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
e-mail: fdunexchem@halliburton.com

SECTION 2. Hazard(s) Identification

WHIMIS Classification
WHIMIS Hazard Class: B2  Flammable Liquids
D1A  Very Toxic Materials
D2A  Very Toxic Materials
D2B  Toxic Materials
E  Corrosive Material

WHIMIS 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

<table>
<thead>
<tr>
<th>Substances</th>
<th>CAS Number</th>
<th>PERCENT (w/w)</th>
<th>HMIRA Registry Number</th>
<th>Decision Granted Date</th>
</tr>
</thead>
</table>

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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**


SECTION 6. Accidental release measures
Personal precautions and emergency procedures

Environmental Precautionary Measures

Precautions for safe handling

Conditions for safe storage and Incompatible materials for storage

Procedure for Cleaning / Absorption

SECTION 7. Handling and Storage

Precautions for safe handling

Conditions for safe storage and Incompatible materials for storage

SECTION 8: Exposure Controls/PDersonal Protection

SECTION 9. Physical and Chemical Properties
### SECTION 10. Stability and Reactivity

<table>
<thead>
<tr>
<th>Conditions of Reactivity</th>
<th>Keep away from heat, sparks and flame. Avoid contact with acids. Avoid contact with oxidizers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions to Avoid</td>
<td></td>
</tr>
<tr>
<td>Hazardous Polymerization</td>
<td>Will Not Occur</td>
</tr>
<tr>
<td>Chemical Stability</td>
<td>Stable</td>
</tr>
<tr>
<td>Sensitivity to Static Discharge</td>
<td>Not available</td>
</tr>
<tr>
<td>Sensitivity to Mechanical Impact</td>
<td>Not available</td>
</tr>
</tbody>
</table>

### SECTION 11. Toxicological Information

<table>
<thead>
<tr>
<th>Routes of entry</th>
<th>Eye or skin contact, inhalation. Ingestion.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information on Toxicological Effects</td>
<td></td>
</tr>
<tr>
<td>Acute effects from exposure</td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td>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.</td>
</tr>
<tr>
<td>Eye Contact</td>
<td>Causes severe eye irritation which may damage tissue. May cause eye burns.</td>
</tr>
<tr>
<td>Skin Contact</td>
<td>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.</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Substances</th>
<th>CAS Number</th>
<th>LD50 Oral</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propargyl alcohol</td>
<td>107-19-7</td>
<td>20 mg/kg (Rat)</td>
<td>16 mg/kg (Rabbit)</td>
<td>600 ppm (Rat, 4h)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20-50 mg/kg (Rat)</td>
<td>88 mg/kg (Rabbit)</td>
<td>520 ppm (Female Rat, 4h)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>93-110 mg/kg (Rat)</td>
<td></td>
<td>1.6 mg/L (Rat, 2h)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>54-55 mg/kg (Rat)</td>
<td></td>
<td>1040 ppm (Female Rat, 1h)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>56.4 mg/kg (Rat)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>145 mg/kg (Rat)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fatty acids, tall oil</td>
<td>Proprietary</td>
<td>7600 mg/kg (Rat)</td>
<td>No data available</td>
<td>No data available</td>
</tr>
<tr>
<td>Ethoxylated alcohols</td>
<td>Proprietary</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
</tr>
<tr>
<td>Modified thiourea polymer</td>
<td>Proprietary</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
</tr>
<tr>
<td>Olefin</td>
<td>Proprietary</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
</tr>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>&gt; 1187 - 2769 mg/kg (Rat)</td>
<td>15800 mg/kg (Rabbit)</td>
<td>87.5 mg/L (Rat) 6h vapour</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3000 mg/kg (Monkey)</td>
<td>393 mg/kg (Primate)</td>
<td>128.2 mg/L (Rat) 4h vapour</td>
</tr>
<tr>
<td></td>
<td></td>
<td>300 mg/kg (Human)</td>
<td></td>
<td>83.2 mg/L (Rat) 4 h</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>64000 ppm (Rat) 4 h</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10 mg/L (Human)</td>
</tr>
</tbody>
</table>

SECTION 12. Ecological Information

Toxicity
Ecotoxicity Effects
HAI-OS ACID INHIBITOR

Revision Date: 22-Sep-2014

<table>
<thead>
<tr>
<th>Substances</th>
<th>CAS Number</th>
<th>Toxicity to Algae</th>
<th>Toxicity to Fish</th>
<th>Toxicity to Microorganisms</th>
<th>Toxicity to Invertebrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propargyl alcohol</td>
<td>107-19-7</td>
<td>EC50(72h): &gt; 98.1 mg/L (Desmodesmus subspicatus) (biomass and growth rate)</td>
<td>LC50: 1.49-1.56 mg/L (Pimephales promelas) LC50(96h): 1.53 mg/L (Pimephales promelas)</td>
<td>EC50(30 min) &gt; 1000 mg/L (Activated sludge, domestic)</td>
<td>EC50:32 mg/L (Daphnia magna) EC50(48h): 3.36 mg/L (Daphnia magna)</td>
</tr>
<tr>
<td>Fatty acids, tall oil</td>
<td>Proprietary</td>
<td>No information available</td>
<td>EC50: 1102 mg/l (Corophium volutator)</td>
<td>No information available</td>
<td>EC50(48 Hour): 50-100 mg/l (Daphnia magna)</td>
</tr>
<tr>
<td>Ethoxylated alcohols</td>
<td>Proprietary</td>
<td>No information available</td>
<td>No information available</td>
<td>No information available</td>
<td>No information available</td>
</tr>
<tr>
<td>Modified thiourea polymer</td>
<td>Proprietary</td>
<td>No information available</td>
<td>No information available</td>
<td>No information available</td>
<td>No information available</td>
</tr>
<tr>
<td>Olefin</td>
<td>Proprietary</td>
<td>No information available</td>
<td>No information available</td>
<td>No information available</td>
<td>No information available</td>
</tr>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>EC50(96h): ca. 22000 mg/L (Pseudokirchnerella subcapitata, Growth rate)</td>
<td>LC50: 28200 mg/l (Pimephales promelas) LC50(96h): 12700 – 15400 mg/L (Lepomis macrochirus) 200 hr NOEC for % Embryo-cardiovascula r for stage 2 = 15800 mg/L</td>
<td>IC50(3h): &gt; 1000 mg/L (activated sludge)</td>
<td>EC50(96h): 18260 mg/L (Daphnia magna) NOEC(21d): 122 mg/L (Daphnia magna, Reproduction)</td>
</tr>
</tbody>
</table>

**Persistence and Degradability**
No information available

**Bioaccumulation potential**
No information available

<table>
<thead>
<tr>
<th>Substances</th>
<th>Log Pow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propargyl alcohol</td>
<td>-0.35 @ 25°C BCF: 3</td>
</tr>
<tr>
<td>Methanol</td>
<td>-0.77 BCF 1.0 – 4.5 (Cyprinus carpio) BCF &lt; 10 (Leuciscus idus melanotus)</td>
</tr>
</tbody>
</table>

**Mobility in soil**
No information available

**Results of PBT and vPvB assessment**
No information available.

<table>
<thead>
<tr>
<th>Substances</th>
<th>PBT and vPvB assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methanol</td>
<td>Not PBT/vPvB</td>
</tr>
</tbody>
</table>

**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**
HAI-OS ACID INHIBITOR

Revision Date: 22-Sep-2014

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
EMS: EmS F-E, S-C

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/

**Disclaimer Statement**

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***END OF MSDS***