

# FEDERAL WHOLESALE DRILLING MUD

(Division of M-1 Drilling Fluids Co.)

## TRANSPORTATION & MATERIAL SAFETY DATA SHEET

TRADE NAME : BENTONITE

EMERGENCY TELEPHONE NUMBER:  
(713) 561-1600  
(713) 561-1300  
DAY OR NIGHT

MFPA HAZARD RATING : HEALTH 1  
FLAMMABILITY 0  
REACTIVITY 0  
SPECIAL HAZARD

### PREAMBLE

Federal Wholesale Drilling Mud is pleased to furnish this data at your request independent of any sale of the product. While every effort has been made to accurately describe this product and associated manifestations, some of the data is obtained from the open literature, independent laboratory studies, or other sources beyond our direct supervision. We cannot make any assertion as to the reliability or completeness; therefore, the User may rely thereon only at User's risk. We have made no effort to censor nor to conceal deleterious aspects of this product. Since we cannot anticipate or control the many different conditions under which this information and our products may be used, we make no guarantee that the health and safety precautions we have suggested will be adequate for all individuals and/or situations involving its handling and use. Likewise we make no guarantee or warranty of any kind that the use or disposal of this product is in compliance with all federal, state or local laws. It is the obligation of each User of this product to determine and comply with the requirements of all applicable statutes. Federal Wholesale Drilling Mud will furnish, upon request, any additional available information to assist the User; however, no warranty, either expressed or implied, nor liability of any nature with respect to the product or to the data herein is made or incurred hereunder.

### I. PRODUCT IDENTIFICATION

COMMON NAME : Bentonite  
MANUFACTURER : M-1 Drilling Fluids Company  
PACKAGE QUANTITY : 45.4 kg (100 lb)  
USE : Drilling fluid additive  
FREIGHT DESCRIPTION : Oil well drilling fluid additive  
CONTAINER SPECIFICATIONS : Multiwall paper bag meets DOT requirements (49 CFR 178)

CHEMICAL FORMULA : Natural clay  
CAS NUMBER : 1302-78-9  
UNIT OF ISSUE : Kilogram (pound)  
APPLICATION : Viscosifier

### II. HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	%	(A) OSHA PEL / (B) ACGIH TLV / (C) OTHER LIMITS RECOMMENDED
Silica, crystalline quartz, respirable dust (14808-60-7)	2-15	(A) 0.1 mg/m <sup>3</sup> (1) (B) 0.1 mg/m <sup>3</sup> (2) (C) NIOSH TWA: 0.1 mg/m <sup>3</sup> (3)
Silica, crystalline cristobalite, respirable dust (14464-46-1)	2-12	(A) 0.05 mg/m <sup>3</sup> (1) (B) 0.05 mg/m <sup>3</sup> (2) (C) NIOSH TWA: 0.05 mg/m <sup>3</sup> (3)
Silica, crystalline tridymite, respirable dust (15468-32-3)	< 1.5	(A) 0.05 mg/m <sup>3</sup> (1) (B) 0.05 mg/m <sup>3</sup> (2) (C) NIOSH TWA: 0.05 mg/m <sup>3</sup> (3)
Gypsum, respirable dust (13397-24-5)	1	(A) 5 mg/m <sup>3</sup> (1) (B) 10 mg/m <sup>3</sup> (2)

### III. PHYSICAL DATA

BOILING POINT (760 mm Hg) : N.A.  
MELTING POINT : N.A.  
pH (1% Soln.) : N.D.  
VAPOR PRESSURE @ 20 deg C : N.A.  
SPECIFIC GRAVITY (H2O=1) : N.D.  
SOLUBILITY IN WATER @ 20 deg C : Insoluble  
VAPOR DENSITY (air=1) : N.A.  
EVAPORATION RATE (BUTYL ACETATE=1) : N.A.  
PHYSICAL APPEARANCE : Powder  
FLASH POINT (method used) : N.A.  
BULK DENSITY : 769-833 kg/m<sup>3</sup> (48-52 lb/ft<sup>3</sup>)  
ODOR & COLOR : Odorless, gray to tan color

