Section 1: Product & Company Identification

Product Name: FR-1100
Product Use: Friction Reducer

Company Information: Corporate Office:
CoilChem, LLC
2103 East Ladd Rd
Washington, OK 73093
(405) 445-5545

Emergency Number: Contact Infotrac: 1-800-535-5053

S.D.S. Revision Date: Oct., 1, 2018

Section 2: Hazards Identification

Appearance and Odor:
Color: Clear Liquid
Appearance: Viscous Liquid
Odor: Petroleum Distillate

Statements of Hazard:
WARNING: May cause skin and eye irritation. Spills of this product are very slippery when wet.

Potential Health Effects:
EFFECTS OF EXPOSURE: Direct contact with this material can cause moderate skin and mild eye irritation. Refer to Section 11 for toxicology information on the regulated components of this product. Overexposure to vapor may cause respiratory tract irritation and central nervous system depression. The estimated acute oral (rat) LD50, acute dermal (rabbit) LD50 and 4-hour inhalation (rat) LC50 values for this material are >5,000 mg/kg, >2,000 mg/kg, and >20 mg/L, respectively.

Section 3: Composition/Information on Ingredients

OSHA Regulated Components:

<table>
<thead>
<tr>
<th>Component/ CAS No.</th>
<th>% (w/w)</th>
<th>OSHA (PEL):</th>
<th>ACGIH (TLV):</th>
<th>Carcinogen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Distillate</td>
<td>22-25</td>
<td>500 ppm</td>
<td>1200 mg/m³ (hud)</td>
<td>----</td>
</tr>
<tr>
<td>Hydro treated light 64742-47-8</td>
<td>(Supplier) 165 ppm (Supplier)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section 4: First-Aid Information

Contact with skin:
Immediately take off all contaminated clothing and shoes. Do not reuse until laundered. Wash with plenty of soap and water. Seek a physician if signs or irritation persist after washing.

Contact with eyes:
Wash immediately with water for at least 15 minutes. If there is any irritation Obtain Immediate Medical Attention.

Ingestion:
Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person. If swallowed contact a physician.

Inhalation:
Remove to fresh air. If breathing is difficult, give oxygen. Obtain medical advice if there are persistent symptoms.

Section 5: Fire Fighting Measures

Recommended Extinguishers:
Use water spray, carbon dioxide, or dry chemical

Protective Equipment:
Wear full firefighting protective clothing. See MSDS Section 8 (Exposure Controls/ Personal Protection). Firefighters, and others exposed, wear self-contained breathing apparatus.

Special Hazards:
Keep containers cool by spraying with water if exposed to fire.

Section 6: Accidental Release Measures

Personal Precautions:
Where exposure level is unknown, wear approved, positive pressure, self-contained breathing apparatus. Where exposure level is known, wear approved respirator suitable for level of exposure. In addition to the protective clothing/ equipment in Section 8 (Exposure Controls/ Personal Protection), wear impermeable boots.

Methods for Clean up:
Spilled material should be absorbed onto an inert material and scooped up. Flush spill area with water. Product may cause slip hazard. If slipperiness remains apply more dry-sweeping compound.
Section 7: Handling & Storage

Handling Precautions:
Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling.

Storage Conditions:
To avoid product degradation and equipment corrosion, do not use iron, copper, or aluminum containers or equipment. Flashpoint determinations on materials of this type are required by certain regulations and scientific standards to be performed using a Pensky-Martens type closed cup test method. This method indicates a flashpoint greater that 93.3C (200F). Although there was no flashpoint detected below 93.3C (200F) by the Pensky-Martens Closed Tester method, some flammable vapors were evolved during the test as evidenced by the enlargement of the test flame. Therefore, caution should be exercised during storage and handling.

Storage Temperature:
Store at <32C (90F)-------Reason: Integrity

Section 8: Exposure Controls/ Personal Protection

Engineering Measures:
Where this material is not used in a closed system, good enclosure and local exhaust ventilation should be provided to control exposure.

Respiratory Protection:
Where exposures are below the established limit, no respiratory protection is required. Where exposures exceed the established exposure limit, use respiratory protection recommended for the material and level of exposure.

Eye Protection:
Eyewash equipment and safety shower should be provided in areas of potential exposure. Wear eye/face protection such as chemical splash proof goggles or face shield.

