Section 1 - Product and Company Identification

Product name：Ethanolamine
Other names：--
Product use： To remove the acid gases in the gas flow (H2S, CO2), particularly in the synthesis of ammonia; non-ionic cleaning agents for the dry cleaning, cotton treatment, emulsion paint, polishes, agricultural spray; chemical intermediate; pharmacy production; corrosion proof; rubber accelerator.
Supplier's name：San Fu Chemical Co., Ltd., Shan Hua Plant
Supplier's address：1,Sec.1,Huanyuan E..Rd.,Liuying Dist.,Tainan, Taiwan 736.
Supplier’s phone：886-6-6231821 Emergency phone：886-6-6231821
FAX.：886-6-6231822

Section 2 - Hazards Identification

Classification：

1.	Flammable liquids	Category 4
2.	Acute toxicity	Category 4 (Ingestion)
3.	Acute toxicity	Category 4 (Skin)
4.	Corrosive to metals	Category 1
5.	Skin corrosion / irritation	Category 1
6.	Serious eye Damage/eye irritation	Category 1

The Most Important Hazards and effect

Label element：

- Hazard symbol：Corrosion、Exclamation Mark

- Signal word：Danger

Hazard statement：

1. Flammable liquids
2. Harmful if swallowed
3. Harmful if contact with skin
4. May corrode metals
5. Cause severe skin burns and eye damage

Precautionary statement：

1. Do not inhale of vapors, mists, or sprays of this product.
2. Wear splash goggles or safety glasses.
3. Use with adequate ventilation.

Others Hazard：/

Section 3 - Composition/Information On Ingredients

Chemical name：Ethanolamine
Synonyms：

Aminoethyl Alcohol、b-Aminoethyl Alcohol、MEA、2-Aminoethanol、2-Hydroxyethylamine、Ethylolamine、Glycinol、Monoethanolamine、Olamine
CAS No.：141-43-5
Ingredient contributing to the hazard(%)：100 %

Section 4 - First Aid Measures

The First-aid Information：

- Inhalation：Remove to fresh air. (Rescuers must use caution to avoid exposure to contaminating fumes.) Give oxygen and get medical attention for any breathing difficulty. If breathing has stopped begin artificial respiration immediately. Get medical attention. Onset of pulmonary edema may be delayed.
- Skin Contact：Wear protective gloves to avoid contact if necessary. Remove contaminated clothing, shoes, and leather products under running water. Immediately flush exposed area with large amounts of warm running water for 20-30 minutes. Obtain medical attention immediately. Decontaminate clothing thoroughly before reuse or discard.
- Eye Contact：Immediately flush eyes with warm, gently running water or saline solution for at least 30 minutes, holding eyelids open during flushing. Take care not to flush contaminated water into unaffected eye. Flushing repeatedly if irritation develops. Wear gloves to avoid contact during first aid procedures. Obtain medical attention immediately.
- Ingestion：Do not give anything by mouth to an unconscious person. Do not induce vomiting. Danger of aspiration with vomiting. If spontaneous vomiting occurs, have casualty lean forward to avoid breathing in of emesis. Rinse mouth and administer more water. May drink milk after drinking 240-300ml water.

The Most Important Symptoms and Hazardous Effects：

1. Prolonged inhalation of high concentrations can cause respiratory tract injure, or even cause kidney and liver damage.

Protection of First-aiders：Wear Class C protective gears and do first aid in a safe zone.

Notes to a Physician：

1. Considers offering the oxygen when inhaled.
2. Gastric lavage should not be used.
3. Consider esophageal endoscopic examination when ingested.

Section 5 - Fire Fighting Measures

Extinguishing Media：Water spray, dry chemical, alcohol foam, or carbon dioxide.

Specific Hazards when Fire-fight：Flammable liquid. If above 85℃, vapor-air mixtures are explosive. Burning may cause toxic/irritative fumes.

Specific Fire-fighting Procedure：

1. Water spray may be used to reduce vapors and to cool containers exposed to fire.
2. Water may be used to flush spills away from exposures and to dilute spills to on-flammable mixtures.
3. Evacuate area of leak or spill.
4. Fight fire from protected location or safe distance.
5. Approach fire from upwind. Stay away from the low or confined area.

