

## MATERIAL SAFETY DATA SHEET

**Product Trade Name:**        **INVERMUL®**

**Revision Date:**                02-Apr-2015

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Trade Name:**        INVERMUL®  
**Synonyms:**                    None  
**Chemical Family:**            Blend  
**Application:**                 Emulsifier

**Manufacturer/Supplier**        Baroid Fluid Services  
     Product Service Line of Halliburton  
     P.O. Box 1675  
     Houston, TX 77251  
     Telephone: (281) 871-4000  
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### 2. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT (w/w)	ACGIH TLV-TWA	OSHA PEL-TWA
Diesel	68476-34-6	10 - 30%	TWA: 100 mg/m <sup>3</sup>	Not applicable
Fatty acid, tall-oil, reaction product with diethylenetriamine, maleic anhydride, tetraethylenepentamine, and triethylenetetramine	68990-47-6	10 - 30%	Not applicable	Not applicable
Diethylene glycol monobutyl ether	112-34-5	1 - 5%	Not applicable	Not applicable
Ethylene glycol monobutyl ether	111-76-2	1 - 5%	TWA: 20 ppm Skin	TWA: 50 ppm Skin

### 3. HAZARDS IDENTIFICATION

**Hazard Overview**                May cause eye and skin irritation. May cause headache, dizziness, and other central nervous system effects. May cause allergic skin reaction. May be absorbed through the skin. May be harmful if swallowed. May be harmful if inhaled. Potential carcinogen. Combustible

### 4. FIRST AID MEASURES

**Inhalation**                        If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult give oxygen. Get medical attention.

<b>Skin</b>	In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes. Get medical attention.
<b>Eyes</b>	In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.
<b>Ingestion</b>	Get medical attention! If vomiting occurs, keep head lower than hips to prevent aspiration.
<b>Notes to Physician</b>	Not Applicable

## 5. FIRE FIGHTING MEASURES

<b>Flash Point/Range (F):</b>	156
<b>Flash Point/Range (C):</b>	69
<b>Flash Point Method:</b>	PMCC
<b>Autoignition Temperature (F):</b>	Not Determined
<b>Autoignition Temperature (C):</b>	Not Determined
<b>Flammability Limits in Air - Lower (%):</b>	Not Determined
<b>Flammability Limits in Air - Upper (%):</b>	Not Determined

<b>Fire Extinguishing Media</b>	Water fog, carbon dioxide, foam, dry chemical.
<b>Special Exposure Hazards</b>	Use water spray to cool fire exposed surfaces. Closed containers may explode in fire. Decomposition in fire may produce toxic gases.
<b>Special Protective Equipment for Fire-Fighters</b>	Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.
<b>NFPA Ratings:</b>	Health 2, Flammability 2, Reactivity 0
<b>HMS Ratings:</b>	Health 2, Flammability 2, Reactivity 0

## 6. ACCIDENTAL RELEASE MEASURES

<b>Personal Precautionary Measures</b>	Use appropriate protective equipment.
<b>Environmental Precautionary Measures</b>	Prevent from entering sewers, waterways, or low areas.
<b>Procedure for Cleaning / Absorption</b>	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.

## 7. HANDLING AND STORAGE

<b>Handling Precautions</b>	Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Wash hands after use. Launder contaminated clothing before reuse.
<b>Storage Information</b>	Store away from oxidizers. Keep from heat, sparks, and open flames. Keep container closed when not in use. Product has a shelf life of 12 months.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

<b>Engineering Controls</b>	Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation.
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<b>Respiratory Protection</b>	If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional. Organic vapor respirator with a dust/mist filter. (A2P2/P3) In high concentrations, supplied air respirator or a self-contained breathing apparatus.
<b>Hand Protection</b>	Chemical-resistant protective gloves (EN 374) Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374): Nitrile gloves. (>= 0.4 mm thickness) This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced. Manufacturer's directions for use should be observed because of great diversity of types.
<b>Skin Protection</b>	Rubber apron.
<b>Eye Protection</b>	Chemical goggles; also wear a face shield if splashing hazard exists.
<b>Other Precautions</b>	Eyewash fountains and safety showers must be easily accessible.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State:</b>	Liquid
<b>Color:</b>	Black
<b>Odor:</b>	Fatty acid
<b>pH:</b>	4-7
<b>Specific Gravity @ 20 C (Water=1):</b>	0.92-0.95
<b>Density @ 20 C (lbs./gallon):</b>	7.8
<b>Bulk Density @ 20 C (lbs/ft<sup>3</sup>):</b>	Not Determined
<b>Boiling Point/Range (F):</b>	Not Determined
<b>Boiling Point/Range (C):</b>	Not Determined
<b>Freezing Point/Range (F):</b>	Not Determined
<b>Freezing Point/Range (C):</b>	Not Determined
<b>Vapor Pressure @ 20 C (mmHg):</b>	Not Determined
<b>Vapor Density (Air=1):</b>	Not Determined
<b>Percent Volatiles:</b>	Not Determined
<b>Evaporation Rate (Butyl Acetate=1):</b>	Not Determined
<b>Solubility in Water (g/100ml):</b>	Slightly soluble
<b>Solubility in Solvents (g/100ml):</b>	Not Determined
<b>VOCs (lbs./gallon):</b>	Not Determined
<b>Viscosity, Dynamic @ 20 C (centipoise):</b>	390-470
<b>Viscosity, Kinematic @ 20 C (centistokes):</b>	Not Determined
<b>Partition Coefficient/n-Octanol/Water:</b>	Not Determined
<b>Molecular Weight (g/mole):</b>	Not Determined

