1. IDENTIFICATION

Product Name: Methyldiethanolamine (MDEA)
Other Names: 2,2’-(Methylimino)bis[ethanol; Ethanol, 2,2’-(methylimino)bis-
Uses: Chemical intermediate.
Chemical Family: No Data Available
Chemical Name: N-Methyldiethanolamine
Product Description: Pure substance.

Contact Details of the Supplier of this Safety Data Sheet

Organisation: Redox Pty Ltd
Location: 2 Swettenham Road
         Minto NSW 2566
         Australia
Telephone: +61-2-97333000

Organisation: Redox Pty Ltd
Location: 11 Mayo Road
         Wiri Auckland 2104
         New Zealand
Telephone: +64-9-2506222

Organisation: Redox Inc.
Location: 3960 Paramount Boulevard
         Suite 107
         Lakewood CA 90712
         USA
Telephone: +1-424-675-3200

Organisation: Redox Chemicals Sdn Bhd
Location: Level 2, No. 8, Jalan Sapir 33/7
         Seksyen 33, Shah Alam Premier Industrial Park
         40400 Shah Alam
         Selangor, Malaysia
Telephone: +60-3-5614-2111

Emergency Contact Details

For emergencies only; DO NOT contact these companies for general product advice.

Organisation: Poisons Information Centre
Location: Westmead NSW
Telephone: 1800-251525
           131126

Organisation: Chemcall
Location: Australia
Telephone: 1800-127406
           +64-4-9179888

Organisation: Chemcall
Location: Malaysia
Telephone: +64-4-9179888

Organisation: Chemcall
Location: New Zealand
Telephone: 0800-243622
           +64-4-9179888

Organisation: National Poisons Centre
Location: New Zealand
Telephone: 0800-764766

Organisation: CHEMTREC
Location: USA & Canada
Telephone: 1-800-424-9300
           1-703-527-3887

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust): Not Scheduled

Globally Harmonised System
Hazard Classification: Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)

Hazard Categories: Serious Eye Damage/Irritation - Category 2A

Pictograms: ![Warning symbol]

Signal Word: Warning

Hazard Statements: H319 Causes serious eye irritation.

Precautionary Statements:
- Prevention: P280 Wear eye protection/face protection.
- Response: P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 If eye irritation persists: Get medical advice/attention.

National Transport Commission (Australia)
Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification: NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Environmental Protection Authority (New Zealand)
Hazardous Substances and New Organisms Amendment Act 2015

HSNO Classifications:
- Health Hazards:
  - 6.1D Substances that are acutely toxic - Harmful
  - 6.3B Substances that are mildly irritating to the skin
  - 6.4A Substances that are irritating to the eye
- Environmental Hazards:
  - 9.3C Substances that are harmful to terrestrial vertebrates

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Entity</th>
<th>Formula</th>
<th>CAS Number</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl(diethanolamine)</td>
<td>C5H13NO2</td>
<td>105-59-9</td>
<td>&gt;=99.8 %</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed: IF SWALLOWED: Rinse mouth. Do not induce vomiting without medical advice. Call a Poison Centre or doctor/physician if you feel unwell. Never give anything by mouth to an unconscious person.

Eye: IF IN EYES: Rinse cautiously with water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. If eye irritation persists, get medical advice/attention.

Skin: IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash before reuse. If skin irritation occurs, get medical advice/attention.

INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing until recovered.
Advice to Doctor
Treat symptomatically.

Medical Conditions Aggravated by Exposure
No information available.

5. FIRE FIGHTING MEASURES

General Measures
If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out.

Flammability Conditions
Combustible liquid.

Extinguishing Media
Use dry chemical, Carbon dioxide (CO2), alcohol-resistant foam or water spray for extinction - Do not use water jet.

Fire and Explosion Hazard
Containers may explode when heated.

Hazardous Products of Combustion
Fire/thermal decomposition may produce irritating and/or toxic fumes, including Nitrogen oxides (NOx), Carbon monoxide, Carbon dioxide.

Special Fire Fighting Instructions
Contain runoff from fire control or dilution water - Runoff may pollute waterways.

Personal Protective Equipment
Wear self-contained breathing apparatus (SCBA) in combination with normal firefighting clothing (fire kit).

Flash Point
138 °C [Pensky-Martens Closed Cup]

Lower Explosion Limit
0.90 %

Upper Explosion Limit
8.40 %

Auto Ignition Temperature
280 °C

Hazchem Code
No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure
Ensure adequate ventilation. ELIMINATE all ignition sources (no smoking, flares, sparks or flames). Do not touch or walk through spilled material. Avoid breathing vapours and contact with eyes, skin and clothing.

Clean Up Procedures
Absorb with earth, sand or other non-combustible material and transfer to a suitable container for disposal (see SECTION 13).

