

**MATERIAL SAFETY DATA SHEET****Product Trade Name:** MO-86M**Revision Date:** 20-Aug-2014**Revision Number:** 17**SECTION 1. Product and Company Identification****Product Identifier**

**Product Trade Name:** MO-86M  
**Synonyms:** None  
**Chemical Family:** Amine  
**Internal ID Code:** HM005397

**Product Use**

**Application:** Gelling Agent

**Manufacturer's Name and Contact Details**

**Name and Address** Halliburton Energy Services  
645 - 7th Ave SW Suite 2200  
Calgary, AB  
T2P 4G8  
Canada

**Emergency Telephone Number** (281) 575-5000

**Prepared By**

Chemical Compliance  
Telephone: 1-580-251-4335  
e-mail: fdunexchem@halliburton.com

**SECTION 2. Hazard(s) Identification****WHMIS Classification**

**WHMIS Hazard Class** D1B Toxic Materials  
E Corrosive Material

**WHMIS Symbol(s)****Summary of hazards of the product**

**Hazard Overview** May cause eye, skin, and respiratory burns. May be harmful if swallowed.

**SECTION 3: Composition/information on Ingredients**

Substances	CAS Number	PERCENT (w/w)	HMIRA Registry Number	Decision Granted Date
Ferric sulfate	10028-22-5	30 - 60%	Not applicable	Not applicable
Ethanolamine	Proprietary	5 - 10%	8948	July 18, 2014
Dibutylaminoethanol	102-81-8	5 - 10%	Not applicable	Not applicable
Ethoxylated alkyl amines	Proprietary	1 - 5%	8948	July 18, 2014

## SECTION 4. First aid measures

### Description of first aid measures

#### **Inhalation**

If inhaled, remove to fresh air. If not breathing give artificial respiration (AR), preferably mouth-to-mouth. If breathing is difficult, oxygen should be given by trained personnel. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation (CPR) immediately. Get medical attention.

#### **Eyes**

In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 30 minutes while holding eyelids open and get medical attention immediately after flushing.

#### **Skin**

In case of contact, immediately flush skin with plenty of soap and water for at least 30 minutes and remove contaminated clothing, shoes and leather goods immediately. Get medical attention.

#### **Ingestion**

Do not induce vomiting. Never give anything by mouth to an unconscious person. If breathing has stopped, trained personnel should begin rescue breathing / artificial respiration (AR) immediately. If the heart has stopped, trained personnel should begin CPR immediately. Obtain medical attention immediately. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration.

### Most important symptoms and effects, both acute and delayed

May cause eye and skin burns.

### Indication of any immediate medical attention and special treatment needed

#### **Notes to Physician**

Treat symptomatically

## SECTION 5. Fire Fighting Measures

### Extinguishing media

#### **Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

#### **Extinguishing media which must not be used for safety reasons**

None known.

### Special hazards arising from the substance or mixture

#### **Special Exposure Hazards**

Decomposition in fire may produce toxic gases.

### Advice for firefighters

#### **Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

### Hazardous combustion products

Oxides of phosphorus. Oxides of nitrogen. Carbon monoxide and carbon dioxide.

## SECTION 6. Accidental release measures

### Personal precautions and emergency procedures

#### **Protective Equipment**

Use appropriate protective equipment.

#### **Environmental Precautionary Measures**

Prevent from entering sewers, waterways, or low areas.

#### **Procedure for Cleaning / Absorption**

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Neutralize to pH of 6-8. Scoop up and remove.

## SECTION 7. Handling and Storage

**Precautions for safe handling**

Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Wash hands after use. Launder contaminated clothing before reuse.

**Conditions for safe storage and Incompatible materials for storage**

Store away from alkalis. Store away from oxidizers. Store in a cool well ventilated area. Keep container closed when not in use. Product has a shelf life of 24 months.

**SECTION 8: Exposure Controls/Personal Protection****Occupational Exposure Limits****Exposure Limits**

Substances	CAS Number	ACGIH TLV-TWA	OSHA PEL-TWA
Ferric sulfate	10028-22-5	1 mg/m <sup>3</sup>	Not available
Ethanolamine	Proprietary	TWA: 2 ppm Skin	10 ppm Skin
Dibutylaminoethanol	102-81-8	TWA: 0.5 ppm Skin	Not available
Ethoxylated alkyl amines	Proprietary	Not available	Not available

**Appropriate engineering controls****Engineering Controls**

Use in a well ventilated area.

**Personal Protective Equipment (PPE)****Respiratory Protection**

Not normally necessary.

**Hand Protection**

Impervious rubber gloves.

**Skin Protection**

Rubber apron.

**Eye Protection**

Chemical goggles; also wear a face shield if splashing hazard exists.

**Other Precautions**

Eyewash fountains and safety showers must be easily accessible.

**SECTION 9. Physical and Chemical Properties****Information on basic physical and chemical properties**

**Physical State:** Liquid  
**Odor:** Mild amine

**Color:** Brown  
**Odor Threshold:** No information available

**Property****Remarks/ - Method****pH:****Values****pH Concentration of Solution:**

1.7 (100%)

**Freezing Point/Range**

No information available.

**Melting Point/Range**

No information available.

**Boiling Point/Range (C):**

No information available.

**Flash Point/Range (C):**

No information available.

**Flash Point Method:**

> 93 °C

**Autoignition Temperature (C):**

PMCC

**Flammability Limits in Air - Lower (%):**

No information available.

**Flammability Limits in Air - Upper (%):**

No information available.

**Evaporation Rate (Butyl Acetate=1):**

No information available.

