HALLIBURTON

MATERIAL SAFETY DATA SHEET

Product Trade Name: **HAI-404M™**

Revision Date: 28-Aug-2014 **Revision Number:** 12

SECTION 1. Product and Company Identification

Product Identifier

Product Trade Name: HAI-404M™
Synonyms: None
Chemical Family: Blend
Internal ID Code HM005995

Product Use

Application: Corrosion Inhibitor

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
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SECTION 2. Hazard(s) Identification

WHIMIS Classification

WHMIS Hazard Class
B2 Flammable Liquids
D1B Toxic Materials
D2A Very Toxic Materials
D2B Toxic Materials

WHMIS Symbol(s)

Summary of hazards of the product

Hazard Overview May cause eye burns. May cause skin and respiratory irritation. May cause allergic skin reaction. May cause headache, dizziness, and other central nervous system effects. May be fatal if swallowed. May cause blindness. May be absorbed through the skin. Repeated overexposure may cause liver and kidney effects. Flammable.

SECTION 3: Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	HMIRA Registry Number	Decision Granted Date
Aldehyde	Proprietary	10 - 30%	8940	August 20, 2014
Methanol	67-56-1	10 - 30%	Not applicable	Not applicable
Isopropanol	67-63-0	10 - 30%	Not applicable	Not applicable
Cycloaliphatic alkoxylate	Proprietary	10 - 30%	8940	August 20, 2014
1-(Benzyl)quinolinium chloride	15619-48-4	5 - 10%	Not applicable	Not applicable
Benzylheteropolycycle salt	Proprietary	5 - 10%	8940	August 20, 2014
Polyoxylated fatty amine salt	61791-26-2	5 - 10%	8940	August 20, 2014
Ethoxylated alcohol	Proprietary	5 - 10%	8940	August 20, 2014
Fatty acids, tall oil	Proprietary	5 - 10%	8940	August 20, 2014
Ethoxylated alkyl amines	Proprietary	1 - 5%	8940	August 20, 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 immediately.

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 15 minutes. Get medical attention. Remove contaminated clothing and launder before reuse.

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.

Most important symptoms and effects, both acute and delayed

May cause severe eye irritation. May cause skin and respiratory irritation. May cause allergic skin reaction. May cause headache, dizziness, and other central nervous system effects. May be harmful if swallowed. May cause blindness.

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

Carbon dioxide, dry chemical, foam.

Extinguishing media which must not be used for safety reasons

None known.

Special hazards arising from the substance or mixture

Special Exposure Hazards

May be ignited by heat, sparks or flames. Use water spray to cool fire exposed surfaces. Closed containers may explode in fire. Decomposition in fire may produce toxic gases. Runoff to sewer may cause fire or explosion hazard.

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

Ammonia. Hydrogen chloride. Oxides of nitrogen. Oxides of phosphorus. Carbon monoxide and carbon dioxide. Hydrocarbons.

SECTION 6. Accidental release measures

Personal precautions and emergency procedures

Protective Equipment

Use appropriate protective equipment. Wear self-contained breathing apparatus in enclosed areas.

Environmental Precautionary Measures

Prevent from entering sewers, waterways, or low areas.

Procedure for Cleaning / Absorption

Isolate spill and stop leak where safe. Remove ignition sources and work with non-sparking tools. Contain spill with sand or other inert materials. 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. Ground and bond containers when transferring from one container to another. If ventilation is inadequate, vapors can spread from open containers of the controlled product and may flash back, causing a fire, if they contact an ignition source.

Conditions for safe storage and Incompatible materials for storage

Keep from heat, sparks, and open flames. Store away from oxidizers. Store in a well ventilated area. Store in a cool, dry location. Store locked up. 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
Aldehyde	Proprietary	Not available	Not available
Methanol	67-56-1	TWA: 200 ppm STEL: 250 ppm Skin	TWA: 200 ppm
Isopropanol	67-63-0	TWA: 200 ppm STEL: 400 ppm	400 ppm
Cycloaliphatic alkoxylate	Proprietary	Not available	Not available
1-(Benzyl)quinolinium chloride	15619-48-4	Not available	Not available
Benzylheteropolycycle salt	Proprietary	Not available	Not available
Polyoxylated fatty amine salt	61791-26-2	Not available	Not available
Ethoxylated alcohol	Proprietary	Not available	Not available
Fatty acids, tall oil	Proprietary	Not available	Not available
Ethoxylated alkyl amines	Proprietary	Not available	Not available

Appropriate engineering controls

Engineering Controls Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation.

Personal Protective Equipment (PPE)

Respiratory Protection Positive pressure self-contained breathing apparatus if methanol is released.

