HALLIBURTON

SAFETY DATA SHEET

Product Trade Name: **Arctic SandWedge™**

Revision Date: 27-Apr-2015 **Revision Number:** 7

1. Identification

1.1. Product Identifier

Product Trade Name: Arctic SandWedge™
Synonyms: FDP-S732-04
Chemical Family: Blend
Internal ID Code HM006088

1.2 Recommended use and restrictions on use

Application: Conductivity Enhancer
Uses Advised Against No information available

1.3 Manufacturer's Name and Contact Details

Manufacturer/Supplier Halliburton Energy Services
P.O. Box 1431
Duncan, Oklahoma 73536-0431
Emergency Telephone: (281) 575-5000

Prepared By Chemical Stewardship
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

1.4. Emergency telephone number

Emergency Telephone Number (281) 575-5000

2. Hazard(s) Identification

2.1 Classification in accordance with paragraph (d) of §1910.1200

Acute Inhalation Toxicity - Vapors	Category 3 - H331
Skin Corrosion / Irritation	Category 1 - H314
Serious Eye Damage / Eye Irritation	Category 1 - H318
Reproductive Toxicity	Category 1 - H360
Specific Target Organ Toxicity - (Single Exposure)	Category 3 - H336
Acute Aquatic Toxicity	Acute 1 - H400
Chronic Aquatic Toxicity	Chronic 1 - H410
Flammable liquids.	Category 2 - H225

2.2. Label Elements

Hazard Pictograms

Signal Word Danger

Hazard Statements

H225 - Highly flammable liquid and vapor
H314 - Causes severe skin burns and eye damage
H318 - Causes serious eye damage
H331 - Toxic if inhaled
H336 - May cause drowsiness or dizziness
H360 - May damage fertility or the unborn child
H400 - Very toxic to aquatic life
H410 - Very toxic to aquatic life with long lasting effects

Precautionary Statements

Prevention

P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking
P233 - Keep container tightly closed
P240 - Ground/Bond container and receiving equipment
P241 - Use explosion-proof electrical/ventilating/lighting/equipment
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray
P242 - Use only non-sparking tools
P243 - Take precautionary measures against static discharge
P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P264 - Wash face, hands and any exposed skin thoroughly after handling
P271 - Use only outdoors or in a well-ventilated area
P273 - Avoid release to the environment
P280 - Wear protective gloves/eye protection/face protection

Response

P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
P363 - Wash contaminated clothing before reuse
P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P310 - Immediately call a POISON CENTER or doctor/physician
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P308 + P313 - IF exposed or concerned: Get medical advice/attention
P312 - Call a POISON CENTER/doctor/physician if you feel unwell
P391 - Collect spillage
P370 + P378 - In case of fire: Use water spray for extinction

Storage	P403 + P233 - Store in a well-ventilated place. Keep container tightly closed P403 + P235 - Store in a well-ventilated place. Keep cool P405 - Store locked up
Disposal	P501 - Dispose of contents/container in accordance with local/regional/national/international regulations

Contains

Substances	**CAS Number**
Isopropanol	67-63-0
Quaternary ammonium compound	Proprietary
Heavy aromatic petroleum naphtha	64742-94-5
Methanol	67-56-1

2.3 Hazards not otherwise classified

None known

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Isopropanol	67-63-0	30 - 60%	Eye Irrit. 2 (H319) STOT SE 3 (H336) Flam. Liq. 2 (H225)
Quaternary ammonium compound	Proprietary	5 - 10%	Acute Tox. 4 (H302) Acute Tox. 3 (H311) Acute Tox. 2 (H330) Skin Corr. 1B (H314) Eye Corr. 1 (H318) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)
Heavy aromatic petroleum naphtha	64742-94-5	1 - 5%	STOT SE 3 (H336) Asp. Tox. 1 (H304) Aquatic Acute 2 (H401) Aquatic Chronic 2 (H411)
Methanol	67-56-1	0.1 - 1%	Acute Tox. 3 (H301) Acute Tox. 3 (H311) Acute Tox. 3 (H331) Repr. 1 (H360) STOT SE 1 (H370) Flam. Liq. 2 (H225)

The exact percentage (concentration) of the composition has been withheld as proprietary.

4. First-Aid Measures

4.1. Description of first aid measures

Inhalation	If inhaled, move victim to fresh air and seek medical attention.
Eyes	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.
Skin	In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes. Get medical attention. Remove contaminated clothing and launder before reuse. Destroy or properly dispose of contaminated shoes.
Ingestion	Get medical attention! If vomiting occurs, keep head lower than hips to prevent aspiration.

4.2 Most important symptoms/effects, acute and delayed

Causes severe skin irritation with tissue destruction. Causes severe eye irritation which may damage tissue. Toxic if inhaled. Potential reproductive hazard. May cause birth defects. May cause headache, dizziness, and other central nervous system effects.