**Vapor Pressure @ 20 C (mmHg):**

< 1

**Vapor Density (Air=1):**

< 1

**Specific Gravity @ 20 C (Water=1):**

>1

**Solubility in Water (g/100ml):**

1.351

**Solubility in other solvents**

Insoluble

**Partition Coefficient/n-Octanol/Water:**

No information available.

**Decomposition Temperature (C):**

No information available.

**Viscosity**

No information available.

**Explosive Properties**

No information available.

**Oxidizing Properties**

No information available

**Other Information****Molecular Weight (g/mole):**

No information available.

**VOC Content (%)**

No information available

**SECTION 10. Stability and Reactivity****Conditions of Reactivity****Conditions to Avoid**

None anticipated

**Hazardous Polymerization:**

Will Not Occur

**Chemical Stability**

Stable

**Sensitivity to Static Discharge**

Not available

**Sensitivity to Mechanical Impact**

Not available

**Incompatible materials**

Strong oxidizers.

**Hazardous Decomposition Products**

Oxides of phosphorus. Oxides of nitrogen. Carbon monoxide and carbon dioxide.

**SECTION 11. Toxicological Information****Routes of entry**

Eye or skin contact, inhalation.

**Information on Toxicological Effects****Acute effects from exposure****Inhalation**

Causes severe respiratory irritation.

**Eye Contact**

Causes severe eye irritation May cause eye burns.

**Skin Contact**

Causes severe skin irritation. May cause skin burns.

**Ingestion**

Causes burns of the mouth, throat and stomach. May cause abdominal pain, vomiting, nausea, and diarrhea.

**Chronic effects from exposure****Chronic Effects/Carcinogenicity**

No data available to indicate product or components present at greater than 1% are chronic health hazards.

**Irritancy of product****Irritation**

Corrosive to eyes Corrosive to skin

**Sensitization of product****Sensitization**

Not confirmed to cause skin or respiratory sensitization.

**Mutagenicity**

Mutagenic Effects

Some in vitro tests have shown mutagenic effects.

**Carcinogenicity**

Carcinogenic Effects

No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC, NTP, or OSHA.

**Reproductive toxicity**

Reproductive Toxicity

This product does not contain any known or suspected reproductive hazards

**Teratogenicity/embryotoxicity**

Teratogenic

Not a confirmed teratogen or embryotoxin.

**Toxicologically synergistic material** Not available**Acute Toxicity**

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Ferric sulfate	10028-22-5	500 mg/kg ( Rat )	No data available	No data available
Ethanolamine	Proprietary	1300 mg/kg ( Rat )	1260 mg/kg ( Rabbit )	No data available
Dibutylaminoethanol	102-81-8	1070 mg/kg ( Rat )	1680 µL/kg ( Rabbit )	No data available
Ethoxylated alkyl amines	Proprietary	750 mg/kg ( Rat )	No data available	No data available

<b>SECTION 12. Ecological Information</b>
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**Toxicity****Ecotoxicity Effects**

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Ferric sulfate	10028-22-5	No information available	No information available	No information available	No information available
Ethanolamine	Proprietary	No information available	No information available	No information available	No information available
Dibutylaminoethanol	102-81-8	No information available	No information available	No information available	No information available
Ethoxylated alkyl amines	Proprietary	No information available	No information available	No information available	No information available

**Persistence and Degradability**

No information available

**Bioaccumulation potential**

No information available

**Mobility in soil**

No information available

**Results of PBT and vPvB assessment**

No information available.

**Other adverse effects****Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

<b>SECTION 13. Disposal Considerations</b>
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**Disposal Method**

Disposal should be made in accordance with federal, state, and local regulations.

**Contaminated Packaging**

Follow all applicable national or local regulations.

<b>SECTION 14. Transport Information</b>
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**Canadian TDG u10****UN Number:**

UN2922

**UN Proper Shipping Name:**

Corrosive Liquid, Toxic, N.O.S. (Contains Ferric Sulfate, Dibutylaminoethanol)

**Transport Hazard Class(es):**

8

**Subsidiary Hazard:** (6.1)  
**Packing Group:** III  
**EMS:** EmS F-A, S-B

**IATA/ICAO**

**UN Number:** UN2922  
**UN Proper Shipping Name:** Corrosive Liquid, Toxic, N.O.S. (Contains Ferric Sulfate, Dibutylaminoethanol)  
**Transport Hazard Class(es):** 8  
**Subsidiary Hazard:** (6.1)  
**Packing Group:** III

**IMDG/IMO**

**UN Number:** UN2922  
**UN Proper Shipping Name:** Corrosive Liquid, Toxic, N.O.S. (Contains Ferric Sulfate, Dibutylaminoethanol)  
**Transport Hazard Class(es):** 8  
**Subsidiary Hazard:** (6.1)  
**Packing Group:** III  
**EMS:** EmS F-A, S-B

**Special Precautions for User:** None

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:**

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:

**SECTION 15: Regulatory Information**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

**Canadian Regulations**

**Canadian DSL Inventory** All components listed on inventory or are exempt.

**WHMIS Hazard Class**  
D1B Toxic Materials  
E Corrosive Material

**WHMIS Symbol(s)****US Regulations**

**US TSCA Inventory** All components listed on inventory or are exempt.

**SECTION 16. Other Information****Preparation Information**

**Prepared By** Chemical Compliance  
Telephone: 1-580-251-4335  
e-mail: fdunexchem@halliburton.com

**Revision Date:** 20-Aug-2014

Not applicable

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**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

**Key or legend to abbreviations and acronyms**

WHMIS: Workplace Hazardous Materials Information System

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

**Disclaimer Statement**

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**\*\*\*END OF MSDS\*\*\***