Containment
Stop leak if safe to do so – Prevent entry into waterways, drains or confined areas.

Decontamination
No information available.

Environmental Precautionary Measures
Avoid release to the environment - Do not flush into surface water or sanitary sewer system. Local authorities should be advised if significant spillages cannot be contained.

Evacuation Criteria
Spill or leak area should be isolated immediately. Keep unauthorised personnel away.

Personal Precautionary Measures
Use personal protective equipment as required (see SECTION 8).

7. HANDLING AND STORAGE

Handling
Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Avoid breathing mist/vapours/spray and contact with eyes, skin and clothing. Use personal protective equipment as required (see SECTION 8). Keep away from heat and sources of ignition - No smoking. Take precautionary measures against static discharge.

Storage
Store in a cool, dry and well-ventilated place. Keep container tightly closed. Keep away from heat and sources of ignition - No smoking. Keep away from incompatible materials (strong acids, oxidising agents, isocyanates).

Container
Keep in the original container.
### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>General</th>
<th>Contains no substances with occupational exposure limit values.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure Limits</td>
<td>No Data Available</td>
</tr>
<tr>
<td>Biological Limits</td>
<td>No information available.</td>
</tr>
<tr>
<td>Engineering Measures</td>
<td>Good general ventilation should be used. Ventilation rates should be matched to conditions. Use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits.</td>
</tr>
<tr>
<td>Personal Protection Equipment</td>
<td>Respiratory protection: Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Recommended filter type: A (organic vapour). Eye/face protection: Wear eye protection/face protection. Recommended: Safety glasses with side-shields; Face-shield. Hand protection: Handle with gloves. Recommended: Rubber gloves; Neoprene gloves. Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Complete suit protecting against chemicals.</td>
</tr>
<tr>
<td>Special Hazards Precautions</td>
<td>No information available.</td>
</tr>
<tr>
<td>Work Hygienic Practices</td>
<td>Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating areas.</td>
</tr>
</tbody>
</table>

### 9. PHYSICAL AND CHEMICAL PROPERTIES

| Physical State | Liquid |
| Appearance | Liquid |
| Odour | Ammoniacal |
| Colour | Colourless |
| pH | 11.5 10 % (20 °C) |
| Vapour Pressure | 0.0031 hPa (@ 20 °C) |
| Relative Vapour Density | 4 Air = 1 |
| Boiling Point | 243.3 °C |
| Melting Point | -21.3 °C |
| Freezing Point | -21.3 °C |
| Solubility | Completely soluble in water |
| Specific Gravity | No Data Available |
| Flash Point | 138 °C [Pensky-Martens Closed Cup] |
| Auto Ignition Temp | 280 °C |
| Evaporation Rate | No Data Available |
| Bulk Density | No Data Available |
| Corrosion Rate | No Data Available |
| Decomposition Temperature | No Data Available |
| Density | 1.04 g/cm³ |
| Specific Heat | No Data Available |
| Molecular Weight | 119.16 g/mol |
| Net Propellant Weight | No Data Available |
| Octanol Water Coefficient | Log Pow = -1.16 (23 °C) |
| Particle Size | No Data Available |
| Partition Coefficient | No Data Available |
| Saturated Vapour Concentration | No Data Available |
| Vapour Temperature | No Data Available |
| Viscosity | 99.05 mm²/s (@ No Data Available) |
| Volatile Percent | No Data Available |
10. STABILITY AND REACTIVITY

General Information
No information available.

Chemical Stability
Stable under normal conditions.

Conditions to Avoid
Keep away from heat and sources of ignition - No smoking. Take precautionary measures against static discharge.

Materials to Avoid
Incompatible/reactive with strong acids, oxidising agents, isocyanates.

Hazardous Decomposition Products
Fire/thermal decomposition may produce irritating and/or toxic fumes, including Nitrogen oxides (NOx), Carbon monoxide, Carbon dioxide.

Hazardous Polymerisation
Does not occur.

11. TOXICOLOGICAL INFORMATION

General Information
Acute toxicity: Ingestion may cause gastrointestinal irritation, nausea, diarrhoea, vomiting.
Skin corrosion/irritation: Non-irritating to the skin.
Eye damage/irritation: Cause serious eye irritation.
Respiratory/skin sensitisation: No sensitisation responses observed.
Germ cell mutagenicity: No known mutagenic effects.
Carcinogenicity: No carcinogenic effects expected.
Reproductive toxicity: No known reproductive/teratogenic effects.
STOT - single exposure: No information available.
STOT - repeated exposure: No information available.
Aspiration toxicity: No aspiration toxicity classification.