Skin Protection:
Wear impermeable gloves and suitable protective clothing. Avoid skin contact,

Additional Advice:
Before eating, drinking, or smoking, wash face and hands thoroughly with soap and water. Food, beverages, and tobacco products should not be carried, stores, or consumed where this material is in use.

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Section 9: Physical & Chemical Properties

Color: Opalescent to white liquid
Appearance: Viscous Liquid
Odor: Slightly of petroleum
PH: 6-8
Melting Point: Not Available
Boiling Point: Similar to Water
Flash Point: > 102°C (Closed cup)
Vapor Pressure: Not Available
Specific Gravity: 1.03-1.06
Solubility in Water: Limited by Viscosity
Vapor Density: Similar to water
Percent Volatile (% by wt): 56%-62%
Saturation in air (% by vol): Not Available
Evaporation Rate: Not Available
Auto ignition Temperature: Not Available
Decomposition Temperature: Not Available
Partition Coefficient: Not Available
Odor Threshold: Not Available
Volatile Organic Content: Not Available

Section 10: Stability & Reactivity

**Stability:** Stable
**Conditions to Avoid:** None known

**Polymerization:** Will not occur
**Conditions to Avoid:** None known

**Materials to Avoid:** No specific incompatibility

**Hazardous Decomposition Products:** Ammonia (NH₃)  Carbon Monoxide  Oxides of Sulfur
Carbon Dioxide  Oxides of Nitrogen
Section 11: Toxicological Information

Toxicological information for the product is found under Section 2 (Hazards Identification). Toxicological information on the regulated components of this product is as follows:

Petroleum distillates, hydro treated light (CAS NO. 64742-47-8) has acute oral (rat) and dermal (rabbit) LD50 values of >5 g/kg and >3.16 g/kg. Prolonged or repeated skin contact tends to remove skin oils, possibly leading to irritation and dermatitis. Direct contact may cause eye irritation. Over exposure to high vapor concentrations, >~700ppm, are irritating to the eyes and respiratory tract and may cause headaches, dizziness, drowsiness, and other central nervous system effects, including death. Aspiration of minute amounts during ingestion or vomiting may cause mild to severe pulmonary injury and possibly death. In a 90-day oral gavages (rats) study at 100, 500, or 1000 mg/kg, no treatment related mortalities were observed. There were no significant changes in body weights or food consumption in any dose groups. Increased liver weights were observed in male and female rats a 500 and 1000 mg/kg. Increased kidney weights were observed only in male rats at 500 and 1000 mg/kg. Testes weights were significantly elevated in male rats at 1000 mg/kg. Kidney effects, indicative of light hydrocarbon nephropathy, occurred in male rat kidneys’ at all dose levels. Histological findings of hepatocellular hypertrophy were seen in the livers of male rats at 1000 mg/kg and in female rats at 500 and 1000 mg/kg. All treatment related effects were reversible within the 4-week recovery period. Observed kidney effects are a unique response by male rats to chronic hydrocarbon exposure, which US EPA has declared “not relevant to humans”. High dose liver effects are a direct consequence of the sustained high-fat "hydrocarbon diet". The No Observed Adverse Effect Level (NOAEL) for this study was 1000 mg/ kg.

C12-14 alcohol ethoxylated toxicological properties have not been fully investigated. The oral LD50 (rat) of this mixture is expected to be consistent with the chemical family of ethoxylated alcohol surfactants, and range from 1.6 to 2.5 g/kg. The acute dermal (rabbit) LD50 value is estimated to be > 2.0 g/kg. One expected component of this mixture was severely irritating to rabbit eyes. This mixture is expected to be moderately irritating to skin, based on data reported for C9-C11 6EO. (Primary irritating index) PII = 5.3/8.

Ethoxylated oelyl amine toxicological properties have not been fully investigated. It is reported to have an oral (rat) LD50 value of 1500 mg/kg. It is also reported to be severely irritating to eyes and moderately irritating to the skin.

California Proposition 65 Warning (applicable in California only)- This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Section 12: Ecological Information

All ecological information provided was conducted on a structurally similar product. This material is not classified as dangerous for the environment. Acute toxicity tests conducted using environmentally representative water gave the following results: The effects on aquatic organisms are due to an external (non-systemic) mode of action, and are significantly reduced (by a factor of 7-20) within 30 minutes due to binding of the products to dissolved organic carbon and inorganic sorbents such as clays and silts.

