Weatherford

Material Safety Data Sheet

WBK 134

1. Product and Company Identification

Material name	**WBK 134**
Patent Number	Not available
Revision date	February-13-2009
Version No.	1
CAS #	Mixture
Product use	Delayed oxidizing breaker
Supplier information	Weatherford Fracturing Technologies 515 Post Oak Blvd Suite 1000 Houston, TX 77027 US

2. Hazards Identification

Emergency overview	DANGER -- OXIDIZER Harmful if swallowed. Harmful in contact with eyes. Cancer hazard. Prolonged exposure may cause chronic effects. Components of the product may be absorbed into the body by inhalation, ingestion and through the skin. Contact with other combustible material can cause fire.
OSHA regulatory status	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
Potential health effects	
Routes of exposure	Ingestion.
Eyes	Eye contact may result in corneal injury. Contact may irritate or burn eyes. Do not get this material in contact with eyes.
Skin	Do not get this material in contact with skin.
Inhalation	Prolonged inhalation may be harmful. May cause cancer by inhalation. Repeated or prolonged inhalation may cause toxic effects. For additional information on inhalation hazards, see Section 11 of this safety data sheet.
Ingestion	Harmful if swallowed. May cause delayed lung damage. Do not ingest.
Target organs	Eyes. Lungs.

Chronic effects Shortness of breath. Conjunctiva. May cause delayed lung damage. This product has the potential for generation of respirable dust during handling and use. Dust may contain respirable crystalline silica. Overexposure to dust may result in pneumocononiosis, a respiratory disease caused by inhalation of mineral dust, which can lead to fibrotic changes to the lung tissue, or silicosis, a respiratory disease caused by inhalation of silica dust, which can lead to inflammation and fibrosis of the lung tissue. Occupational exposure to respirable dust and respirable crystalline silica should be monitored and controlled.

Signs and symptoms Discomfort in the chest. Shortness of breath. Corneal damage. Cough. Conjunctivitis.

Potential environmental effects May cause long-term adverse effects in the environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
AMMONIUM PERSULFATE	7727-54-0	60 - 80
Crystalline Silica in the form of Quartz	14808-60-7	5 - 10

4. First Aid Measures

First aid procedures

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses after the first 5 minutes and continue washing. Get medical attention immediately.

Skin contact Remove and isolate contaminated clothing and shoes. Wash off with warm water and soap. For minor skin contact, avoid spreading material on unaffected skin. Get medical attention immediately.

Inhalation Move to fresh air. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Get medical attention immediately.

Ingestion If swallowed, seek medical advice immediately and show this container or label. Rinse mouth. Do not induce vomiting without medical advice. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Never give anything by mouth to a victim who is unconscious or is having convulsions.

Notes to physician In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General advice If exposed or concerned: get medical attention/advice. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

Flammable properties Containers may explode when heated. Some will react explosively with hydrocarbons (fuels). May explode from heat or contamination. Some may decompose explosively when heated or involved in a fire. Runoff may create fire or explosion hazard. These substances will accelerate burning when involved in a fire. Contact with combustible material may cause fire.

Extinguishing media

Suitable extinguishing media Water. Dry chemical, CO2, water spray or regular foam.

Protection of firefighters

Protective equipment and precautions for firefighters Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Do not move cargo or vehicle if cargo has been exposed to heat. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. ALWAYS stay away from tanks engulfed in flame. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Move containers from fire area if you can do it without risk. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Use water spray to cool unopened containers. Cool containers with flooding quantities of water until well after fire is out.

6. Accidental Release Measures

Personal precautions Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering. Keep unnecessary personnel away. Isolate spill or leak area immediately for at least 50 to 100 meters (150 to 330 feet) in all directions. Stay upwind. Keep out of low areas.

Environmental precautions Runoff from fire control or dilution water may cause pollution.

Methods for containment Stop leak if you can do so without risk. Keep combustibles (wood, paper, oil, etc.) away from spilled material. Prevent entry into waterways, sewers, basements or confined areas.

Methods for cleaning up Should not be released into the environment. Sweep up or gather material and place in appropriate container for disposal. Avoid dust formation. After removal flush contaminated area thoroughly with water.

7. Handling and Storage

Handling Do not handle or store near an open flame, heat or other sources of ignition. Keep away from clothing and other combustible materials. Do not breathe dust/fume/gas/mist/vapors/spray. Use only with adequate ventilation. Wear personal protective equipment. Wash hands after handling and before eating. Do not get this material in contact with eyes. Do not get this material in contact with skin. Avoid release to the environment. Wash thoroughly after handling. Avoid prolonged exposure.

Storage Keep container tightly closed. Do not store near combustible materials. Keep in a well-ventilated place. Keep this material away from food, drink and animal feed. Keep out of the reach of children. Use care in handling/storage.