### IV. REACTIVITY DATA

PRODUCT IS STABLE? : Yes  
PRODUCT DECOMPOSES? : No  
PRODUCT POLYMERIZES? : No

INCOMPATIBILITY : OTHER : N.D.  
AIR : N.D.  
HEAT : N.D.  
ACID : N.D.  
BASE : N.D.  
WATER : N.D.  
OXIDIZER : N.D.  
(Specify)

N.D.-Not Determined N.A.-Not Applicable < Less Than > Greater Than C-Ceiling Limit  
Notes for additional information and interpretive assistance, see last page.

## V. FIRE AND EXPLOSION HAZARD INFORMATION

FLAMMABLE LIMITS BY AIR, % BY VOL.	L.E.L. N.A.	U.E.L. N.A.	AUTO IGNITION TEMPERATURE N.A.
PRODUCTS EVOLVED WHEN SUBJECTED TO HEAT BY COMBUSTION	This material is not combustible.		
EXTINGUISHING MEDIA	In case of fire, flood with water. Compatible with any extinguishing media used to extinguish fires nearby.		
UNUSUAL FIRE FIGHTING PROCEDURES	High efficiency particulate respirator (HEPA) or self-contained breathing apparatus must be used if this material is raised as a dust into the air.		
UNUSUAL FIRE AND EXPLOSION HAZARDS	None known.		

## VI. HEALTH HAZARD INFORMATION

PRIMARY ROUTES OF EXPOSURE	EYE CONTACT TARGET ORGAN	X	SKIN CONTACT TARGET ORGAN	X	SKIN ABSORPTION	INHALATION TARGET ORGAN	X	INGESTION	CARCINOGENICITY	NTP	No	IARC	Yes	CSHA	No
ACUTE EFFECTS OF EXPOSURE	Inhalation may result in distress in breathing, coughing, and irritation of the upper respiratory system. Skin and eye contact may cause mechanical irritation. (4)														
CHRONIC EFFECTS OF EXPOSURE	Crystalline silica is known to cause fibrosis, silicosis, and liver effects and is an experimental tumorigen. (4) Limited evidence shows that the inhalation of crystalline silica does cause cancer in humans. (5)														
TOXICITY DATA	Oral-mouse TDLo: 12000 g/kg/28W-C; ivn-rat LD50: 35 mg/kg. (4) Crystalline silica is an IARC Group 2A probable carcinogen. Respirable crystalline cristobelite, quartz and tridymite are NTP anticipated carcinogens (1991). (1)														

## VII. EMERGENCY AND FIRST AID PROCEDURES

1. EYES	Hold eyelids apart and flush eyes with water for at least 15 minutes. Get medical attention if irritation persists.
3. SKIN	Wash thoroughly with soap and water. Remove contaminated clothing.
A. INGESTION	Drink water to dilute. Never give anything by mouth to an unconscious person. Get medical attention as needed.
1. 0. INHALATION	Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
OTHER INSTRUCTIONS	Sensitive individuals should avoid further contact. Persons seeking medical attention should carry a copy of this MSDS with them.

## VIII. OCCUPATIONAL CONTROL MEASURES

RESPIRATORY	Wear a NIOSH/MSHA-approved high-efficiency particulate respirator when the airborne concentration is above the PEL.
VENTILATION	Supply natural or mechanical ventilation adequate to keep exposures below recommended exposure limits.
SKIN	Wear gloves and long-protective clothing. Wash thoroughly after handling. Wash clothes and clean shoes before reuse.
EYES	Wear chemical safety goggles or glasses with sideguards. Insure proper fit for best protection.
OTHER PROTECTIVE EQUIPMENT	Ordinary measures of personal hygiene should be observed. Avoid contact with skin and clothing. Avoid breathing dust.

