

MATERIAL SAFETY DATA SHEET

Product Trade Name: FE-1A ACIDIZING COMPOSITION

Revision Date: 16-Jul-2014

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Trade Name: FE-1A ACIDIZING COMPOSITION
Synonyms: None
Chemical Family: Organic acid Anhydride
Application: Additive

Manufacturer/Supplier: Halliburton Energy Services
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Emergency Telephone: (281) 575-5000

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2. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT (w/w)	ACGIH TLV-TWA	OSHA PEL-TWA
Acetic anhydride	108-24-7	60 - 100%	TWA: 5 ppm	5 ppm
Acetic acid	64-19-7	30 - 60%	TWA: 10 ppm STEL: 15 ppm	10 ppm

3. HAZARDS IDENTIFICATION

Hazard Overview: May cause eye, skin, and respiratory burns. May be harmful if swallowed. Combustible Reacts violently with water.

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.

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.

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.

Ingestion: Do not induce vomiting. Slowly dilute with 1-2 glasses of water or milk and seek medical attention. Never give anything by mouth to an unconscious person.

Notes to Physician: Not Applicable

5. FIRE FIGHTING MEASURES

Flash Point/Range (F):	103
Flash Point/Range (C):	39
Flash Point Method:	PMCC
Autoignition Temperature (F):	630
Autoignition Temperature (C):	332
Flammability Limits in Air - Lower (%):	3
Flammability Limits in Air - Upper (%):	19

Fire Extinguishing Media Carbon Dioxide, Dry Chemicals, Foam. Water must not be used with open containers.

Special Exposure Hazards May be ignited by heat, sparks or flames. Closed containers may explode in fire. Decomposition in fire may produce toxic gases. Reaction with water may be highly exothermic.

Special Protective Equipment for Fire-Fighters Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

NFPA Ratings: Health 3, Flammability 2, Reactivity 2
HMIS Ratings: Health 3, Flammability 2, Physical Hazard 2 , PPE: lqs

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures Use appropriate protective equipment.

Environmental Precautionary Measures Prevent from entering sewers, waterways, or low areas.

Procedure for Cleaning / Absorption Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Neutralize to pH of 6-8. Scoop up and remove.

7. HANDLING AND STORAGE

Handling Precautions Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Wash hands after use. Launder contaminated clothing before reuse.

Storage Information Store away from alkalis. Store away from oxidizers. Store away from water. Keep from heat, sparks, and open flames. Keep container closed when not in use. Store in a cool well ventilated area. Store locked up. Product has a shelf life of 60 months.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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

Respiratory Protection Organic vapor/acid gas respirator.

Hand Protection Impervious rubber gloves.

Skin Protection Rubber boots. Full protective chemical resistant clothing.

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

Physical State:	Liquid
Color:	Clear colorless
Odor:	Pungent acrid
pH:	< 2
Specific Gravity @ 20 C (Water=1):	1.0753
Density @ 20 C (lbs./gallon):	8.962
Bulk Density @ 20 C (lbs/ft3):	Not Determined
Boiling Point/Range (F):	259
Boiling Point/Range (C):	126
Freezing Point/Range (F):	15
Freezing Point/Range (C):	-9
Vapor Pressure @ 20 C (mmHg):	11.7
Vapor Density (Air=1):	3.5
Percent Volatiles:	100
Evaporation Rate (Butyl Acetate=1):	0.97
Solubility in Water (g/100ml):	Soluble
Solubility in Solvents (g/100ml):	Not Determined
VOCs (lbs./gallon):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	Not Determined
Viscosity, Kinematic @ 20 C (centistokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid	Keep away from heat, sparks and flame. Do not allow water to get into container because of violent reaction.
Incompatibility (Materials to Avoid)	Strong alkalis. Strong oxidizers. Reacts with water.
Hazardous Decomposition Products	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	Causes severe respiratory irritation.
Eye Contact	Causes severe eye burns.
Skin Contact	Causes severe burns.
Ingestion	Causes burns of the mouth, throat and stomach.
Chronic Effects/Carcinogenicity	Prolonged, excessive exposure may cause erosion of the teeth.

