

Safety Data Sheet HiFlow 20

SECTION 1: Identification

1.1 Product identifier

Product name HiFlow 20
Product number HF20

1.3 Recommended use of the chemical and restrictions on use

Friction reducing.

1.4 Supplier's details

Name Downhole Chemical Solutions
Address 1 Cowboys Way #572
Frisco, Texas 75034

Telephone 469-466-1100

1.5 Emergency phone number(s)

1-888-255-3924 US (ChemTel)
1-813-248-0585 International (ChemTel)

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

GHS classification in accordance with: (US) OSHA (29 CFR 1910.1200)

- Skin corrosion/irritation, Cat. 2

2.2 GHS label elements, including precautionary statements

Pictogram



Signal word

Warning

Hazard statement(s)

H315

Causes skin irritation

Precautionary statement(s)

P264
P280
P302+P352
P332+P313
P362+P364

Wash hands thoroughly after handling.
Wear protective gloves.
IF ON SKIN: Wash with plenty of water.
If skin irritation occurs: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.

Safety Data Sheet

HiFlow 20

2.3 Other hazards which do not result in classification

Slip hazard from spills

SECTION 3: Composition/information on ingredients

3.2 Mixtures

| Hazardous components | |
|---|----------------------|
| Distillates, petroleum, hydrotreated light (CAS no.: 64742-47-8; EC no.: 265-149-8) | 10 - 30 % (weight) * |
| Alcohols, C12-C16, Ethoxylated (CAS no.: 68551-12-2) | 2 - 5 % (weight)* |
| Ammonium chloride (CAS no.: 12125-02-9; EC no.: 235-186-4; Index no.: 017-014-00-8) | 1 - 5 % (weight) * |
| Acrylamide (CAS no.: 79-06-1; EC no.: 201-173-7; Index no.: 616-003-00-0) | < 0.1 % (weight)* |

Trade secret statement (OSHA 1910.1200(i))

*The specific chemical identities and/or actual concentrations or actual concentration ranges for one or more listed components are being withheld as trade secrets under the US regulation 29 CFR 1910.1200(i).

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

| | |
|-------------------------|---|
| General advice | Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area. |
| If inhaled | Remove person to fresh air and keep comfortable for breathing. Call a poison center or doctor if you feel unwell. Acute and delayed symptoms and effects: May cause respiratory irritation. Signs/symptoms may include burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema. |
| In case of skin contact | Wash with plenty of water for at least 15 minutes. Call a poison center or doctor if irritation develops or persists. Take off contaminated clothing and wash it before reuse. Acute and delayed symptoms and effects: Causes skin irritation. Signs/symptoms may include localized redness, swelling, and itching. |
| In case of eye contact | Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a poison center or doctor if you feel unwell. Acute and delayed symptoms and effects: May cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision. |
| If swallowed | Call a poison center or doctor if you feel unwell. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Acute and delayed symptoms and effects: May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea. |

4.2 Most important symptoms/effects, acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11

Safety Data Sheet

HiFlow 20

4.3 Indication of immediate medical attention and special treatment needed, if necessary

No data available.

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Specific hazards arising from the chemical

Carbon oxides, Nitrogen oxides (NOx), Hydrogen chloride gas

5.3 Special protective actions for fire-fighters

Avoid any skin contact. Effects of contact or inhalation may be delayed. Fire may produce irritating, corrosive and/or toxic gases. Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution. Wear positive pressure self-contained breathing apparatus (SCBA). Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection. Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

Further information

Use water spray to cool unopened containers. Spills produce extremely slippery surfaces.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Warning: Do not touch or walk through spilled material. Spills can create very slippery surfaces. Wear respiratory protection if necessary. Avoid breathing gas, mist, vapors, or spray. Ensure adequate ventilation. Evacuate personnel to safe areas. For personal protection see section 8.

6.2 Environmental precautions

Do not contaminate water

6.3 Methods and materials for containment and cleaning up

Stop leak if you can do it without risk. Sweep up and shovel into suitable containers for disposal.

Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Surfaces are very slippery from this product. Do not swallow. Do not breathe mist, vapors, or spray. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. See Section 8 for information on Personal Protective Equipment.

7.2 Conditions for safe storage, including any incompatibilities

Freezing will adversely affect the quality of the product. Store locked up. Keep away from heat and sources of ignition. Store away from incompatible materials. See Section 10 for information on Incompatible Materials. Keep out of the reach of children.