Acute
Ingestion
Acute toxicity (Oral):
- LD50, Rat: 4,680 mg/kg

Other
Acute toxicity (Dermal):
- LD50, Rabbit: >2,000 mg/kg

Carcinogen Category
None

12. ECOLOGICAL INFORMATION

Ecotoxicity
Aquatic toxicity:
- LC50, Fish, freshwater (Leuciscus idus): 1,466 mg/L (96 h).
- EC50, Daphnia (Water flea): 233 mg/L (48 h).
- EC50, Algae, freshwater: >100 mg/L (72 h).
Readily biodegradable (96 % after 18 days).
13. DISPOSAL CONSIDERATIONS

General Information
Dispose of contents/container in accordance with local/regional/national regulations. Waste must be classified and labelled prior to recycling or disposal.

Special Precautions for Land Fill
Contaminated packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. TRANSPORT INFORMATION

Land Transport (Australia)
ADG Code
Proper Shipping Name: Methyl diethanolamine (MDEA)
Class: C2 Combustible Liquids - Flash Point >93°C, Closed Cup, Not Excluded Flammable
Subsidiary Risk(s): No Data Available
UN Number: No Data Available
Hazchem: No Data Available
Pack Group: No Data Available
Special Provision: No Data Available

Land Transport (Malaysia)
ADR Code
Proper Shipping Name: Methyl diethanolamine (MDEA)
Class: No Data Available
Subsidiary Risk(s): No Data Available
UN Number: No Data Available
Hazchem: No Data Available
Pack Group: No Data Available
Special Provision: No Data Available

Land Transport (New Zealand)
NZS5433
Proper Shipping Name: Methyl diethanolamine (MDEA)
Class: No Data Available
Subsidiary Risk(s): No Data Available
UN Number: No Data Available
15. REGULATORY INFORMATION

General Information  No Data Available
Poisons Schedule (Aust)  Not Scheduled
Approval Code
HSR003155

National/Regional Inventories

Australia (AICS) Listed
Canada (DSL) Not Determined
Canada (NDSL) Not Determined
China (IECSC) Not Determined
Europe (EINECS) Not Determined
Europe (REACH) Not Determined
Japan (ENCS/METI) Not Determined
Korea (KECI) Not Determined
Malaysia (EHS Register) Not Determined
New Zealand (NZIoC) Listed
Philippines (PICCS) Not Determined
Switzerland (Giftliste 1) Not Determined
Switzerland (Inventory of Notified Substances) Not Determined
Taiwan (NCSR) Not Determined
USA (TSCA) Not Determined

16. OTHER INFORMATION

Related Product Codes
MEDIET1000, MEDIET1001, MEDIET1002, MEDIET1003, MEDIET1004, MEDIET1100, MEDIET1101, MEDIET1200, MEDIET1300, MEDIET1400, MEDIET1401, MEDIET1420, MEDIET2000, MEDIET3000, MEDIET4000, MEDIET5000, MEDIET6000, MEDIET6001

Revision
3
Revision Date
02 Oct 2017
Key/Legend
< Less Than
> Greater Than
AICS Australian Inventory of Chemical Substances
atm Atmosphere
CAS Chemical Abstracts Service (Registry Number)
cm² Square Centimetres
CO₂ Carbon Dioxide
COD Chemical Oxygen Demand
deg C (°C) Degrees Celsius
EPA (New Zealand) Environmental Protection Authority of New Zealand
deg F (°F) Degrees Fahrenheit
g Grams
g/cm³ Grams per Cubic Centimetre
g/l Grams per Litre
HSNO Hazardous Substance and New Organism
IDLH Immediately Dangerous to Life and Health
**Immiscible** Liquids are insoluble in each other.

**inHg** Inch of Mercury

**inH2O** Inch of Water

**K** Kelvin

**kg** Kilogram

**kg/m³** Kilograms per Cubic Metre

**lb** Pound

**LC50** LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.

**LD50** LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.

**ltr or L** Litre

**m³** Cubic Metre

**mbar** Millibar

**mg** Milligram

**mg/24H** Milligrams per 24 Hours

**mg/kg** Milligrams per Kilogram

**mg/m³** Milligrams per Cubic Metre

**Misc or Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present.

**mm** Millimetre

**mmH2O** Millimetres of Water

**mPa.s** Millipascals per Second

**N/A** Not Applicable

**NIOSH** National Institute for Occupational Safety and Health

**NOHSC** National Occupational Health and Safety Commission

**OECD** Organisation for Economic Co-operation and Development

**Oz** Ounce

**PEL** Permissible Exposure Limit

**Pa** Pascal

**ppb** Parts per Billion

**ppm** Parts per Million

**ppm/2h** Parts per Million per 2 Hours

**ppm/6h** Parts per Million per 6 Hours

**psi** Pounds per Square Inch

**R** Rankine

**RCP** Reciprocal Calculation Procedure

**STEL** Short Term Exposure Limit

**TLV** Threshold Limit Value

**tne** Tonne

**TWA** Time Weighted Average

**ug/24H** Micrograms per 24 Hours

**UN** United Nations

**wt** Weight