Algae Test Results:  
Test: Growth Inhibition (OECD 201)  
Duration: 72 hrs  
Species: Green Algae (Selenastrum cpricornutum) > 100 mg/L IC50  
Information based on a structurally similar material.
Fish Test Results:
Test: Acute toxicity, fresh water (OECD 203)
Duration: 96 hrs
Species: Zebra fish (brachydanio rerio) > 100 mg/ L
Information based on a structurally similar material.

Invertebrate Test Results:
Test: Acute immobilization (OECD 202)
Duration: 48 hrs
Species: Water Flea (daphnia magna) > 100 mg/L
Information based on a structurally similar material.

Degradation:
Test: CO2 Evolution: Modified Sturm (OECD 301B)
Duration: 28 day Procedure: Ready Biodegradability.
The large polymer size is incompatible with transport across biological membranes and diffusion; the bioconcentration factor is therefore considered to be zero. The material is not readily biodegradable (OECD 301B)

Section 13: Disposal Considerations
Recover if possible. In so doing, comply with the local and national regulations currently in force. Hazardous waste classification under federal regulation (40 CFR Part 261 et seq) is dependent upon whether a material is a RCRA “listed hazardous waste” or has any of the four RCRA “hazardous waste characteristics”. Refer to 40 CFR Part 261.33 to determine if a given material to be disposed of is a RCRA “listed hazardous waste”; information contained in Section 15 of this MSDS is not intended to indicate if the product is a “listed hazardous waste”. RCRA “hazardous waste characteristics” there are four characteristics that are defined in 40 CFR Section 261.21-61.24: Ignitability, Corrosivity, see Section 9 and 14 (pH and DOT corrosivity). For reactivity, see Section 10 (incompatible materials). For Toxicity see Section 2 (composition). Federal regulations are subject to change. State and local requirements, which may differ from or be more stringent than the federal regulation, may also, apply to the classification of the material if it is to be disposed.

Section 14: Transportation Information
US DOT:
Proper Shipping Name: Not Applicable/ Not Regulated
Hazardous Substance: Not Applicable

Transport Canada:
Proper Shipping Name: Not Applicable/ Not Regulated

ICAO/IATA
Proper Shipping Name: Not Applicable/ Not Regulated

IMO:
Proper Shipping Name: Not Applicable/ Not Regulated
Section 15: Regulatory Information

United States (USA): All components of this product are included on the TSCA Chemical Inventory or are not required to be listed on the TSCA Chemical Inventory.

Canada: All components of this product are included on the Domestic Substances List (DSL) or are not required to be listed on the DSL.

European Union (EU): All components of this product are included on the European Inventory of Existing Chemical Substances (EINECS) or are not required to be listed on the EINECS.

China: All components of this product are NOT included on the Chinese Inventory. The Chinese Stat Environmental Protection Administration (SEPA) has granted a Polymer Exemption for the non-listed substance to Cytec and the product can be imported into China ONLY under specific conditions.

Japan: All components of this product are NOT included on the Japanese (ENCS) inventory.

Korea: All components of this product are NOT included on the Korean (ECL) inventory.

Philippines: All components of this product are NOT included on the Philippine (PICCS) inventory.

Other Environmental Information: The following components of this product may be subject to reporting requirements pursuant to Section 313 of CERCLA (40 CFR 372), Section 12 (b) of TSCA, or may be subject to release reporting requirements (40 CFR 307, 40 CFR 311, etc.). See Section 13 for information on waste classification and waste disposal of this product.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No.</th>
<th>%</th>
<th>TPQ (lbs)</th>
<th>RQ (lbs)</th>
<th>S313</th>
<th>TSCA 12B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium Acetate</td>
<td>631-61-8</td>
<td>0.0-6.0</td>
<td>None</td>
<td>5000</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Product Hazard Classification Under Section 311 of SAS

***Acute***

Section 16: Other Information

NFPA Hazard Rating (National Fire Association)

Health: 2  Fire: 1  Reactivity: 0

This product’s safety information is provided to assist our customers in assessing compliance with health, safety and environmental regulations. The information contained herein, is based on data available to us and is believed to be accurate, although no guarantee or warranty is provided by this company in this respect. Since the use of this product is within the exclusive control of the user, it is the user’s obligation to determine the conditions of safe use of this product. Such conditions should comply with all Federal regulations concerning the product. All materials in this product are produced in compliance with Public Law 94-469 (also known as the “Toxic Substances Control Act” of 1976)