HALLIBURTON

SAFETY DATA SHEET

AQF-2™ XG

Revision Date: 01-Mar-2023 **Revision Number:** 2

1. Identification

Product identifier

Product Name AQF-2™ XG

Other means of identification

Hazardous Material Number: HM009409

Recommended use of the chemical and restrictions on use

Recommended Use Foaming Agent

Supplier details

Halliburton Energy Services
Av. Amazonas N37-29 y Villalengua Edif.,
Quito, Ecuador

Halliburton Energy Services
Carrera 7 No. 71-52, Floor 7, Torre B,
Bogotá, Colombia

Halliburton Energy Services
Avenida Principal De Santa Rita Sector Punta
Santa Rita, WES, Venezuela

For further information, please contact:

E-mail Address fdunexchem@halliburton.com

Emergency Phone number

US/Canada: +1-760-476-3962
Peru: 5116 1867 77
Argentina: +54 11 5219 8871
Chile: +56 44 8905208
Colombia: +57 1 344 1317
Panama: +50 78 387596
Global Incident Response Access Code: 334305
Contract Number: 14012

2. Hazards Identification

Classification of the hazardous chemical

Acute Oral Toxicity	Category 5 - H303
Skin Corrosion / Irritation	Category 2 - H315
Serious Eye Damage/Irritation	Category 2A - H319
Acute Aquatic Toxicity	Category 2 - H401
Flammable liquids	Category 4 - H227

Label Elements

Hazard Pictograms

Signal Word: Warning

Hazard Statements

H227 - Combustible liquid
H303 - May be harmful if swallowed
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H401 - Toxic to aquatic life

Precautionary Statements

Prevention

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P264 - Wash face, hands and any exposed skin thoroughly after handling
P273 - Avoid release to the environment
P280 - Wear protective gloves/protective clothing/eye protection/face protection

Response

P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
P302 + P352 - IF ON SKIN: Wash with plenty of water.
P332 + P313 - If skin irritation occurs: Get medical advice/attention
P362 + P364 - Take off contaminated clothing and wash before reuse
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P337 + P313 - If eye irritation persists: Get medical advice/attention

Storage

P403 - Store in a well-ventilated place

Disposal

P501 - Dispose of contents/container in accordance with local/regional/national/international regulations

Contains

Substances	**CAS Number**
Salts of aliphatic sulfonic acids	Proprietary
Ethylene glycol monobutyl ether	111-76-2
Diethylene glycol	111-46-6

Other hazards which do not result in classification

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).
This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

3. Composition/Information on Ingredients

Product Classification: Mixture

Substances	CAS Number	PERCENT (w/w)	GHS Classification
Salts of aliphatic sulfonic acids	Proprietary	30 - 60%	Skin Irrit. 2 (H315) Eye Dam. 1 (H318) Aquatic Acute 2 (H401)
Ethylene glycol monobutyl ether	111-76-2	10 - 30%	Acute Tox. 4 (H302) Acute Tox. 4 (H312) Acute Tox. 4 (H332) Skin Irrit. 2 (H315) Eye Irrit. 2A (H319) Flam. Liq. 4 (H227)
Diethylene glycol	111-46-6	5 - 10%	Acute Tox. 4 (H302) STOT RE 2 (H373)

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

4. First Aid Measures

Description of 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.

Eyes In case of contact, immediately flush eyes with plenty of water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Seek immediate medical attention/advice. Suitable emergency eye wash facility should be immediately available

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.

Ingestion Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

Most important symptoms and effects, both acute and delayed

Causes severe eye irritation which may damage tissue. Causes skin irritation. May cause damage to organs through prolonged or repeated exposure.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable extinguishing media

Suitable Extinguishing Media

Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons

Do NOT spray pool fires directly with water. A solid stream of water directed into hot burning liquid can cause splattering.

Physicochemical hazards arising from the chemical

Special exposure hazards in a fire

Decomposition in fire may produce harmful gases. Vapors are heavier than air and may accumulate in low areas. Vapors may travel along the ground to be ignited at distant locations.

Special protective equipment and precautions for fire fighters

Special protective equipment for firefighters

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

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Ensure adequate ventilation. Avoid breathing vapors. Avoid contact with skin, eyes and clothing. Remove sources of ignition.

See Section 8 for additional information.

Environmental precautions

Prevent from entering sewers, waterways, or low areas.

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. Do NOT spread spilled product with water.

7. Handling and storage

Precautions for safe handling

Use appropriate protective equipment. Ensure adequate ventilation. Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Remove sources of ignition. Ground and bond containers when transferring from one container to another.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Store away from oxidizers. Keep from heat, sparks, and open flames. Store in a cool well ventilated area. Keep container closed when not in use. Keep from freezing. Product has a shelf life of 36 months.