Specific end use(s)

Apart from the uses mentioned in section 1 no other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

CAS: 12125-02-9 (EC: 235-186-4)

Ammonium chloride

ACGIH: 20 mg/m³ STEL inhalation; 10 mg/m³ TWA inhalation; Cal/OSHA: 20 mg/m³ PEL-ST inhalation; 10 mg/m³ PEL-TWA inhalation; NIOSH: 20 mg/m³ REL-ST inhalation; 10 mg/m³ REL-TWA inhalation

CAS: 64742-47-8 (EC: 265-149-8)

Distillates, petroleum, hydrotreated light

ACGIH: 200 mg/m³ TLV® inhalation

CAS: 79-06-1

Acrylamide

Cal/OSHA: 0.03 mg/m³ PEL inhalation; NIOSH: Ca, 0.03 mg/m³, See Appendix A REL inhalation; OSHA: 0.3 mg/m³ PEL inhalation

8.2 Appropriate engineering controls

Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, gas, etc.) below recommended exposure limits.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Safety glasses with side shields or goggles. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Wear protective gloves, such as PVC or other plastic material. Consult manufacturer specifications for further information.

Body protection

Wear protective clothing. Clothing with full length sleeves and pants should be worn. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multipurpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Thermal hazards

No data available.

Environmental exposure controls

Do not let product enter drains.

Safety Data Sheet

HiFlow 20

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

| | |
|---|---|
| Appearance/form (physical state, color, etc.) | Viscous Milky Emulsion |
| Odor | Aliphatic |
| Odor threshold | No data available. |
| pH | 3.5 - 6.5 |
| Melting point/freezing point | < 41 °F |
| Initial boiling point and boiling range | > 212 °F |
| Flash point | Does not flash |
| Evaporation rate | < 1 (n-butyl acetate =1) |
| Flammability (solid, gas) | No data available. |
| Upper/lower flammability limits | No data available. |
| Upper/lower explosive limits | No data available. |
| Vapor pressure | 2.3 kPa (68 °F) |
| Vapor density | 0.804 g/L @ 68°F |
| Density | 8.34 - 8.9 |
| Relative density | 1.0 - 1.2 (77 °F) |
| Solubility(ies) | Completely Miscible |
| Partition coefficient: n-octanol/water | No data available. |
| Auto-ignition temperature | No data available. |
| Decomposition temperature | > 302°F |
| Viscosity | >20.5 mm ² /s @ 40 C |
| Explosive properties | No data available. |
| Charge | Cationic |
| Oxidizing properties | The substance or mixture is not classified as oxidizing |

Other safety information

No data available.

SECTION 10: Stability and reactivity

10.1 Reactivity

Contact with incompatible materials. Sources of ignition. Exposure to heat.

10.2 Chemical stability

Stable under normal storage conditions.

10.3 Possibility of hazardous reactions

No data available.

10.4 Conditions to avoid

Heat, flames and sparks. Incompatible products. Keep away from open flames, hot surfaces and sources of ignition.

10.5 Incompatible materials

Strong oxidizing agent

10.6 Hazardous decomposition products

Thermal decomposition may produce: carbon oxides, ammonia, nitrogen oxides

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity

Safety Data Sheet

HiFlow 20

Likely Routes of Exposure: Eye contact. Skin contact. Inhalation. Ingestion.

Information on the product as supplied:

LD50 Oral - Rat - > 5000 mg/kg (Estimated)

LD50 Skin - Rabbit - > 5000 mg/kg (Estimated)

LC50 Inhalation - The product is not expected to be toxic by inhalation

Skin corrosion/irritation - Not irritating

Serious eye damage/eye irritation - Not irritating (OECD 437) Based on results obtained from test on analogous products)

Respiratory/Skin sensitization - Not sensitizing

Mutagenicity - Not mutagenic

Carcinogenicity - Not carcinogenic

Reproductive toxicity - Not toxic for reproduction

STOT - Single Exposure - No known effects

STOT - Repeated Exposure - No known effects

Aspiration Hazard - Due to the viscosity, this product does not present an aspiration hazard

Components:

Ammonium chloride

LD50 Oral - Rat - 1,410 mg/kg

LD50/dermal/rat > 2000 mg/kg (Based on results obtained from tests on analogous products)

This product is not expected to be toxic by inhalation

Alcohols, C12-16, ethoxylated

LD50/oral/rat = 1391 mg/kg

LD50/dermal/rat 2525 mg/kg

LC50/inhalation/4 hours/rat > 1600 mg/m³ (OECD 403)

Risk of Serious Eyed Damage (OECD 405)

Distillates, petroleum, hydrotreated light:

LD50 Oral - Rat - > 5000 mg/kg

LD50 Skin - Rabbit - > 5,000 mg/kg

LC0 Inhalation - Rat - 4951 mg/m³ - 4 h. Result: Based on results obtained from tests on analogous products

Symptoms (including delayed and immediate effects):

Inhalation: May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Ingestion: May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

Skin corrosion/irritation

Information on the product as supplied:

Causes skin irritation. Signs/symptoms may include localized redness, swelling, and itching.