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
Color: Dark brown
Odor: Alcohol
Odor Threshold: No information available

Property Remarks/ - Method	Values
pH:	3.72
pH Concentration of Solution:	No information available.
Freezing Point/Range	< -20 °C
Melting Point/Range	No information available
Boiling Point/Range (C):	No information available.
Flash Point/Range (C):	20.6 °C
Flash Point Method:	PMCC
Autoignition Temperature (C):	No information available.
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):	No information available.
Vapor Density (Air=1):	No information available.
Specific Gravity @ 20 C (Water=1):	0.988
Solubility in Water (g/100ml):	Soluble
Solubility in other solvents	No information available.
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 Keep away from heat, sparks and flame.
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
Ammonia. Hydrogen chloride. Oxides of nitrogen. Oxides of phosphorus. Carbon monoxide and carbon dioxide. Hydrocarbons.

SECTION 11. Toxicological Information

Routes of entry
Eye or skin contact, inhalation. Ingestion.

Information on Toxicological Effects

Acute effects from exposure

Product Information Under certain conditions of use, some of the product ingredients may cause the following:

Inhalation May cause respiratory irritation. May cause central nervous system depression including headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness.

Eye Contact May cause severe eye irritation. May cause permanent eye damage.

Skin Contact May cause skin irritation. May cause an allergic skin reaction. May be absorbed through the skin and produce effects similar to those caused by inhalation and/or ingestion.

Ingestion May be fatal or cause blindness if swallowed. May cause central nervous system depression including headache, dizziness, drowsiness, muscular weakness, incoordination, slowed reaction time, fatigue blurred vision, slurred speech, giddiness, tremors and convulsions. May cause liver and kidney damage.

Chronic effects from exposure

Chronic Effects/Carcinogenicity Prolonged or repeated exposure may cause eye, blood, lung, liver, kidney, heart, central nervous system and spleen damage.

Irritancy of product

Irritation Irritating to eyes and skin

Sensitization of product

Sensitization Ingredients in the product have been shown to cause skin sensitization.

Mutagenicity

Mutagenic Effects An ingredient in the product has been shown to cause mutagenic effects in bacterial and mammalian cells in vitro.

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 Fetotoxic and teratogenic effects observed in experimental animals at concentrations that did not produce maternal toxicity.

Toxicologically synergistic material

Methanol: In animals, high concentrations can increase the toxicity of other chemicals, particularly liver toxins like carbon tetrachloride. Ethanol significantly decreases the toxicity, because it competes for the same metabolic enzymes

Isopropanol: Enhanced by the toxicity of carbon tetrachloride, 1,1,2-trichloroethane, chloroform, trichloroethylene, and dimethylnitrosamine (possibly carbon tetrachloride).

Acute Toxicity

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Aldehyde	Proprietary	2200 mg/kg (Rat) 340 mg/kg (Guinea pig) 1160 ng/kg (Rat) 1600 mg/kg (Rat)	2000 mg/kg (Rabbit) 2000 mg/kg (Rat) 1260 mg/kg (Rabbit)	QSAR: 68.86 ppm (Rat) 4h 68.88 ppm (Rat) 4h (QSAR)
Methanol	67-56-1	> 1187 - 2769 mg/kg (Rat) 3000 mg/kg (Monkey) 300 mg/kg (Human)	15800 mg/kg (Rabbit) 393 mg/kg (Primate)	87.5 mg/L (Rat) 6h vapour 128.2 mg/L (Rat) 4h vapour 83.2 mg/L (Rat) 4 h 64000 ppm (Rat) 4 h 10 mg/L (Human)
Isopropanol	67-63-0	4396 mg/kg (Rat) 5840 mg/kg (Rat) 3600 mg/kg (Mouse)	12800 mg/kg (Rat) 12870 mg/kg (Rabbit) 16.4 mL/kg (Rabbit) 6280 mg/kg (Rabbit)	72.6 mg/L (Rat) 4h >10000 ppm (Rat) 6h

Cycloaliphatic alkoxylate	Proprietary	No data available	No data available	No data available
1-(Benzyl)quinolinium chloride	15619-48-4	No data available	No data available	No data available
Benzylheteropolycycle salt	Proprietary	No data available	No data available	No data available
Polyoxylated fatty amine salt	61791-26-2	620 mg/kg (Rat) 1200 mg/kg	10 g/kg (Rat)	No data available
Ethoxylated alcohol	Proprietary	1,400 mg/kg (Rats)	>2000 and < 5000 mg/kg (similar substances)	No data available
Fatty acids, tall oil	Proprietary	7600 mg/kg (Rat)	No data available	No data available
Ethoxylated alkyl amines	Proprietary	750 mg/kg (Rat)	No data available	No data available