## 10. STABILITY AND REACTIVITY

<b>Stability Data:</b>	Stable
<b>Hazardous Polymerization:</b>	Will Not Occur
<b>Conditions to Avoid</b>	Keep away from heat, sparks and flame.

**Incompatibility (Materials to Avoid)**

Strong oxidizers.

**Hazardous Decomposition Products**

Oxides of nitrogen. Hydrocarbons. Carbon monoxide and carbon dioxide.

**Additional Guidelines**

Not Applicable

## 11. TOXICOLOGICAL INFORMATION

**Principle Route of Exposure**

Eye or skin contact, inhalation.

### Symptoms related to exposure

#### **Acute Toxicity**

##### **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 eye irritation.

##### **Skin Contact**

Causes moderate skin irritation. May cause an allergic skin reaction.

##### **Ingestion**

Aspiration into the lungs may cause chemical pneumonitis including coughing, difficulty breathing, wheezing, coughing up blood and pneumonia, which can be fatal. 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/Carcinogenicity**

Contains petroleum distillates which have been shown to cause skin cancer in laboratory animals.

### Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Diesel	68476-34-6	7,600 mg/kg (Rat)	> 4300 mg/kg (Rabbit)	4.1 mg/L (Rat) 4h
Fatty acid, tall-oil, reaction product with diethylenetriamine, maleic anhydride, tetraethylenepentamine, and triethylenetetramine	68990-47-6	> 2020 mg/kg (Rat)	> 2000 mg/kg (Rat)	No data available
Diethylene glycol monobutyl ether	112-34-5	3384 mg/kg (Rat) 6560 mg/kg (Rat) 5660 mg/kg (Rat) 2406 mg/kg (Mouse) 2000 mg/kg (Guinea pig)	2700 mg/kg (Rabbit) 2764 mg/kg (Rabbit)	No data available
Ethylene glycol monobutyl ether	111-76-2	470 mg/kg (Rat) 1414 mg/kg (Guinea pig) 1746 mg/kg (Rat) 320 mg/kg (Rabbit) 530 mg/kg (Rat) 560 mg/kg (Rat) 3000 mg/kg (Rat) 2400 mg/kg (Rat)	220 mg/kg (Rabbit) 2270 mg/kg (Rat) 200 mg/kg (Guinea pig) >2000 mg/kg (Rabbit) 841 mg/kg (Rabbit) 435 mg/kg (Rabbit) >2000 mg/kg (Guinea pig) >2000 mg/kg (Rat) 100 mg/kg (Rabbit) 207 mg/kg (Guinea pig) 400-500 mg/kg (Rabbit)	450 mg/L (Rat) 4h 2.174 mg/L (Rat) 4h 2.21 mg/L (Rat) 4h 450-486 mg/L (Rat) 4h 925 mg/L (Rat) 4h >633 mg/L (Guinea pig) 1h

## 12. ECOLOGICAL INFORMATION

**Ecotoxicological Information**

Ecotoxicity Product

**Acute Fish Toxicity:** Not determined  
**Acute Crustaceans Toxicity:** TLM48: 33.9 mg/l (Acartia tonsa)  
**Acute Algae Toxicity:** EC50: 8.4 mg/l (Skeletonema costatum)

