

MATERIAL SAFETY DATA SHEET (MSDS)

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

- **Product Name:** DF-Detergent™
- **Chemical Family:** Anionic Surfactant blend
- **WHMIS Classification:** D2A
- **Workplace Hazard:** toxic effects
- **Product Use:** Surfactant
- **TDG Classification:** Not regulated
- **Supplier:** Drilling Fluids Innovations

2. COMPOSITION/INFORMATION ON INGREDIENTS

| Surfactant Group | Chemical Characterization % | CAS Registry Number |
|---------------------------------|-----------------------------|---------------------|
| Diocetyl Sulphosuccinate Sodium | < 50 | 577-11-7 |
| Non Ionic Surfactant | < 20 | 68002-97-1 |
| Butyl Glycol | < 10 | 111-76-2 |

3. HAZARDS IDENTIFICATION

MOST IMPORTANT HAZARDS

- Adverse human health effect: Liquid is an irritant to eye and may irritate skin.
- Environmental effects: The product does not have any adverse effect on aquatic environment.
- Physical and chemical hazards: Non – flammable liquid.
- Fire or explosion: Requires a source of ignition, presence of air, and temperature greater than the flash point.
- Further hazards: No specific hazards under normal conditions of use.

4. FIRST AID MEASURES

- **Skin contact:**
 - Wash with soap and plenty of water for at least 5 minutes.
 - Remove contaminated clothing and footwear.
 - If irritation persists, or develops, obtain medical attention.
- **Eye contact:**
 - Flush with gently flowing warm water for 15 minutes, or until irritation ceases.
 - When flushing is complete obtain medical attention.
- **Inhalation:**
 - Move to fresh air.
 - Apply oxygen or artificial respiration if required.
 - If breathing difficulties or distress continues, obtain medical attention.
- **Ingestion:**
 - Do not induce vomiting.
 - If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration.
 - If conscious, rinse out mouth thoroughly with water.
 - This product contains ethylene glycol, ingestion and lack of immediate medical attention may result in kidney and liver damage.
 - Obtain medical attention or contact poison control center immediately.
 - Never give anything by mouth if victim is unconscious, rapidly losing consciousness or convulsing.

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5. FIRE FIGHTING MEASURES

- **Extinguishing media Suitable :** Foam, Water, Carbon dioxide (CO₂) & Multipurpose powders (dry powder)
- **Specific hazards:** Containers may explode on the heat of fire. Causes foaming and spreading of water & Assists in putting out fires by water.
- **Combustion products:** carbon dioxides and products of incomplete combustion.
- **Conditions of flammability:** Although this product is not considered flammable, loss of water in a fire situation may render the material combustible.
 - **Flash point:** >100°C.
 - **Upper flammable limit:** Not determined.
 - **Lower flammable limit:** Not determined.
 - **Auto-ignition temperature:** Not determined.
- **Hazardous combustion products:** Oxides of carbon, nitrogen and sulfur on combustion.
 - **Explosion data-sensitivity to mechanical impact:** Not applicable.
 - **Explosion data-sensitivity to static discharge:** Not applicable.

6. ACCIDENTAL RELEASE MEASURES

- **Personal precautions:**
 - Wear appropriate gloves, respirator if long exposure to spill is necessary.
 - Spills Maybe slippery, do not touch or walk through it.
- **Environmental precautions:**
 - Avoid excessive discharge into drains / sewers or waterways.
- **Methods for cleaning up:**
 - Recover the product by absorbing with sand and shoveling or sweeping.
 - Contain spilled liquid by absorbing with sand or earth.
 - Use of water wash down to clean spill traces is recommended spill maybe slippery.

7. HANDLING AND STORAGE

- **Handling:** Handle and use in accordance with good occupational hygiene and safety
- **Practice:** Wear proper protective equipment with proper ventilation when using the product. Avoid contact with skin and eyes. Wash thoroughly after handling.
- **Storage:** Store in a dry place, stable under normal storage conditions. Keep away from incompatibles, Keep containers tightly closed when not in use, Protect from temperature above 40°C.
- **Incompatible products:** Strong oxidizing agents.
- **Packaging:** Product should be stored in the original packaging.
- **Packaging materials:** HDPE drums.
- **Storage Life:** Physically and chemically stable for 24 months when stored in the original unopened sales container at ambient temperatures.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines: CAS# 111-76-2:
 OSHA PEL 50 mg/m³
 ACGIH TLV 25 mg/m³

Personal Protective Equipment

- **Respiratory protection:**
 - Use local exhaust or general dilution ventilation to control vapor levels below applicable

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- Exposure limits. Wear a NIOSH certified or equivalent respirator when using this product such as N95 Respirator; when general ventilation is not adequate to control the vapor level below applicable exposure limit or when causes irritation or discomfort.
- **Hand protection:** Wear impermeable gloves conforming to protect skin from exposure.
- **Eye protection:**
 - The use of suitable eye goggles and face shield is recommended.
 - Wear safety glasses with side shields or goggles to avoid contact with eyes.
- **Skin protection:**
 - Wear impervious clothing including boots, gloves, lab coat, apron or coveralls as appropriate to prevent skin contact.
 - Clothing should be laundered before re-use. The worker should wash daily at the end of each work shift.
- **Other protecting equipment:**
 - Local exhaust ventilation is recommended if handling generates vapor or fume concentrations.
 - Eyewash fountains and deluge shower should be provided in areas where there is any possibility that the workers could be exposed to the substances.