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. Fire-fighting measures

5.1. Extinguishing media

Suitable Extinguishing Media

Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons

None known.

5.2 Specific hazards arising from the substance or mixture

Special Exposure Hazards

May be ignited by heat, sparks or flames. Use water spray to cool fire exposed surfaces. Closed containers may explode in fire. Decomposition in fire may produce toxic gases. Do not allow runoff to enter waterways.

5.3 Special protective equipment and precautions for fire-fighters

Special Protective Equipment for Fire-Fighters

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Wear self-contained breathing apparatus in enclosed areas.
See Section 8 for additional information

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

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

7.1. Precautions for Safe Handling

Handling Precautions

Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Wash hands after use. Launder contaminated clothing before reuse. Ground and bond containers when transferring from one container to another.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Information

Store away from oxidizers. Keep from heat, sparks, and open flames. Keep container closed when not in use. Product has a shelf life of 24 months.

8. Exposure Controls/Personal Protection

8.1 Occupational Exposure Limits

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA

Isopropanol	67-63-0	400 ppm	TWA: 200 ppm STEL: 400 ppm
Quaternary ammonium compound	Proprietary	Not applicable	Not applicable
Heavy aromatic petroleum naphtha	64742-94-5	Not applicable	Not applicable
Methanol	67-56-1	TWA: 200 ppm	TWA: 200 ppm STEL: 250 ppm Skin

8.2 Appropriate engineering controls

Engineering Controls Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation.

8.3 Individual protection measures, such as personal protective equipment

Personal Protective Equipment If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection 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.

Hand Protection 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.

Skin Protection Rubber apron.

Eye Protection Chemical goggles; also wear a face shield if splashing hazard exists.

Other Precautions Eyewash fountains and safety showers must be easily accessible.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Liquid
Odor: Bland
Color: Dark brown
Odor Threshold: No information available

Property	Values	Remarks/ - Method
pH:	8	
Freezing Point/Range	No information available.	
Melting Point/Range	No data available	
Boiling Point/Range	No data available	
Flash Point	18 °C / 66 °F	
Flammability (solid, gas)	No data available	

upper flammability limit	12.7
lower flammability limit	2
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	0.9
Water Solubility	Insoluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

VOC Content (%) No data available

10. Stability and Reactivity

10.1. Reactivity

Not expected to be reactive.

10.2. Chemical Stability

Stable

10.3. Possibility of Hazardous Reactions

Will Not Occur

10.4. Conditions to Avoid

None anticipated

10.5. Incompatible Materials

Strong oxidizers.

10.6. Hazardous Decomposition Products

Carbon monoxide and carbon dioxide.

11. Toxicological Information

11.1 Information on likely routes of exposure

Principle Route of Exposure Eye or skin contact, inhalation.

11.2 Symptoms related to the physical, chemical and toxicological characteristics

Acute Toxicity

Inhalation	May cause central nervous system depression including headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness. May cause respiratory irritation.
Eye Contact	Causes severe eye irritation which may damage tissue.
Skin Contact	Causes severe skin irritation with tissue destruction. May be absorbed through the skin and produce effects similar to those caused by inhalation and/or ingestion.

Ingestion May cause abdominal pain, vomiting, nausea, and diarrhea. 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 Suspected of damaging fertility or the unborn child

11.3 Toxicity data

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Isopropanol	67-63-0	4396 mg/kg (Rat) 5840 mg/kg (Rat) 3600 mg/kg (Mouse)	12,800 mg/kg (Rat) 12,870 mg/kg (Rabbit) 6280 mg/kg (Rabbit)	72.6 mg/L (Rat) 4h > 10,000 mg/L (Rat) 6h
Quaternary ammonium compound	Proprietary	304.5 mg/kg (Rat) 426 mg/kg (Rat)	930 mg/kg (Rat) 919 mg/kg (Mouse)	0.054 - 0.51 mg/L (Rat) 4h
Heavy aromatic petroleum naphtha	64742-94-5	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 4.778 mg/L (Rat) 4h
Methanol	67-56-1	> 1187 - 2769 mg/kg (Rat) 3000 mg/kg (Monkey) 300 mg/kg (Human)	15800 mg/kg (Rabbit) 393 mg/kg (Primate) 1000 mg/kg (Human)	87.5 mg/L (Rat) 6h 128.2 mg/L (Rat) 4h 83.2 mg/L (Rat) 4h 64000 mg/L (Rat) 4h 10 mg/L (Human)

Substances	CAS Number	Skin corrosion/irritation
Isopropanol	67-63-0	Non-irritating to the skin (Rabbit)
Quaternary ammonium compound		Causes severe irritation and or burns
Heavy aromatic petroleum naphtha	64742-94-5	Non-irritating to the skin (Rabbit)
Methanol	67-56-1	Non-irritating to the skin (Rabbit)