## IX. SPECIAL PRECAUTIONS

PRECAUTIONARY LABELING	WARNING! Suspect cancer hazard. Contains crystalline silica which may cause cancer. May cause mechanical eye, skin, and upper respiratory irritation.
CAUTIONS FOR TRANSPORTATION	Keep dusts to a minimum. Keep container closed. Use with adequate ventilation. See MSDS for proper protective equipment.

N.D. - Not Determined; N.A. - Not Applicable; < - Less Than; > - Greater Than  
Note: for additional information and interpretive assistance, see last page.

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### X. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Wear proper protective equipment (MSDS Section VIII). Contain the spill. Minimize dust. Re-sack or place in a suitable container. Keep out of sewers and waterways.

DISPOSAL METHOD

Consult your local authorities for the proper procedures for disposing of bentonite, a naturally-occurring clay.

### XI. U.S. GOVERNMENT & OTHER REGULATORY AGENCY CONTROLS

OSHA TITLE III ACUTE X CHRONIC X FIRE REACTIVITY SUDDEN RELEASE OF PRESSURE

FDA: Safe designation 21 CFR 582.1155

### XII. TRANSPORTATION INFORMATION

#### A. DEPARTMENT OF TRANSPORTATION (DOT)

CLASSIFIED AS A HAZARDOUS MATERIAL ACCORDING TO DOT (49 CFR 172) No

PROPER SHIPPING NAME : Drilling fluid additive, n.o.s. (bentonite clay)

HAZARD CLASS : Not restricted

IDENTIFICATION NO. : N.A.

LABEL(S) REQUIRED : None

EXCEPTIONS & PACKAGING REQUIREMENTS (SEE SECTION) : N.A.

MAXIMUM QUANTITY PASSENGER AIRCRAFT : N.A.

IN ONE PACKAGE CARGO AIRCRAFT : N.A.

#### B. AIR TRANSPORT REGULATIONS (IATA/ICAO)

PROPER SHIPPING NAME : Drilling fluid additive, n.o.s. (bentonite clay)

UN NO. : N.A.

HAZARD CLASS : Not restricted FLASH POINT : N.A. deg F N.A. deg C

MAX QUANTITY PASSENGER AIRCRAFT : N.A.

PACKAGING (SEE SECTION) : N.A.

IN ONE PACKAGE CARGO AIRCRAFT : N.A.

PACKAGING (SEE SECTION) : N.A.

#### C. INTERNATIONAL MARITIME ORGANIZATION REGULATIONS (IMO)

SUBSTANCE NAME : Drilling fluid additive, n.o.s. (bentonite clay)

UN NO. : N.A.

HAZARD CLASS : Not restricted CLASS NO. : N.A.

PAGE NO. : N.A.

LABEL(S) : None FLASH POINT : N.A. deg F N.A. deg C

DESCRIPTION : Oil well drilling fluid additive (bentonite clay)

### XIII. ADDITIONAL INFORMATION

#### References:

- (1) Chemical Guide to the OSHA Hazard Communication Standard, Ed. by Clansky, K.B., 7th Edition; Roytech; Burlingame, CA, (1992).
- (2) 1991-1992 Threshold Limit Values and Biological Exposure Indices; American Conference of Governmental Industrial Hygienists; Cincinnati, (1991).
- (3) NIOSH Pocket Guide to Chemical Hazards; National Institute for Occupational Safety and Health; Cincinnati, (1991).
- (4) IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Silica and Some Silicates, Vol. 42; World Health Organization; Lyon, France, (1987).

FOR ADDITIONAL INFORMATION CONTACT:  
EPA, Environmental Affairs (713) 561-1507

Prepared by : James K. Rushing  
Date Prepared : Revised: 28 September 1992.

N.D.-Not Determined N.A.-Not Applicable <-Less Than ->Greater Than  
Note: For additional information and interpretive assistance, see last page.

