

Section 10: Stability and Reactivity

10.1 Reactivity

Reactive with oxidizing agents.

10.2 Chemical Stability

Stable under recommended storage conditions.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization does not occur.

10.4 Conditions to avoid

Heat. Ignition sources. Incompatible materials.

10.5 Incompatible materials

Oxidizing agents.

10.6 Hazardous decomposition products

Carbon oxides. Nitrogen oxides (NO_x).

Other information:

Corrosivity: No information available.

Section 11: Toxicological Information

Information on the likely routes of exposure

Principal Routes of Exposure: Eyes. Inhalation. Skin.

11.1 Information on toxicological effects for 2-Dimethylaminoethanol (CAS# 108-01-0);

A. acute toxicity

LD50/oral/rat	2000 mg/kg (RTECS) 2000-2340 mg/kg (European Commission IUCLID dataset) 1803 mg/kg (LOLI)
LD50/oral/mouse	3100 mg/kg
LD50/dermal/rat	No information available
LD50/dermal/rabbit	1370 µL/kg (RTECS) 1220 mg/kg (LOLI) 1220-3135 mg/kg (European Commission IUCLID data set)
LC50/inhalation/rat (gas)	1641 ppm / 4 hours
LC50/inhalation/mouse (vapor)	3250 mg/m^3 / 4 hours

B. Skin Contact:

Causes severe irritation and burns.
May be absorbed through the skin.
Harmful in contact with skin.

C. Eye Contact:

Contact with liquid or vapor causes severe burns and possible irreversible eye damage including corneal injury and cataracts.
Causes severe irritation and burns.

D. Inhalation:

Toxic by inhalation
May irritate the respiratory tract (lungs) and cause sore throat, sneezing, coughing, wheezing, and/or shortness of breath/dyspnea.
Higher exposures can cause a build-up of fluid in the lungs (pulmonary edema) with severe shortness of breath.
May affect behavior/central nervous system and cause headache, muscle tenderness, restlessness, ataxia, tremor, increased irritability, lack of sleep, insomnia, convulsions, coma.
May also affect metabolism and cause anorexia.

E. Ingestion:

Harmful if swallowed.

F. Germ Cell Mutagenicity: No information available.

G. Carcinogenicity:

Not considered carcinogenic.
Is not listed as carcinogenic by ACGIH, NTP, OSHA-HCS, Australia.

H. Reproductive Toxicity: No information available.

I.. STOT-single exposure: No information available.

J. STOT-repeated exposure: No information available.

K. Aspiration hazard: No information available.

Section 12: Ecological Information

12.1 Ecotoxicity effects: No data available.

Freshwater Algae Data:	EC50 Desmodesmus subspicatus	35 mg/L (72 hours)
Freshwater Fish Species Data:	LC50 Pimephales promelas	81 mg/L (96 hours/static/1)
Water Flea Data:	EC50 Daphnia magna	98.77 mg/L (48 hours)

12.2 Persistence and degradability: No information available.

12.3 Bio-accumulative potential: No information available.

12.4 Mobility in soil: No information available.

12.5 Results of PBT and vPvB assessment: No information available.

12.6 Other adverse effects: No additional relevant information available.

Section 13: Disposal Considerations

13.1 Waste treatment methods

Waste from residues/unused products: Waste must be disposed of in accordance with Federal, State and Local regulations.

Contaminated packaging: Empty containers should be taken for local recycling, recovery or waste disposal.

Not listed in RCRA – F Series, K Series, P Series, or U Series.

Section 14: Transport Information

DOT and IATA:

14.1 UN number: UN2051
14.2 UN proper shipping name: 2-Dimethylaminoethanol
14.3 Transport hazard class: 8
14.4 Packing Group: II
14.5 Environmental hazards
Marine pollutant: No information available.
ERG No.:
DOT: 132
IATA: 8F
14.6 Special precautions for user
DOT RQ (lbs): No information available.

Section 15: Regulatory Information

15.1 Safety, health and environmental regulations/ legislation specific for the substance or mixture

N,N-Dimethylethanolamine, CAS# 108-01-0 (also known as 2-2-Dimethylaminoethanol) is listed on:
U.S. TSCA
Korea KECL (KE-11494)
Philippines PICCS
Japan ENCS [(2)-353; (2)-297]
China
Australia (AICS)
EINECS-No. (203-542-8)

US TSCA
CAS# 108-01-0 is not listed under TSCA Section5(a)2.
CAS# 108-01-0 is not listed under TSCA 8(d).

US CERCLA/SARA:
CAS# 108-01-0 is not listed on the CERCLA Hazardous Substances and their Reportable Quantities.
CAS# 108-01-0 is not listed in SARA Section 302 as Extremely Hazardous with TPQ or RQ.
CAS# 108-01-0 is not listed in SARA Section 313 – Chemical Category.
CAS# 108-01-0 is not listed in SARA Section 313 – Reporting de minimis.

US State Regulations:
Massachusetts RTK: Present
New Jersey RTK: Hazardous Substance List: 3111
Pennsylvania RTK: Present

California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986:
CAS# 108-01-0 is not listed as a carcinogen, a developmental toxicity, male reproductive

toxicity, nor a female toxicity.

CANADA

WHMIS Hazardous Class:
- B3 Combustible liquid
- D1B Toxic materials
- E Corrosive material

Canada Controlled Products Regulation:
This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the SDS contains all information required by the CPR.

CAS# 108-01-0 is listed on the Canada (DSL)>
CAS# 108-01-0 is not listed on CEPA Schedule 1 – Toxic Substance.
CAS# 108-01-0 is not listed on CEPA – 2010 Greenhouse Gases Subject to Mandatory Reporting.

EU Classification:

Indication of danger:
- Flammable
- C - Corrosive
- X_n – Harmful

R Phrases:
- R10 Flammable
- R34 Causes burns
- R20/21/22 Harmful by inhalation, in contact with skin and if swallowed.

S Phrases:
- S25 Avoid contact with eyes
- S26 In case of contact with eyes, rinse immediately with plenty of water and seek Medical advice
- S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)
- S36/37/39 Wear Suitable protective clothing, gloves and eye/face protection.

This product is classified in accordance with Annex VI to Directive 67/548/EEC.

15.2 Chemical Safety Assessment

Date of Preparation: October 3, 2016

Abbreviations and acronyms
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
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, Bio-accumulative and Toxicological

vPvB: very Persistent and very Bio-accumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
STEL: Short Term Exposure Limit
LOLI: The Registered Chemicals List of Lists

Section 16: Other Information

Disclaimer of Liability:

Caution! Do not use SPI Supplies products or materials in applications involving implantation within the body; direct or indirect contact with the blood pathway; contact with bone, tissue, tissue fluid, or blood; or prolonged contact with mucous membranes. Products offered by SPI Supplies are not designed or manufactured for use in implantation in the human body or in contact with internal body fluids or tissues. SPI Supplies will not provide to customers making devices for such applications any notice, certification, or information necessary for such medical device use required by US FDA (Food and Drug Administration) regulation or any other statute. SPI Supplies and Structure Probe, Inc. make no representation, promise, express warranty or implied warranty concerning the suitability of these materials for use in implantation in the human body or in contact with internal body tissues of fluids.

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