Substances	CAS Number	Eye damage/irritation
Isopropanol	67-63-0	Causes severe eye irritation. (Rabbit)
Quaternary ammonium compound		Causes severe eye irritation which may damage tissue.
Heavy aromatic petroleum naphtha	64742-94-5	Non-irritating to the eye (Rabbit)
Methanol	67-56-1	Non-irritating to the eye (Rabbit)

Substances	CAS Number	Skin Sensitization
Isopropanol	67-63-0	Did not cause sensitization on laboratory animals (guinea pig)
Quaternary ammonium compound		Did not cause sensitization on laboratory animals (guinea pig)
Heavy aromatic petroleum naphtha	64742-94-5	Patch test on human volunteers did not demonstrate sensitization properties
Methanol	67-56-1	Did not cause sensitization on laboratory animals (guinea pig)

Substances	CAS Number	Respiratory Sensitization
Isopropanol	67-63-0	No information available
Quaternary ammonium compound		No information available
Heavy aromatic petroleum naphtha	64742-94-5	No information available
Methanol	67-56-1	No information available

Substances	CAS Number	Mutagenic Effects
Isopropanol	67-63-0	In vitro tests did not show mutagenic effects. In vivo tests did not show mutagenic effects.
Quaternary ammonium compound		In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects.

Heavy aromatic petroleum naphtha	64742-94-5	In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects.
Methanol	67-56-1	In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects.

Substances	CAS Number	Carcinogenic Effects
Isopropanol	67-63-0	Did not show carcinogenic effects in animal experiments
Quaternary ammonium compound		Did not show carcinogenic effects in animal experiments
Heavy aromatic petroleum naphtha	64742-94-5	Did not show carcinogenic effects in animal experiments
Methanol	67-56-1	Did not show carcinogenic effects in animal experiments

Substances	CAS Number	Reproductive toxicity
Isopropanol	67-63-0	No significant toxicity observed in animal studies at concentration requiring classification.
Quaternary ammonium compound		Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments.
Heavy aromatic petroleum naphtha	64742-94-5	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments.
Methanol	67-56-1	Fetotoxic and teratogenic effects observed in experimental animals at concentrations that did not produce maternal toxicity.

Substances	CAS Number	STOT - single exposure
Isopropanol	67-63-0	May cause headache, dizziness, and other central nervous system effects.
Quaternary ammonium compound		No information available
Heavy aromatic petroleum naphtha	64742-94-5	May cause disorder and damage to the Central Nervous System (CNS)
Methanol	67-56-1	May cause disorder and damage to the Central Nervous System (CNS) EYES

Substances	CAS Number	STOT - repeated exposure
Isopropanol	67-63-0	No significant toxicity observed in animal studies at concentration requiring classification. (similar substances)
Quaternary ammonium compound		No significant toxicity observed in animal studies at concentration requiring classification.
Heavy aromatic petroleum naphtha	64742-94-5	No significant toxicity observed in animal studies at concentration requiring classification.
Methanol	67-56-1	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	Aspiration hazard
Isopropanol	67-63-0	Not applicable
Quaternary ammonium compound		Not applicable
Heavy aromatic petroleum naphtha	64742-94-5	Aspiration into the lungs may cause chemical pneumonitis including coughing, difficulty breathing, wheezing, coughing up blood and pneumonia, which can be fatal.
Methanol	67-56-1	Not applicable