#### Ecotoxicity Substance

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Diesel	68476-34-6	EL50 (72h) 10 mg/L (Pseudokirchnerella subcapitata) NOEL (72h) 1 mg/L (Pseudokirchnerella subcapitata)	LC50 35 mg/L (Pimephales promelas) LL50 (96h) 21 mg/L (Oncorhynchus mykiss)	No information available	EL50 (48h) 210 mg/L (Daphnia magna) NOEL (48h) 46 mg/L (Daphnia magna)
Fatty acid, tall-oil, reaction product with diethylenetriamine, maleic anhydride, tetraethylenepentamine, and triethylenetetramine	68990-47-6	EC50 (72h) > 100 mg/L (growth rate) (Pseudokirchnerella subcapitata)	LC50 (96h) > 100 mg/L (Danio rerio)	EC50 (3h) > 100 mg/L (Activated sludge) (respiration rate)	IC50 (48h) > 100 mg/L (Daphnia magna)
Diethylene glycol monobutyl ether	112-34-5	EC50 > 100 mg/L (Desmodesmus subspicatus)	LC50 1300 mg/L (Lepomis macrochirus)	EC10 >1995 mg/L (Activated sludge, industrial)	EC50 > 100 mg/L (Daphnia magna)
Ethylene glycol monobutyl ether	111-76-2	EC50 839.56 mg/L (Skeletonema costatum) EbC50 (72h) 911 mg/L EC50 > 500 mg/L (Scenedesmus subspicatus) NOEC (72h) 88 mg/L (biomass)(Pseudokirchnerella subcapitata)	LC50 > 1000 mg/L (Scophthalmus maximus, juvenile) LC50 (96h) 1474 mg/L (Oncorhynchus mykiss) NOEC (21d) > 100mg/L (Danio rerio)	TT/EC3 (48h) 463 mg/L (Uronema parduzci) TT/EC3 (72h) 73 mg/L (Entosiphon sulcatum) TT/EC3 (16h) 700 mg/L (Pseudomonas putida)	EC50 > 1000 mg/L (Daphnia magna) EC50 (48h) 1800 mg/L (Daphnia magna) EC50 1875 mg/L (Daphnia magna) NOEC (21d) 100 mg/L (Daphnia magna)

#### 12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Diesel	68476-34-6	(57.5% @ 28d)
Fatty acid, tall-oil, reaction product with diethylenetriamine, maleic anhydride, tetraethylenepentamine, and triethylenetetramine	68990-47-6	Readily biodegradable (71% @ 28d)
Diethylene glycol monobutyl ether	112-34-5	Readily biodegradable (71% @ 28d)
Ethylene glycol monobutyl ether	111-76-2	Readily biodegradable (75-88% @ 28d)

#### 12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Diesel	68476-34-6	No information available
Fatty acid, tall-oil, reaction product with diethylenetriamine, maleic anhydride, tetraethylenepentamine, and triethylenetetramine	68990-47-6	2.4
Diethylene glycol monobutyl ether	112-34-5	1.0
Ethylene glycol monobutyl ether	111-76-2	0.81

#### 12.4. Mobility in soil

#### 12.5. Results of PBT and vPvB assessment

No information available.

#### 12.6. Other adverse effects

No information available

### 13. DISPOSAL CONSIDERATIONS

**Disposal Method** Disposal should be made in accordance with federal, state, and local regulations.

**Contaminated Packaging** Follow all applicable national or local regulations.

## 14. TRANSPORT INFORMATION

### US DOT

**UN Number:** Not restricted  
**UN Proper Shipping Name:** Not restricted  
**Transport Hazard Class(es):** Not applicable  
**Packing Group:** Not applicable

### US DOT Bulk

**DOT (Bulk)** Not restricted in accordance with the terms and conditions of 49 CFR 173.120(b)(3).

### Canadian TDG

**UN Number:** Not restricted  
**UN Proper Shipping Name:** Not restricted  
**Transport Hazard Class(es):** Not applicable  
**Packing Group:** Not applicable

### IMDG/IMO

**UN Number:** Not restricted  
**UN Proper Shipping Name:** Not restricted  
**Transport Hazard Class(es):** Not applicable  
**Packing Group:** Not applicable

### IATA/ICAO

**UN Number:** Not restricted  
**UN Proper Shipping Name:** Not restricted  
**Transport Hazard Class(es):** Not applicable  
**Packing Group:** Not applicable

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:** Not applicable

**Special Precautions for User:** None

## 15. REGULATORY INFORMATION

### **US Regulations**

**US TSCA Inventory** All components listed on inventory or are exempt.

**EPA SARA Title III Extremely Hazardous Substances** Not applicable

**EPA SARA (311,312) Hazard Class** Acute Health Hazard  
Chronic Health Hazard  
Fire Hazard

**EPA SARA (313) Chemicals** This product does not contain a toxic chemical for routine annual "Toxic Chemical Release Reporting" under Section 313 (40 CFR 372).

**EPA CERCLA/Superfund Reportable Spill Quantity** Not applicable.

<b>EPA RCRA Hazardous Waste Classification</b>	If product becomes a waste, it does NOT meet the criteria of a hazardous waste as defined by the US EPA.
<b>California Proposition 65</b>	All components listed do not apply to the California Proposition 65 Regulation.
<b>MA Right-to-Know Law</b>	One or more components listed.
<b>NJ Right-to-Know Law</b>	One or more components listed.
<b>PA Right-to-Know Law</b>	One or more components listed.
<b>Canadian Regulations</b>	
<b>Canadian DSL Inventory</b>	Product contains one or more components not listed on the inventory.
<b>WHMIS Hazard Class</b>	B3 Combustible Liquids D2B Toxic Materials

## **16. OTHER INFORMATION**

### **The following sections have been revised since the last issue of this SDS**

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 Stewardship at 1-580-251-4335.

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