8. Exposure Controls / Personal Protection

Exposure limits

ACGIH

Components	CAS #	TWA	STEL	Ceiling
Crystalline Silica in the form of Quartz	14808-60-7	0.025 mg/m3	Not established	Not established

Exposure guidelines Occupational exposure to nuisance dust (total and respirable) and respirable crystalline silica should be monitored and controlled.

Engineering controls	Ensure adequate ventilation, especially in confined areas.
Personal protective equipment	
Eye / face protection	Do not get this material in contact with eyes. Wear safety glasses; chemical goggles and face shield (if splashing is possible).
Skin protection	Wear appropriate chemical resistant gloves. Chemical resistant apron or protective suit if splashing or contact with solution is likely. Protective gloves.
Respiratory protection	Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
General hygeine considerations	When using do not eat or drink. Keep away from food and drink. Handle in accordance with good industrial hygiene and safety practice. Wash hands after handling and before eating.

9. Physical & Chemical Properties

Appearance	Solid.
Color	Orange.
Odor	Slightly acrid.
Odor threshold	Not available
Physical state	Solid.
Form	Solid
pH	4.5 - 5 @ 1% soln/water
Melting point	Not available
Freezing point	Not available
Boiling point	Not available
Flash point	Not available
Evaporation rate	Not available
Flammability	Not available.
Flammability limits in air, upper, % by volume	Not available
Flammability limits in air, lower, % by volume	Not available
Vapor pressure	Not available
Vapor density	Not available
Specific gravity	1.814
Relative density	1.8138 g/cm3 estimated
Solubility (water)	Not available
Partition coefficient (n-octanol/water)	Not available
Auto-ignition temperature	Not available
Decomposition temperature	Not available

10. Chemical Stability & Reactivity Information

Chemical stability	Instability caused by excessive moisture.

Conditions to avoid Exposure to moisture. This product may react with reducing agents.

Incompatible materials This product may react with reducing agents. Water. Peroxides. Strong oxidizing agents. organic materials

Hazardous decomposition products May include oxides of sulphur. May include oxides of nitrogen. Phosphine. Ammonia Sulfuric acid.

Possibility of hazardous reactions Hazardous polymerization does not occur.

11. Toxicological Information

Acute effects Acute LD50: 620 mg/kg estimated, Rat, Oral
Acute LC50: 173 mg/l/4h estimated, Rat, Inhalation

Component analysis - LD50

Toxicology Data - Selected LD50s and LC50s

AMMONIUM PERSULFATE	7727-54-0	Inhalation LC50 Rat: 520 mg/L/1H; Oral LD50 Rat: 495 mg/kg
Crystalline Silica in the form of Quartz	14808-60-7	Oral LD50 Rat: 500 mg/kg

Sensitization Not expected to be hazardous by OSHA criteria.

Local effects Contact may irritate or burn eyes.

Chronic effects Hazardous by OSHA criteria. Prolonged or repeated exposure may cause lung injury. Prolonged exposure may cause chronic effects. In 1997, IARC (the International Agency for Research on Cancer) concluded that crystalline silica inhaled from occupational sources can cause lung cancer in humans. However in making the overall evaluation, IARC noted that "carcinogenicity was not detected in all industrial circumstances studied. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." (IARC Monographs on the evaluation of the carcinogenic risks of chemicals to humans, Silica, silicates dust and organic fibres, 1997, Vol. 68, IARC, Lyon, France.) In June 2003, SCOEL (the EU Scientific Committee on Occupational Exposure Limits) concluded that the main effect in humans of the inhalation of respirable crystalline silica dust is silicosis. "There is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and, apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore, preventing the onset of silicosis will also reduce the cancer risk..." (SCOEL SUM Doc 94-final, June 2003) According to the current state of the art, worker protection against silicosis can be consistently assured by respecting the existing regulatory occupational exposure limits. Occupational exposure to respirable dust and respirable crystalline silica should be monitored and controlled.

Carcinogenicity Hazardous by OSHA criteria. Cancer hazard.

ACGIH - Threshold Limit Values - Carcinogens

Crystalline Silica in the form of Quartz	14808-60-7	A2 - Suspected Human Carcinogen

NTP (National Toxicology Program) - Report on Carcinogens - Known Human Carcinogens

Crystalline Silica in the form of Quartz	14808-60-7	Known Human Carcinogen

Neurological effects Not expected to be hazardous by OSHA criteria.

12. Ecological Information

Ecotoxicity

LC50 137 mg/L estimated, Fish, 96.00 Hours,
EC50 160 mg/L estimated, Daphnia, 48.00 Hours,
Components of this product have been identified as having potential environmental concerns.