6. Do not inhale chemical or fumes. 7. Do not enter fire area without wearing proper protective gears.
Specific Protection of Firefighters：As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH and full protective gear

Section 6 - Accidental Release Measures

Personal Precautions： 1. Restrict access to area until completion of clean up. 2. Ensure clean up is inducted by trained personnel only. 3. Wear proper personal protective gears.
Environmental Precautions： 1. Well-ventilated the contaminated area. 2. Remove all sources of ignition. 3. Notify the occupational safety health unit or environmental protection unit.
Methods for Cleaning up： 1. Prevent contacting with the spills or leaks. 2. Prevent entry into sewers or confined area. 3. Stop leaking if safe to do so. 4. Absorb with dry earth or sand. Dike if necessary. 5. Small Spill: Cover and soak up with inert absorbent material. The waste absorbent material is hazardous as the product. Store in the appropriate containers with covers and hazardous label. Small amounts of residue may be flushed with plenty of water. 6. Large Spill: Contact the fire department, emergency management agency, or the suppliers immediately.

Section 7 - Handling and Storage

Handling： 1. Do not use aluminium, galvanized or tin-plated containers. 2. Do not use brass or copper containers/stirrers. 3. Avoid all personal contact, including inhalation. 4. Wear protective clothing when risk of exposure occurs. 5. Use in a well-ventilated area. 6. Avoid contact with moisture. 7. Avoid contact with incompatible materials. 8. When handling, DO NOT eat, drink, or smoke. 9. Keep containers securely sealed when not in used. 10. Avoid physical damage to containers. 11. Always wash hands with soap and water after handing. 12. Work clothes should be laundered separately. Launder contaminated clothing before re-use. 13. Use good occupational work practice. 14. Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained. 15. Do not allow clothing wet with material to stay in contact with skin.
Storage： 1. Store in original containers. 2. Keep containers securely sealed.

3. Store in a cool, dry, well-ventilated area.
4. Store away from incompatible materials and foodstuff containers.
5. Protect containers against physical damage and check regularly for spills and leaks.
6. Observe manufacturer's storing and handling recommendations.
7. Do not store near acids, or oxidizing agents.
8. No smoking, naked lights, heat or ignition sources.

Section 8 - Exposure Controls & Personal Protection

Engineering measures：

1. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
2. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Control parameters			
TWA	STEL	Ceiling	Biological standards
3 ppm	6 ppm	--	--

Personal protective equipment：

- Respiratory protection：Use an approved positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Selection of the Class of Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. For further information consult site specific CHEMWATCH data, or your Occupational Health and Safety Advisor.
- Hand Protection：Wear chemical protective gloves, e.g. PVC.
- Eye Protection：Chemical goggles. Full face shield may be required for supplementary but never for primary protection of eyes.
- Skin and Body Protection：Wear safety footwear or safety gumboots, e.g. Rubber. When handling corrosive liquids, wear trousers or overalls outside of boots, to avoid spills entering boots. PVC protective suit may be required if exposure severe. Ensure there is ready access to safety shower.

Hygiene measures：

1. Change contaminated clothing. Dispose or reuse after appropriate cleaning. Warning the cleaner for the chemical contaminated.
2. Eating or smoking is prohibited.
3. Wash hands thoroughly after working with the substance.
1. Maintain the cleanness of the workplace.

Section 9 - Physical & Chemical Properties

Appearance：liquid	Odor：fishy, ammonia-like odor.
Colour：colorless	Melting Point: 10.3℃~10.5℃
pH value：12.1 (25% water solution)	Boiling point/boiling range：171℃~172℃
Flammability: --	Flash point： 85℃
Decomposition temp：--	Test method (Opened or Closed cup)：Closed
Autoignition temp：410℃	Explosion properties：5.5%~17%

Vapor pressure：4 mmHg	Vapor density：2.1 (Air=1)
Density：1.018 (water = 1)	Solubility：Soluble in water.
log Kow：-1.31	Evaporation Rate：＜1

Section 10 - Stability & Reactivity Data

Stability：Stable under normal temperature and pressure

Possible hazardous reactions under specific conditions：

1. Stable under normal conditions, but would absorb the moisture in the air, and react with Carbon Dioxide to produce salt. Would decompose under light, and slowly oxidize in air, and turn into a color of yellow then to brown. The reaction rate would increase due to the existence of heat and metal.
2. Strong acid, hydrochloric acid, acid anhydride: violent reaction or explosive reaction
3. Strong Oxidizers: violent reaction
4. Monomers (epoxide, vinyl chloride, vinyl acetate): violent reaction
5. Strong deoxidizer (Hydrazine) : violent reaction
6. Nitrocellulose: When ethanolamine acts as the heat reactor of the polymerization reaction, the contact with large source of nitrocellulose would induce spontaneous combustion.