9. PHYSICAL AND CHEMICAL PROPERTIES

- **Physical state:**Liquid
- **Appearance:**Colorless to pale yellow liquid
- **Odor:**Negligible
- **PH:**..... 5 – 8 (1% solution in distilled water @ 25 OC)
- **Solubility**In water, in organic solvents (Soluble in alcohols, glycols).
- **Specific Gravity:**..... 0.99 – 1.01
- **Flammability characteristics:**
 - **Flash Point**..... > 100 C
 - **Auto ignition temperature** :.....Above 1000 C

10. STABILITY AND REACTIVITY

- **Stability:**Stable under normal conditions of use.
- **Material to avoid:**..... Strong oxidants.
- **Hazardous Decomposition**
 - **Products:**Carbon oxides and product of incomplete combustion.
 - **Hazardous Polymerization:**..... Will not occur.

11. TOXICOLOGICAL INFORMATION

LD50 /LC50

- **CAS# 577-11-7:** Oral, mouse: LD50 = 2643 mg/Kg; Oral, rat: LD50 = 1900 mg/Kg; Draize skin, rabbit = 10 mg in 24 hrs, moderate
- **CAS# 111-76-2:** Inhalation, mouse: LC50 =700 ppm/7H; Inhalation, rat: LC50 =450 ppm/4H; Oral, mouse: LD50 =1230 mg/kg; Oral, rabbit: LD50 = 300 mg/Kg; Oral, rat: LD50 = 470 mg/Kg; Skin, rabbit: = 220 mg/Kg
- **Mutagenicity:** No evidence of mutagenic potential on humans.
- **Carcinogenicity:** Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
- **Reproductive Effects:** Not listed to have a reproductive and developmental toxicity.
- **Local effects:** Excessive inhalation may cause minor respiratory irritation, headache.
- **Acute Toxicity**

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12. ECOLOGICAL INFORMATION

Aquatic Toxicity

- **CAS# 111-76-2:**
 - 24-Hr. LC50; goldfish: 1650 mg/L
 - 96-Hr. LC50; bluegill sunfish: 1490 mg/L
 - 96-Hr. LC50; tidewater silversides: 1250 mg/L
- **CAS# 577-11-7:**
 - 96 hr LC50 Fish / *Onchorhynchus mykiss* - 28 mg/L
- Degradability:.....The product does not have any known adverse effect on environment.
- Effects on Aquatic Environment:.... The product does not have any known adverse effect on aquatic environment.

13. DISPOSAL CONSIDERATIONS

The generation of waste should be avoided or minimized whenever possible. Avoid dispersal of spilt material and runoff in contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional authority requirements.

Container Disposal:

- Recommend crushing, puncturing or other means to prevent unauthorized recycling of used containers.
- Dispose of in a licensed landfill.

14. TRANSPORT INFORMATION

This material is NOT Regulated as a DOT Hazardous Material. DOT Description (49 CFR 172.101)

- **Land (U.S. DOT):**..... Not Regulated.
- **Air (IATA /ICAO):**..... Not Regulated.
- **Water (IMO):**..... Not Regulated.
- **UN Number:**..... Non-Hazardous Material.
- **Packaging category: Class:**..... Non-Hazardous Material SECTION 15.

15. REGULATORY INFORMATION

| | |
|----------------------------|--|
| TSCA: | This material is listed on TSCA (Toxic substance Control Act) inventory list. |
| OSHA: | This product is NOT listed as Hazardous substance under criteria of Federal OSHA Hazard Communication Standard, 29 CFR 1910.1200 |
| CAA RMP: | Not a regulated chemical. |
| CERCLA: | Not a regulated chemical |
| EHS (EPCRA 302): | Not a regulated chemical. |
| TRI (EPCRA 313): | Not a regulated chemical. |
| RCRA Chemical Code: | None |
| R – Phrase (s): | R22 Harmful if swallowed & R36 / 38 Irritating to eyes / skin. |
| S – Phrase (s): | S26 In case of contact with eyes, rinse immediately with plenty of water and seek Medical advice: S36 Wear eye / face protection. |

Labeling required in accordance with EEC directives: Not Regulated.

There are no additional regulations which define this product as dangerous and special provisions relating to Labeling, packaging, handling of dangerous substances or preparations do not apply.