Components:

Ammonium chloride

Rabbit/ Non irritating

Distillates, petroleum, hydrotreated light

Irritating

Alcohols, C12-16, ethoxylated

Not irritating

Serious eye damage/irritation

Information on the product as supplied:

May cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Safety Data Sheet

HiFlow 20

Components:

Ammonium chloride

Rabbit/ Irritating to eyes

Distillates, petroleum, hydrotreated light

Not irritating to eyes

Alcohols, C12-16, ethoxylated

Risk of serious damage to eyes (OECD 405)

Respiratory or skin sensitization

Information on the product as supplied:

Not sensitizing

Components:

Ammonium chloride

Not sensitizing

Distillates, petroleum, hydrotreated light

The product is not expected to be sensitizing

Alcohols, C12-16, ethoxylated

Not sensitizing

Germ cell mutagenicity

Information on the product as supplied:

Not mutagenic.

Components:

Ammonium chloride

No data available

Distillates, petroleum, hydrotreated light

Alcohols, C12-16, ethoxylated

In vitro tests did not show mutagenic effects (OECD 471, 482, 474)

Not mutagenic.

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Ammonium Chloride

Carcinogenicity study in rat (OCDE 451): NOAEL > 1104.6 mg/kg/day

Distillates, petroleum, hydrotreated light

Carcinogenicity study in rats (OECD 451) : Negative

Alcohols, C12-16, ethoxylated

Based on the absence of mutagenicity, it is unlikely that the substance is carcinogenic

Safety Data Sheet

HiFlow 20

Reproductive toxicity

Alcohols, C12-16, Ethoxylated

Based on available data, product is not expected to be toxic for reproduction

NOAEL/Maternal toxicity/rat > 250 mg/kg/day

NOAEL/Developmental toxicity/rat > 250 mg/kg/day

Two Generation Reproduction Toxicity (OECD 416)

NOAEL/rat > 250 mg/kg/day

Distillates, petroleum, hydrotreated light

By analogy with similar substances, this substance is not expected to be toxic for reproduction

NOAEL/rat = 300 ppm (OECD 421)

Ammonium Chloride

Based on available data, this substance is not expected to be toxic for reproduction

NOAEL/rat > 1500 mg/kg/day (OECD 422)

STOT-single exposure

Information on the product as supplied:

No data available

Components:

Ammonium chloride

No Known Effects

Distillates, petroleum, hydrotreated light

May cause drowsiness or dizziness. - Central nervous system

Alcohols, C12-16, Ethoxylated

Based on available data, product is not expected to demonstrate chronic toxic effects.

STOT-repeated exposure

Information on the product as supplied:

No known effects

Components:

Ammonium chloride

Based on available data, product is not expected to demonstrate chronic toxic effects

NOAEL/oral/rat/90 days = 1695.7 mg/kg/day (OECD 408)

NOAEL/oral/rat/28 days = 2214.5 mg/kg/day (OECD 407)

Distillates, petroleum, hydrotreated light

No data available

Aspiration hazard

Information on the product as supplied:

Due to viscosity, this product does not present an aspiration hazard

Components:

Distillates, petroleum, hydrotreated light

May be fatal if swallowed and enters airways.

Ammonium chloride

No known effects.

Alcohols, C12-16, Ethoxylated

No known effects.