Conditions to avoid：air, heat, sparks, open flame, other sources of ignition.

Materials to avoid：strong acid, strong oxidizers, monomers, strong deoxidizer, nitrocellulose

Hazardous decomposition products：--

Section 11 - Toxicological Information

Route of exposure：Eye、Skin、Ingestion、Inhalation

Symptoms：sore throat, coughing, respiratory distress, headache, lethargy, and vomit.

Immediate Toxicity：

- Skin: May cause irritation, redness, burns, and pain. May be absorbed through the skin; symptoms may parallel inhalation.
- Eyes: Vapors and contact may cause severe irritation, burns, redness, pain, and blurred vision.
- Inhalation: Vapor may cause irritation to the respiratory tract. Symptoms may include sore throat, coughing, respiratory distress, headache, lethargy, and narcosis. Exposure to higher concentrations may cause pulmonary irritation, and kidney and liver damage.
- Ingestion: May cause mucosal burns of the mouth and esophagus, abdominal pain, nausea, and vomiting. May cause systemic poisoning with symptoms paralleling inhalation.
  - LD_{50}: 1720 mg/kg (Oral rat)
  - LC_{50}:--

Specific effects：Chronic Effects on Humans:

1. Prolonged or repeated skin exposure may cause severe irritation or dermatitis.
2. Persons with pre-existing skin disorders or impaired liver, kidney, and pulmonary function may be more susceptible to the effects of this material.

Section 12 - Ecological Information

Ecotoxicology：

■ LC_{50}(fish)：170mg/1/96H ■ EC_{50}(Aquatic Invertebrates)：-- ■ Bioconcentration factor (BCF)：<1
Persistence and degradability： ■ Half-Life (Air)：-- ■ Half-Life (Water surface)：-- ■ Half-Life (Groundwater)：-- ■ Half-Life (Soil)：--
Bioaccumulative potential：--
Mobility in soil： 1. If released to soil, 2-aminoethanol (MEA) is expected to biodegrade fairly rapidly following acclimation (half-life on the order of days to weeks). 2. MEA is expected to leach in soil. 3. Volatilization from soil surfaces is not expected to be an important fate process. 4. If released to water, 2-aminoethanol should undergo biodegradation. 5. The half-life of this compound is expected to range from a few days to a few weeks depending, in large part, on the degree of acclimation of the system.
Other adverse effects：--

Section 13 - Disposal Considerations

Methods of disposal： 1. Follow ROC Environmental Law and Regulations. 2. Incinerate residue at an approved site.

Section 14 - SDS Transport Information

UN classification number：2491
Proper D.O.T Shipping Name：Ethanolamine or Ethanolamine Solution
Hazard Class：Hazard Class 8
Packing Group：Ⅲ
Marine pollution：n/a
Specific precautionary transport measures and conditions： 1. Store away from incompatible materials. 2. The outer package of dangerous goods must be non-reactive materials. 3. Must fix the dangerous goods with or without package by using binding belt in transportation container. 4. No stacking unless the package designed for stacking. 5. Protect the outer package of dangerous goods against physical damage during loading or unloading.

Section 15 - Regulatory Information

Regulations： 1. Occupational Safety and Health Act 2. Regulations for the Labelling and Hazard Communication of Hazardous Chemicals

3. Standards of Permissible Exposure Limits of Airborne Hazardous Substances in Workplace
4. Road Traffic Safety Regulations
5. Industrial Waste Storage and Disposal Regulations
6. Public Hazardous Materials and Flammable Pressurized Gases Establishment Standards and Safety Control Regulations.
7. Assessment and Classification Administration of Hazardous Chemicals.

Section 16 - Other Information

Literature references	1. CHEMINFO Database, CCINFO CD, 2005-3 2. RTECS Database, TOMES PLUS Disc, Vol.65, 2005 3. HSDB Database, TOMES PLUS Disc, Vol.65, 2005 4. ChemWatch Database, 2005-1	
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Remarks	Symbols Explanations: "--" No information is available at this time. "/" Not applicable to this substance.	

■ This information above has consulted national or international papers and manufacturer or supplier's provided 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. Users should make their own determination of the suitability of the information for their particular purposes.