Ecotoxicity - Freshwater Fish Species Data

AMMONIUM PERSULFATE	7727-54-0	96 Hr LC50 Lepomis macrochirus: 103 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: 76.3 mg/L [static]

Ecotoxicity - Water Flea Data

AMMONIUM PERSULFATE	7727-54-0	48 Hr EC50 Daphnia magna: 120 mg/L

Environmental effects

Ecotoxicity - Freshwater Fish Species Data

AMMONIUM PERSULFATE	7727-54-0	96 Hr LC50 Lepomis macrochirus: 103 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: 76.3 mg/L [static]

Ecotoxicity - Water Flea Data

AMMONIUM PERSULFATE	7727-54-0	48 Hr EC50 Daphnia magna: 120 mg/L

13. Disposal Considerations

Disposal instructions

Do not allow this material to drain into sewers/water supplies. This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Dispose in accordance with all applicable regulations.

14. Transport Information

Department of Transportation (DOT) Requirements

Basic shipping requirements:

Proper shipping name	Ammonium persulfate
Hazard class	5.1
UN number	UN1444
Packing group	III
Additional information:	
Special provisions	A1, A29, IB8, IP3, T1, TP33
Packaging exceptions	152
Packaging non bulk	213
Packaging bulk	240
ERG number	140

Department of Transportation (DOT) Requirements

Bulk

Basic shipping requirements:

Proper shipping name	Ammonium persulfate
Hazard class	5.1
UN number	UN1444
Packing group	III
Additional information:	
Special provisions	A1, A29, IB8, IP3, T1, TP33
Packaging exceptions	152
Packaging non bulk	213
Packaging bulk	240
ERG number	140

Canadian Transportation of Dangerous Goods (TDG) Requirements

Basic shipping requirements:

Proper shipping name	AMMONIUM PERSULFATE; or AMMONIUM PERSULPHATE
Hazard class	5.1
UN number	UN1444
Packing group	III
Additional information:	
ERG number	140

IMDG

Basic shipping requirements:

Proper shipping name	AMMONIUM PERSULPHATE
Hazard class	5.1
Subsidiary hazard class	•
UN number	1444
Packing group	III

IATA

Basic shipping requirements:

Proper shipping name	Ammonium persulphate
Hazard class	5.1
UN number	1444
Packing group	III

15. Regulatory Information

Labelling

Contains AMMONIUM PERSULFATE, Crystalline Silica in the form of Quartz

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

CERCLA/SARA Hazardous Substances - Not applicable.

NTP (National Toxicology Program) - Report on Carcinogens - Known Human Carcinogens

Crystalline Silica in the form of Quartz	14808-60-7	Known Human Carcinogen

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical Yes

CERCLA (Superfund) reportable quantity

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance No

Section 311 hazardous chemical Yes

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
Europe	European Inventory of New and Existing Chemicals (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

International regulations

Canada - WHMIS - Ingredient Disclosure List

AMMONIUM PERSULFATE	7727-54-0	0.1 %
Crystalline Silica in the form of Quartz	14808-60-7	1 %

IARC - Group 1 (Carcinogenic to Humans)

Crystalline Silica in the form of Quartz	14808-60-7	Monograph 68 [1997] (listed under Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources)

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

U.S. - California - Proposition 65 - Carcinogens List

Crystalline Silica in the form of Quartz	14808-60-7	carcinogen, initial date 10/1/88 (airborne particles of respirable size)

U.S. - Massachusetts - Right To Know List

Crystalline Silica in the form of Quartz	14808-60-7	Carcinogen; Extraordinarily hazardous

U.S. - Minnesota - Hazardous Substance List

Crystalline Silica in the form of Quartz	14808-60-7	Carcinogen

U.S. - New Jersey - Right to Know Hazardous Substance List

AMMONIUM PERSULFATE	7727-54-0	sn 0111
Crystalline Silica in the form of Quartz	14808-60-7	sn 1660

U.S. - Pennsylvania - RTK (Right to Know) List

Crystalline Silica in the form of Quartz	14808-60-7	Present

U.S. - Rhode Island - Hazardous Substance List

Crystalline Silica in the form of Quartz	14808-60-7	Toxic (dust)

U.S. - Texas - Effects Screening Levels - Long Term

AMMONIUM PERSULFATE	7727-54-0	1 µg/m3 ESL (particulate)
Crystalline Silica in the form of Quartz	14808-60-7	0.1 µg/m3 ESL (respirable, under review)

U.S. - Texas - Effects Screening Levels - Short Term

AMMONIUM PERSULFATE	7727-54-0	10 µg/m3 ESL (particulate)
Crystalline Silica in the form of Quartz	14808-60-7	1 µg/m3 ESL (under review)

16. Other Information

Recommended restrictions Workers (and your customers or users in the case of resale) should be informed of the potential presence of respirable dust and respirable crystalline silica as well as their potential hazards. Appropriate training in the proper use and handling of this material should be provided as required under applicable regulations.

HMIS® ratings
Health: 1*
Flammability: 0
Physical hazard: 1

NFPA ratings
Health: 1
Flammability: 0
Instability: 1
Special hazards: OX

Prepared by
Emilia Ugwu
4426 South Flores Rd
Elmendorf
TX, 78112
+1 210 626 0832

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