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Acetic anhydride	108-24-7	630 mg/kg (Rat)	4000 mg/kg (Rabbit)	4.2 mg/L (Rat) 4 h 1000 ppm (Rat) 4 h LC100: 1670 mg/m ³ (Rat) 6h
Acetic acid	64-19-7	3310 mg/kg (Rat) 600 mg/kg (Rabbit) 4960 mg/kg (Mouse)	1060 mg/kg (Rabbit)	11.4 mg/L (Rat) 4 h

12. ECOLOGICAL INFORMATION

Ecotoxicological Information

Ecotoxicity Product

Acute Fish Toxicity:	Not determined
Acute Crustaceans Toxicity:	Not determined
Acute Algae Toxicity:	Not determined

Ecotoxicity Substance

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Acetic anhydride	108-24-7	EC50(72h): > 1000 mg/L (>300.82 mg/L acetate ion) (growth rate) (Skeletonema costatum) (similar substance)	LC50: 265 mg/L (Leuciscus idus) LC50(96h): > 1000 mg/L (>300.82 mg/L acetate ion) (Oncorhynchus mykiss) (similar substance)	NOEC(16h): 1150 mg/L (Pseudomonas putida) (similar substance)	EC50(48h): 55 mg/L (Daphnia magna) EC50(48h): > 1000 mg/L (>300.82 mg/L acetate ion) (Daphnia magna) (similar substance) NOEC(21d): 31.4 - 37.9 mg/L (Daphnia magna) (reproduction) (similar substance – acetic acid)
Acetic acid	64-19-7	EC50: 90 mg/L (Microcystis aeruginosa) EC50(72h): > 1000 mg/L (>300.82 mg/L – acetate ion) (Skeletonema costatum)	LC50: 79 mg/l (Pimephales promelas) LC50: 75 mg/l (Pimephales promelas) LC50(96h) > 1000 mg/L (>300.82 mg/L – acetate ion) (Oncorhynchus mykiss)	NOEC(16h): 1150 mg/L (Pseudomonas putida)	EC50: 47 mg/l (Daphnia magna) LC50: 32 mg/L (Artemia salina) EC50(48h) > 1000 mg/L (>300.82 mg/L – acetate ion) (Daphnia magna) NOEC(21d): 31.4 - 37.9 mg/L (Daphnia magna) (reproduction)

12.2. Persistence and degradability

Readily biodegradable

Substances	CAS Number	Persistence and Degradability
Acetic anhydride	108-24-7	Readily biodegradable (99% @ 28d)
Acetic acid	64-19-7	Readily biodegradable (> 95% @ 28d)

12.3. Bioaccumulative potential

Does not bioaccumulate

Substances	CAS Number	Log Pow
Acetic anhydride	108-24-7	-0.58 BCF 3.16 (Calculated)
Acetic acid	64-19-7	-0.17 BCF 3.16 (Calculated)

12.4. Mobility in soil

No information available

12.5. Results of PBT and vPvB assessment

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

12.6. Other adverse effects

13. DISPOSAL CONSIDERATIONS

Disposal Method	Disposal should be made in accordance with federal, state, and local regulations. Incineration recommended in approved incinerator according to federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.
Contaminated Packaging	Follow all applicable national or local regulations. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

14. TRANSPORT INFORMATION

US DOT

UN Number:	UN2920
UN Proper Shipping Name:	Corrosive Liquid, Flammable, N.O.S. (Contains Acetic Anhydride, Acetic Acid)
Transport Hazard Class(es):	8
Subsidiary Hazard:	(3)
Packing Group:	II
NAERG:	NAERG 132

US DOT Bulk

DOT (Bulk)	Not Applicable
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Canadian TDG u10

UN Number:	UN2920
UN Proper Shipping Name:	Corrosive Liquid, Flammable, N.O.S. (Contains Acetic Anhydride, Acetic Acid)
Transport Hazard Class(es):	8
Subsidiary Hazard:	(3)
Packing Group:	II

IMDG/IMO

UN Number:	UN2920
UN Proper Shipping Name:	Corrosive Liquid, Flammable, N.O.S. (Contains Acetic Anhydride, Acetic Acid)
Transport Hazard Class(es):	8
Subsidiary Hazard:	(3)
Packing Group:	II
EMS:	EmS F-E, S-C

IATA/ICAO

UN Number:	UN2920
UN Proper Shipping Name:	Corrosive Liquid, Flammable, N.O.S. (Contains Acetic Anhydride, Acetic Acid)
Transport Hazard Class(es):	8
Subsidiary Hazard:	(3)
Packing Group:	II

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

Special Precautions for User: None

Labels: Corrosive
Flammable Liquid

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 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	EPA Reportable Spill Quantity is 1409 Gallons based on Acetic acid (CAS: 64-19-7).
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 Corrosivity D002
California Proposition 65	All components listed do not apply to the California Proposition 65 Regulation.
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	All components listed on inventory or are exempt.
WHMIS Hazard Class	B3 Combustible Liquids E Corrosive Material

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 Compliance at 1-580-251-4335.
Disclaimer Statement	This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

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