8. Exposure Controls/Personal Protection

Control parameters

Exposure Limits

Substances	CAS Number	Venzuela	Colombia	Argentina
Salts of aliphatic sulfonic acids	Proprietary	Not applicable	Not applicable	Not applicable
Ethylene glycol monobutyl ether	111-76-2	TWA: 20 ppm	TWA: 20 ppm	TWA: 20 ppm
Diethylene glycol	111-46-6	Not applicable	Not applicable	Not applicable

Appropriate engineering controls

Engineering Controls Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits. Ensure adequate ventilation, especially in confined areas

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. When the potential exists for vapors of this product to be present, use a respirator with an organic-vapor filter or a supplied-air respirator as needed for adequate protection.

Hand Protection Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374): 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.

Skin Protection Wear protective clothing appropriate for the work environment.

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

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

Environmental Exposure Controls Do not allow material to contaminate ground water system.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical State: Liquid
Odor: Bland
Color Clear light yellow
Odor Threshold: No information available

Property	Values	Remarks/ - Method
pH:	6.5 - 8.5	(10 % solution)
Freezing Point / Range	-16 °C	
Melting Point / Range	No data available	
Pour Point / Range	No data available	
Boiling Point / Range	> 100 °C / 212 °F	
Flash Point	61 °C / 142 °F	(PMCC)

Evaporation rate	No data available
Vapor Pressure	< 1 mmHg
Vapor Density	No data available
Specific Gravity	1.038
Water Solubility	Soluble 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

Other information
VOC Content (%) No data available

10. Stability and Reactivity

Reactivity
Not expected to be reactive.

Chemical stability
Stable

Possibility of hazardous reactions
Will Not Occur

Conditions to avoid
Keep away from heat, sparks and flame.

Incompatible materials
Strong oxidizers.

Hazardous decomposition products
Oxides of sulfur. Carbon monoxide and carbon dioxide.

11. Toxicological Information

Information on possible routes of exposure
Principle Route of Exposure Eye or skin contact, inhalation. Ingestion.

Most Important Symptoms/Effects
Causes severe eye irritation which may damage tissue. Causes skin irritation. May cause damage to organs through prolonged or repeated exposure.

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Salts of aliphatic sulfonic acids	Proprietary	2310 mg/kg (Rat) 2079 mg/kg (Rat) 6314 mg/kg (Rat) 4000 mg/kg (Rat)	6300 mg/kg (Rabbit) > 6000 mg/kg	> 52 mg/L (Rat) 4h
Ethylene glycol monobutyl ether	111-76-2	530 mg/kg-bw (guinea pig)	400 mg/kg (Rabbit)	No data available
Diethylene glycol	111-46-6	12565 - 19600 mg/kg (Rat)	11890 - 13300 mg/kg (Rabbit)	> 4.6 mg/L (Rat) 4h

Immediate, delayed and chronic health effects from exposure
Inhalation May cause respiratory irritation.
Eye Contact Causes severe eye irritation which may damage tissue.
Skin Contact Causes skin irritation.

Ingestion May cause abdominal pain, vomiting, nausea, and diarrhea.

Chronic Effects/Carcinogenicity Prolonged or repeated exposure can cause delayed kidney damage.

Substances	CAS Number	Skin corrosion/irritation
Salts of aliphatic sulfonic acids		Irritating to skin. (Rabbit)
Ethylene glycol monobutyl ether	111-76-2	Skin, rabbit: Causes moderate skin irritation. Causes skin irritation. (Rabbit)
Diethylene glycol	111-46-6	Non-irritating to the skin (Rabbit)

Substances	CAS Number	Serious eye damage/irritation
Salts of aliphatic sulfonic acids		Causes severe eye irritation which may damage tissue. (Rabbit)
Ethylene glycol monobutyl ether	111-76-2	Eye, rabbit: Causes moderate eye irritation Causes eye irritation. (Rabbit)
Diethylene glycol	111-46-6	Non-irritating to the eye (Rabbit)

Substances	CAS Number	Skin Sensitization
Salts of aliphatic sulfonic acids		Did not cause sensitization on laboratory animals (guinea pig)
Ethylene glycol monobutyl ether	111-76-2	Did not cause sensitization on laboratory animals (guinea pig)
Diethylene glycol	111-46-6	Did not cause sensitization on laboratory animals (guinea pig)

Substances	CAS Number	Respiratory Sensitization
Salts of aliphatic sulfonic acids		No information available
Ethylene glycol monobutyl ether	111-76-2	No information available
Diethylene glycol	111-46-6	No information available

Substances	CAS Number	Mutagenic Effects
Salts of aliphatic sulfonic acids		In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects.
Ethylene glycol monobutyl ether	111-76-2	In vitro tests did not show mutagenic effects. In vivo tests did not show mutagenic effects.
Diethylene glycol	111-46-6	In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects.

Substances	CAS Number	Carcinogenic Effects
Salts of aliphatic sulfonic acids		Did not show carcinogenic effects in animal experiments (Rat)
Ethylene glycol monobutyl ether	111-76-2	Not regarded as carcinogenic.
Diethylene glycol	111-46-6	Did not show carcinogenic effects in animal experiments (Rat)

Substances	CAS Number	Reproductive toxicity
Salts of aliphatic sulfonic acids		No significant toxicity observed in animal studies at concentration requiring classification.
Ethylene glycol monobutyl ether	111-76-2	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments.
Diethylene glycol	111-46-6	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments.