12. Ecological Information

12.1. Toxicity

Ecotoxicity Effects

Product Ecotoxicity Data

No data available

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates

Isopropanol	67-63-0	EC50 (72h) > 1000 mg/L (Desmodesmus subspicatus) EC50 (7d) 1800 mg/L (Scenedesmus quadricauda)	LC50 (96h) 9640 mg/L (Pimephales promelas) LC50 (7d) 7060 mg/L (Poecilia reticulata)	TT (16h) 1050 mg/L (Pseudomonas putida)	EC50 (48h) 13,299 mg/L (Daphnia magna) EC50 (24h) > 10,000 mg/L (Daphnia magna)
Quaternary ammonium compound	Proprietary	No information available	LC50 (96h) 0.28 mg/L (Pimephales promelas) LC50 (96h) 0.515 mg/L (Lepomis macrochirus) LC50 (96h) 0.923 mg/L (Oncorhynchus mykiss) LC50 (96h) 0.86 mg/L (Cyprinidon variegatus)	No information available	EC50 (48h) 0.092 mg/L (Mysidosis Bahia) EC50 (48h) 0.0059 mg/L (Daphnia magna) NOEC (21d) 0.00415 mg/L (Daphnia magna)
Heavy aromatic petroleum naphtha	64742-94-5	EC50 (72h) 7.8 mg/L (Pseudokirchneriella subcapitata)	LL50 (96h) 3.6 mg/L (Oncorhynchus mykiss) LC50 (96h) 357.7 mg/L (Scophthalmus maximus)	No information available	EL50 (48h) 1.1 mg/L (Daphnia magna) (similar substance)
Methanol	67-56-1	EC50 (96h) 22000 mg/L (Pseudokirchnerella subcapitata, Growth rate)	LC50 28200 mg/L (Pimephales promelas) LC50 (96h) 12700 – 15400 mg/L (Lepomis macrochirus)	IC50 (3h) > 1000 mg/L (activated sludge)	EC50 (96h) 18260 mg/L (Daphnia magna) NOEC (21d) 122 mg/L (Daphnia magna, Reproduction)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Isopropanol	67-63-0	Readily biodegradable (53% @ 5d)
Quaternary ammonium compound	Proprietary	(> 60% @ 28d)
Heavy aromatic petroleum naphtha	64742-94-5	Readily biodegradable (58% @ 28d)
Methanol	67-56-1	(95-97% @ 20d)

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Isopropanol	67-63-0	0.05
Quaternary ammonium compound	Proprietary	3.91
Heavy aromatic petroleum naphtha	64742-94-5	2.9 - 6.1
Methanol	67-56-1	-0.77 BCF = 1.0 – 4.5 (Cyprinus carpio) BCF < 10 (Leuciscus idus melanotus)

12.4. Mobility in soil

Substances	Mobility
Isopropanol	KOC = 1.5
Quaternary ammonium compound	No information available
Heavy aromatic petroleum naphtha	No information available
Methanol	KOC = 0.13 - 0.61

12.5 Other adverse effects

No information available

13. Disposal Considerations

13.1. Waste treatment methods

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:	UN1993
UN Proper Shipping Name:	Flammable Liquid, N.O.S. (Contains Isopropanol, Heavy Aromatic Naphtha)
Transport Hazard Class(es):	3
Packing Group:	II
Environmental Hazards:	Marine Pollutant
NAERG:	NAERG 128

US DOT Bulk

DOT (Bulk)	Not applicable

Canadian TDG

UN Number:	UN1993
UN Proper Shipping Name:	Flammable Liquid, N.O.S. (Contains Isopropanol, Heavy Aromatic Naphtha)
Transport Hazard Class(es):	3
Packing Group:	II
Environmental Hazards:	Marine Pollutant

IMDG/IMO

UN Number:	UN1993
UN Proper Shipping Name:	Flammable Liquid, N.O.S. (Contains Isopropanol, Heavy Aromatic Naphtha)
Transport Hazard Class(es):	3
Packing Group:	II
Environmental Hazards:	Marine Pollutant
EMS:	EmS F-E, S-E

IATA/ICAO

UN Number:	UN1993
UN Proper Shipping Name:	Flammable Liquid, N.O.S. (Contains Isopropanol, Heavy Aromatic Naphtha)
Transport Hazard Class(es):	3
Packing Group:	II
Environmental Hazards:	Marine Pollutant

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.

EPA RCRA Hazardous Waste Classification	If product becomes a waste, it does meet the criteria of a hazardous waste as defined by the US EPA, because of: Ignitability D001
California Proposition 65	The California Proposition 65 regulations apply to this product.
MA Right-to-Know Law	One or more components listed.
NJ Right-to-Know Law	One or more components listed.
PA Right-to-Know Law	One or more components listed.

Canadian Regulations

Canadian DSL Inventory	Product contains one or more components not listed on the inventory.

16. Other information

Preparation Information

Prepared By	Chemical Stewardship Telephone: 1-580-251-4335 e-mail: fdunexchem@halliburton.com
Revision Date:	27-Apr-2015
Reason for Revision	SDS sections updated: 2

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.

Key or legend to abbreviations and acronyms
bw – body weight
CAS – Chemical Abstracts Service
EC50 – Effective Concentration 50%
ErC50 – Effective Concentration growth rate 50%
LC50 – Lethal Concentration 50%
LD50 – Lethal Dose 50%
LL50 – Lethal Loading 50%
mg/kg – milligram/kilogram
mg/L – milligram/liter
NIOSH – National Institute for Occupational Safety and Health
NTP – National Toxicology Program
OEL – Occupational Exposure Limit
PEL – Permissible Exposure Limit
ppm – parts per million
STEL – Short Term Exposure Limit
TWA – Time-Weighted Average
UN – United Nations
h - hour
mg/m^3 - milligram/cubic meter
mm - millimeter
mmHg - millimeter mercury
w/w - weight/weight
d - day

Key literature references and sources for data
www.ChemADVISOR.com/

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End of Safety Data Sheet