SECTION 12: Ecological information

Toxicity

Information on the product as supplied:

LC50 - Pimephales promelas (fathead minnow) - 10-100 mg/l - 96 h (Estimated from similar product)

EC50 - Ceriodaphnia dubia (Water flea) - 20-100 mg/l - 48 h (Estimated from similar product)

Components:

Ammonium chloride

LC50 - Oncorhynchus mykiss (rainbow trout) - 3.98 mg/l - 96 h

NOEC - Oncorhynchus mykiss (rainbow trout) - 57 mg/l - 96 h

EC50 - Daphnia magna (water flea) - 161 mg/l - 48 h

NOEC - Daphnia magna (water flea) - 0.1 mg/l - 216 h

Distillates, petroleum, hydrotreated light

LC0 - Oncorhynchus mykiss (rainbow trout) - >1000 mg/l - 96 h

EC0 - Daphnia magna (water flea) - >1000 mg/l - 48 h

IC0 - Pseudokirchneriella subcapitata (green algae) - >1000 mg/l - 72 h

NOEC - Oncorhynchus mykiss (rainbow trout) - >1000 mg/l - 28 d

EC50 - Tetrahymena pyriformis - >1000 mg/l - 48 h

NOEC - Daphnia magna (water flea) - >1000 mg/l - 21 d

Alcohols, C12-16, ethoxylated

LC50 - Cyprinus carpio / 3.0 mg/l - 96 h

EC50 - Daphnia magna (water flea) - 1.9 mg/l - 48 h

EC20 - Daphnia magna (water flea) - 0.98 mg/l - 21 days

IC50 - Desmodesmus subcapitatus (green algae) - 2.2 mg/l - 72 h

Persistence and degradability

Information on the product as supplied

Not readily biodegradable. Does not hydrolyze.

Components:

Ammonium chloride

No data available

Distillates, petroleum, hydrotreated light

Readily biodegradable. 67.6% / 28 days (OECD 301 F) ; 68.8% / 28 days (OECD 306) ; 61.2% / 61 days (OECD 304 A)

Partition co-efficient (Log Pow): 3 - 6

Does not hydrolyze

Alcohols C12-16, ethoxylated

Readily biodegradable. 100% / 28 days

Partition co-efficient (Log Pow): 4.24 - 5.14

Bioconcentration Factor (BCF): 12.7

Koc: 27134 - 71866

Ammonium Chloride

Biodegradation : Not relevant : Inorganic

The polymeric ingredient is not readily biodegradable.

Bioaccumulative potential

Information on the product as supplied:

Because of the high molecular weight of the polymer diffusion through biological membranes is very

Safety Data Sheet

HiFlow 20

small. Bioaccumulation is unlikely.

Components:

Ammonium chloride

No data available

Mobility in soil

Information on the product as supplied

No data available on product

Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

SECTION 13: Disposal considerations

Disposal of the product

Disposal should be in accordance with applicable Federal, State and local laws and regulations. Local regulations may be more stringent than State or Federal requirements.

Disposal of contaminated packaging

Dispose of as unused product.

SECTION 14: Transport information

DOT (US)

Not dangerous goods

IMDG

Not dangerous goods

IATA

Not dangerous goods

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

SARA 302 Components

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

Contains one or more of the listed substances (De Minimis) reporting levels established by SARA Title III, Section 313.

Ammonium Chloride (De minimis concentration) 1.0%

Clean Water Act

Section 311 Hazardous Substances (40 CFR 117.3) - Reportable Quantity 5,000lbs
DOT RQ (lbs) 5000 lbs

CERCLA

Hazardous Substances List (40 CFR 302.4)
Contains one or more of the listed substances
Ammonium Chloride 5,000lbs

RCRA status

Not RCRA hazardous

SARA 311/312 Hazards

Acute Health Hazard

Safety Data Sheet

HiFlow 20

Massachusetts Right To Know Components

Distillates, petroleum, hydrotreated light
CAS-No. 64742-47-8

Chemical name: Ammonium chloride
CAS number: 12125-02-9

Pennsylvania Right To Know Components

Distillates, petroleum, hydrotreated light
CAS-No. 64742-47-8

Chemical name: Ammonium chloride
CAS number: 12125-02-9

New Jersey Right To Know Components

Distillates, petroleum, hydrotreated light
CAS-No. 64742-47-8

Common name: Ammonium chloride
CAS number: 12125-02-9

California Prop. 65 Components

WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Chemical name: Acrylamide
CAS number: 79-06-1

WARNING! This product contains a chemical known to the State of California to cause cancer.

Chemical name: Acrylamide
CAS number: 79-06-1

HMIS Rating

| HMIS RATINGS (Hazardous Materials Identification System) | |
|--|---|
| HEALTH | 0 |
| FLAMMABILITY | 1 |
| REACTIVITY | 0 |
| PERSONAL PROTECTION | B |

SECTION 16: Other information

16.1 Further information/disclaimer

DISCLAIMER: The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigation to determine the suitability of information for their particular purposes. In no event shall Downhole Chemical Solutions be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, whatsoever arising, even if Downhole Chemical Solutions has been advised of the possibility of such damages.