HALLIBURTON

MATERIAL SAFETY DATA SHEET

Product Trade Name: **HAI-OS ACID INHIBITOR**

Revision Date: 22-Sep-2014 **Revision Number:** 17

SECTION 1. Product and Company Identification

Product Identifier

Product Trade Name: HAI-OS ACID INHIBITOR
Synonyms: None
Chemical Family: Blend
Internal ID Code HM003203

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
Telephone: 1-580-251-4335
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SECTION 2. Hazard(s) Identification

WHIMIS Classification

WHMIS Hazard Class
B2 Flammable Liquids
D1A Very Toxic Materials
D2A Very Toxic Materials
D2B Toxic Materials
E Corrosive Material

WHMIS Symbol(s)

Summary of hazards of the product

Hazard Overview May cause eye and skin burns. May cause headache, dizziness, and other central nervous system effects. May be absorbed through the skin. May be fatal if swallowed. May cause blindness. Flammable.

SECTION 3: Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	HMIRA Registry Number	Decision Granted Date

Propargyl alcohol	107-19-7	5 - 10%	Not applicable	Not applicable
Fatty acids, tall oil	Proprietary	10 - 30%	8943	September 10, 2014
Ethoxylated alcohols	Proprietary	10 - 30%	8943	September 10, 2014
Modified thiourea polymer	Proprietary	10 - 30%	8943	September 10, 2014
Olefin	Proprietary	1 - 5%	8943	September 10, 2014
Methanol	67-56-1	30 - 60%	Not applicable	Not applicable

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 30 minutes and remove contaminated clothing, shoes and leather goods immediately. Get medical attention immediately.

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 lie on their side, in recovery position, to reduce risk of aspiration, and obtain medical attention immediately.

Most important symptoms and effects, both acute and delayed

May cause eye and skin burns. May cause headache, dizziness, and other central nervous system effects. May be fatal 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

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

May be ignited by heat, sparks or flames. Decomposition in fire may produce toxic gases. Use water spray to cool fire exposed surfaces. Closed containers may explode in fire. Avoid spraying water directly into storage containers due to danger of boilover. Vapors are heavier than air and may accumulate in low areas. Vapors may travel along the ground to be ignited at distant locations.

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 sulfur. Oxides of nitrogen. Carbon monoxide and carbon dioxide. Hydrogen cyanide.

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.

Conditions for safe storage and Incompatible materials for storage

Store away from oxidizers. Keep from heat, sparks, and open flames. 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
Propargyl alcohol	107-19-7	TWA: 1 ppm	Not available
Fatty acids, tall oil	Proprietary	Not available	Not available
Ethoxylated alcohols	Proprietary	Not available	Not available
Modified thiourea polymer	Proprietary	Not available	Not available
Olefin	Proprietary	Not available	Not available
Methanol	67-56-1	TWA: 200 ppm STEL: 250 ppm Skin	TWA: 200 ppm

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 Full protective chemical resistant clothing.

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: Alcohol
Color: Clear amber
Odor Threshold: No information available

Property	Values	Remarks/ - Method
pH:	4 - 6	

pH Concentration of Solution:	No information available.
Freezing Point/Range	-29 °C
Melting Point/Range	No information available
Boiling Point/Range (C):	No information available.
Flash Point/Range (C):	< 11 °C
Flash Point Method:	TCC
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):	>1
Specific Gravity @ 20 C (Water=1):	0.89
Solubility in Water (g/100ml):	Disperses
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. Avoid contact with acids. Avoid contact with oxidizers.
Hazardous Polymerization:	Will Not Occur

Chemical Stability
Stable

Sensitivity to Static Discharge
Not available

Sensitivity to Mechanical Impact
Not available

Incompatible materials
Strong oxidizers. Strong acids. Strong alkalis.

Hazardous Decomposition Products
Oxides of sulfur. Oxides of nitrogen. Carbon monoxide and carbon dioxide. Hydrogen cyanide.