Substances	CAS Number	STOT - single exposure
Salts of aliphatic sulfonic acids		No significant toxicity observed in animal studies at concentration requiring classification.
Ethylene glycol monobutyl ether	111-76-2	No significant toxicity observed in animal studies at concentration requiring classification.
Diethylene glycol	111-46-6	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	STOT - repeated exposure
Salts of aliphatic sulfonic acids		No significant toxicity observed in animal studies at concentration requiring classification.
Ethylene glycol monobutyl ether	111-76-2	No significant toxicity observed in animal studies at concentration requiring classification.

Diethylene glycol	111-46-6	Causes damage to organs through prolonged or repeated exposure: Kidney

Substances	CAS Number	Aspiration hazard
Salts of aliphatic sulfonic acids		No information available
Ethylene glycol monobutyl ether	111-76-2	Not applicable
Diethylene glycol	111-46-6	No information available

12. Ecological Information

Ecotoxicity

12.1. Toxicity

Ecotoxicity effects

Toxic to aquatic life.

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Salts of aliphatic sulfonic acids	Proprietary	EC50 (72h) 5.2 mg/L (Skeletonema costatum)	LC50 (96h) 4.2 mg/L (Danio rerio)	No information available	EC50 (48h) 4.53 mg/L (Ceriodaphnia sp) NOEC (21d) 6.3 mg/L (Daphnia magna)
Ethylene glycol monobutyl ether	111-76-2	EC50(72 h)=1840 mg/L (Pseudokirchneriella subcapitata)	LC50(96 h)=1474 mg/L (Oncorhynchus mykiss) NOAEC(21 d)>100 mg/L (Danio rerio)	No information available	EC50(48 h)=1800 mg/L (Daphnia magna) EC50(21 d)=297 mg/L (Daphnia magna)
Diethylene glycol	111-46-6	TGK (8d) 2700 mg/L (Scenedesmus quadricauda)	LC50 75200 mg/L (Pimephales promelas)	EC20 (30m) > 1995 mg/L (domestic activated sludge)	EC50 84000 mg/L (Daphnia magna) EC50 >10000 mg/L (Daphnia magna)

Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Salts of aliphatic sulfonic acids	Proprietary	Readily biodegradable (80-96% @ 28d)
Ethylene glycol monobutyl ether	111-76-2	Readily biodegradable (90.4% @ 28d)
Diethylene glycol	111-46-6	Readily biodegradable (90-100% @ 28d)

Bioaccumulative potential

Substances	CAS Number	Bioaccumulation
Salts of aliphatic sulfonic acids	Proprietary	- 1.3
Ethylene glycol monobutyl ether	111-76-2	Log Pow=0.9
Diethylene glycol	111-46-6	BCF: 100 (Leuciscus idus melanotus)

Mobility in soil

Substances	CAS Number	Mobility
Salts of aliphatic sulfonic acids	Proprietary	No information available
Ethylene glycol monobutyl ether	111-76-2	No information available
Diethylene glycol	111-46-6	No information available

Other adverse effects

Endocrine Disruptor Information

This product does not contain any known or suspected endocrine disruptors

13. Disposal Considerations

Disposal methods

Disposal methods Follow all applicable community, national or regional regulations regarding waste management methods.

Contaminated Packaging Follow all applicable national or local regulations.

14. Transport Information

Transportation Information

UN Number	Not restricted
UN proper shipping name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

IMDG/IMO

UN Number	Not restricted
UN proper shipping name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

IATA/ICAO

UN Number	Not restricted
UN proper shipping name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	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

International Agreements

Montreal Protocol - Ozone Depleting Substances:	Does not apply.
Stockholm Convention - Persistent Organic Pollutants:	Does not apply
Rotterdam Convention - Prior Informed Consent:	Does not apply.
Basel Convention - Hazardous Waste:	Does not apply.

NFPA Ratings:	Health 1, Flammability 2, Reactivity 0
HMIS Ratings:	Health 1, Flammability 2, Physical Hazard 0 , PPE: C

16. Other Information

Revision Date: 01-Mar-2023
Revision Note
Initial Release

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

Key or legend to abbreviations and acronyms used in the safety data sheet
bw – body weight
CAS – Chemical Abstracts Service
EC10 – Effective Concentration 10%
EC50 – Effective Concentration 50%
EEC – European Economic Community
ErC50 – Effective Concentration growth rate 50%
IBC Code – International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%
LL0 – Lethal Loading 0%
LL50 – Lethal Loading 50%
MARPOL – International Convention for the Prevention of Pollution from Ships
mg/kg – milligram/kilogram
mg/L – milligram/liter
NIOSH – National Institute for Occupational Safety and Health
NOEC – No Observed Effect Concentration
NTP – National Toxicology Program
OEL – Occupational Exposure Limit
PBT – Persistent Bioaccumulative and Toxic
PC – Chemical Product category
PEL – Permissible Exposure Limit
ppm – parts per million
PROC – Process category
STEL – Short Term Exposure Limit
h - hour
d - day

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End of Safety Data Sheet