SECTION 12. Ecological Information

Toxicity

Ecotoxicity Effects

Substances	CAS Number	**Toxicity to Algae**	**Toxicity to Fish**	**Toxicity to Microorganisms**	**Toxicity to Invertebrates**
Aldehyde	Proprietary	EC50: 0.13 mg/L (Chlorella vulgaris) 80 h minimum inhibitory concentration (QSAR): 0.15 mmol/L (Chlorella vulgaris)	(QSAR) LC50(47h): 122 mg/L (Cyprinus carpio)	(QSAR) IC50(48h): 131.2 mg/L (Tetrahymena pyriformis)	(QSAR) LC50(48h): 107 mg/L (Daphnia magna)
Methanol	67-56-1	EC50(96h): ca. 22000 mg/L (Pseudokirchnerella subcapitata, Growth rate)	LC50: 28200 mg/l (Pimephales promelas) LC50(96h): 12700 – 15400 mg/L (Lepomis macrochirus) 200 hr NOEC for % Embryo-cardiovascular for stage 2 = 15800 mg/L	IC50(3h): > 1000 mg/L (activated sludge)	EC50(96h): 18260 mg/L (Daphnia magna) NOEC(21d): 122 mg/L (Daphnia magna, Reproduction)
Isopropanol	67-63-0	EC50(72h): > 1000 mg/l(Desmodesmus subspicatus) EC50(7d): 1800 mg/L (mean extinction value) (Scenedesmus quadricauda)	LC50(96h): 9640 mg/l (Pimephales promelas) LC50(7d): 7060 mg/L (Poecilia reticulata)	TT(16h): 1050 mg/L (Pseudomonas putida)	EC50(48h): 13299 mg/l (Daphnia magna) EC50(24h): > 10000 mg/L (Daphnia magna)
Cycloaliphatic alkoxylate	Proprietary	No information available	No information available	No information available	No information available
1-(Benzyl)quinolinium chloride	15619-48-4	No information available	No information available	No information available	No information available
Benzylheteropolycycle salt	Proprietary	No information available	No information available	No information available	No information available
Polyoxylated fatty amine salt	61791-26-2	No information available	LC50 1.3 mg/L (Lepomis macrochirus)	No information available	LC50: 2.35 mg/L (Daphnia pulex)
Ethoxylated alcohol	Proprietary	(similar substance) EC50(72h): 0.5 mg/L (Scenedesmus subspicatus) (similar substance) EC50(72h): 0.85 mg/L (Selenastrum capricornutum)	(similar substance) LC50(96h): 1.2 – 6.4 (Brachydanio rerio)	(similar substance) EC0(30m): >10000 mg/L (Pseudomonas putida)	(similar substance) EC50(48h): 0.5 – 1.9 mg/L
Fatty acids, tall oil	Proprietary	No information available	EC50: 1102 mg/l (Corophium volutator)	No information available	EC50(48 Hour): 50-100 mg/l (Daphnia magna)

Ethoxylated alkyl amines	Proprietary	No information available	No information available	No information available	No information available

Persistence and Degradability
No information available

Bioaccumlation potential
No information available

Substances	Log Pow
Aldehyde	1.83 BCF: 8 (Calculated)
Methanol	-0.77 BCF 1.0 – 4.5 (Cyprinus carpio) BCF < 10 (Leuciscus idus melanotus)
Isopropanol	0.05 @ 25°C

Mobility in soil
No information available

Results of PBT and vPvB assessment
No information available.

Substances	PBT and vPvB assessment
Methanol	Not PBT/vPvB
Isopropanol	Not PBT/vPvB

Other adverse effects
Endocrine Disruptor Information
This product does not contain any known or suspected endocrine disruptors

SECTION 13. Disposal Considerations

Disposal Method Disposal should be made in accordance with federal, state, and local regulations. Incineration recommended in approved incinerator according to federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.

Contaminated Packaging Follow all applicable national or local regulations. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

SECTION 14. Transport Information

Canadian TDG ul0
UN Number: UN1993
UN Proper Shipping Name: Flammable Liquid, N.O.S. (Contains Isopropanol, Methanol)
Transport Hazard Class(es): 3
Packing Group: II
EMS: EmS F-E, S-E

IATA/ICAO
UN Number: UN1993
UN Proper Shipping Name: Flammable Liquid, N.O.S. (Contains Isopropanol, Methanol)
Transport Hazard Class(es): 3
Packing Group: II

IMDG/IMO
UN Number: UN1993

UN Proper Shipping Name:	Flammable Liquid, N.O.S. (Contains Isopropanol, Methanol)
Transport Hazard Class(es):	3
Packing Group:	II
EMS:	EmS F-E, S-E

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

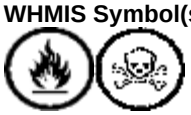
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Canadian Regulations

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

WHMIS Hazard Class
B2 Flammable Liquids
D1B Toxic Materials
D2A Very Toxic Materials
D2B Toxic Materials

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: 28-Aug-2014

The following sections have been revised since the last issue of this SDS
Section 3. Composition/Information of Ingredients
Not applicable

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/
NZ CCID

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