SECTION 11. Toxicological Information

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

Information on Toxicological Effects

Acute effects from exposure

Inhalation	Causes severe respiratory irritation. May cause chemical pneumonia. May cause central nervous system depression including headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness.
Eye Contact	Causes severe eye irritation which may damage tissue. May cause eye burns.
Skin Contact	Causes severe skin irritation. May cause skin burns. 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. Causes burns of the mouth, throat and stomach. 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.

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. Chronic exposure to propargyl alchol vapour has caused neoplastic adenomas in animals.

Irritancy of product

Irritation Causes severe irritation and or burns

Sensitization of product

Sensitization Fatty acid, tall oil has caused skin sisitization in animal studies.

Mutagenicity

Mutagenic Effects Propargyl alchol has caused chromosomal aberrations in 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.

Acute Toxicity

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Propargyl alcohol	107-19-7	20 mg/kg (Rat) 20-50 mg/kg (Rat) 93-110 mg/kg (Rat) 54-55 mg/kg (Rat) 56.4 mg/kg (Rat) 145 mg/kg (Rat)	16 mg/kg (Rabbit) 88 mg/kg (Rabbit)	600 ppm (Rat, 4h) 520 ppm (Female Rat, 4h) 1.6 mg/L (Rat, 2h) 1040 ppm (Female Rat, 1h)
Fatty acids, tall oil	Proprietary	7600 mg/kg (Rat)	No data available	No data available
Ethoxylated alcohols	Proprietary	No data available	No data available	No data available
Modified thiourea polymer	Proprietary	No data available	No data available	No data available
Olefin	Proprietary	No data available	No data available	No data available
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)

SECTION 12. Ecological Information

Toxicity

Ecotoxicity Effects

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Propargyl alcohol	107-19-7	EC50(72h): > 98.1 mg/L (Desmodesmus subspicatus) (biomass and growth rate)	LC50: 1.49-1.56 mg/L (Pimephales promelas) LC50(96h): 1.53 mg/L (Pimephales promelas)	EC50(30 min) > 1000 mg/L (Activated sludge, domestic)	EC50:32 mg/L (Daphnia magna) EC50(48h): 3.36 mg/L (Daphnia magna)
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 alcohols	Proprietary	No information available	No information available	No information available	No information available
Modified thiourea polymer	Proprietary	No information available	No information available	No information available	No information available
Olefin	Proprietary	No information available	No information available	No information available	No information available
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)

Persistence and Degradability
No information available

Bioaccumlation potential
No information available

Substances	Log Pow
Propargyl alcohol	-0.35 @ 25°C BCF: 3
Methanol	-0.77 BCF 1.0 – 4.5 (Cyprinus carpio) BCF < 10 (Leuciscus idus melanotus)

Mobility in soil
No information available

Results of PBT and vPvB assessment
No information available.

Substances	PBT and vPvB assessment
Methanol	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.

Contaminated Packaging Follow all applicable national or local regulations.

SECTION 14. Transport Information

Canadian TDG ul0

UN Number:	UN2924
UN Proper Shipping Name:	Flammable Liquid, Corrosive, N.O.S. (Contains Methanol, Propargyl Alcohol)
Transport Hazard Class(es):	3
Subsidiary Hazard:	(8)
Packing Group:	II
EMS:	EmS F-E, S-C

IATA/ICAO

UN Number:	UN2924
UN Proper Shipping Name:	Flammable Liquid, Corrosive, N.O.S. (Contains Methanol, Propargyl Alcohol)
Transport Hazard Class(es):	3
Subsidiary Hazard:	(8)
Packing Group:	II

IMDG/IMO

UN Number:	UN2924
UN Proper Shipping Name:	Flammable Liquid, Corrosive, N.O.S. (Contains Methanol, Propargyl Alcohol)
Transport Hazard Class(es):	3
Subsidiary Hazard:	(8)
Packing Group:	II
EMS:	EmS F-E, S-C

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

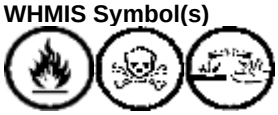
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Canadian Regulations

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

WHMIS Hazard Class
B2 Flammable Liquids
D1A Very Toxic Materials
D2A Very Toxic Materials
D2B 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: 22-Sep-2014

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/

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