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# EXPLANATION OF THE TRANSPORTATION AND MATERIAL SAFETY DATA SHEET

## NFPA HAZARD INTERPRETATION

### Degree of Health Hazard

#### of Possible Injury

- 4 A few whiffs of the vapor could cause death; or the vapor or liquid could be fatal on penetrating the fire fighter's normal full protective clothing which is designed for resistance to heat.
- 3 Materials extremely hazardous to health, but areas may be entered with extreme care. Full protective clothing should be provided. No skin surface should be exposed.
- 2 Materials hazardous to health, but areas may be entered freely with self-contained breathing apparatus.
- 1 Materials only slightly hazardous to health.
- 0 Materials which on exposure under fire conditions would offer no health hazard beyond that of ordinary combustible material.

### Degree of Flammability

#### Susceptibility of Materials to Burning

- 4 Very flammable gases, very volatile flammable liquids, and materials that in the form of dusts or mists readily form explosive mixtures when dispersed in air.
- 3 Liquids ignitable under almost all normal temperature conditions solids that burn rapidly, and any material that ignites spontaneously at normal temperatures in air.
- 2 Liquids which must be moderately heated before ignition will occur and solids that readily give off flammable vapors.
- 1 Materials that must be preheated before ignition can occur.
- 0 Materials that will not burn.

### Degree of Reactivity

#### Susceptibility to Release of Energy

- 4 Materials which in themselves are readily capable of detonation or of explosive decomposition or explosive reaction at normal temperatures and pressures.
- 3 Materials which in themselves are capable of detonation or of explosive decomposition or of explosive reaction but which require a strong initiating source or which must be heated under confinement before initiation.
- 2 Materials which in themselves are normally unstable and readily undergo violent chemical change but do not detonate.
- 1 Materials which in themselves are normally stable but which may become unstable at elevated temperatures and pressures or which may react with water with some release of energy but not violently.
- 0 Materials which are normally stable even under fire exposure conditions and which are not reactive with water.

A "W" in the bottom space of the diamond alerts fire fighting personnel to the possible hazard in use of water. The violence of the reaction with water is indicated by the degree number in the REACTIVITY category.

## SECTION II. HAZARDOUS INGREDIENTS

The purposes of this form, a material shall be defined as hazardous if it meets any one of the following criteria (see OSHA 29 CFR Part 1910 Hazard Communication):

- (1) Toxicity - A toxic substance is one that has demonstrated the potential to: endanger human life by exposure via any route found in the workplace; produce short - or long-term disease or bodily injury; affect health adversely; induce cancer or other neoplastic effects in man or experimental animals; induce a transmissible change in the characteristics of an offspring from those of its human or experimental animal parent; or cause the production of physical defect in the developing human or experimental animal embryo. As required by OSHA, these substances are identified if they are present in quantities greater than 1%, or in the case of carcinogens, greater than 0.1%, or if a hazard is determined at a lower concentration.  
Toxic substances not regulated under OSHA 29 CFR 1910 but covered by other governmental regulations will be listed as required under any state regulation or the following federal regulations: CERCLA/Superfund 40 CFR 117; Toxic Substance Control Act (TSCA), FIFRA pesticide registration; Resource Conservation and Recovery Act (RCRA), and the Federal Clean Air and Water Acts 40 CFR 60-61, 40 CFR 401 and 116.
- (2) Corrosive - As defined by OSHA is a chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact.
- (3) Irritant - As defined by OSHA is a chemical which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact.
- (4) Sensitizer - As defined by OSHA is a chemical that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure of the chemical.
- (5) Physical Hazards - As defined by OSHA, DOT and RCRA will be based on the flammability, corrosivity, reactivity and/or explosive nature of the product as a whole, the mixture or individual ingredients as determined to be the most hazardous.

## SECTION VI. HEALTH HAZARD INFORMATION

Primary Routes of Exposure: Should indicate one or more possible pathways by which substance may affect the human body.

Acute Effects of Exposure: Acute effect applies to injuries which rapidly follow through direct exposure to a hazardous material without implying degree of severity.

Chronic Effects of Exposure: Chronic effect applies to injuries which are delayed and occur after repeated or prolonged exposure to a hazardous material without implying degree of severity.

Median Lethal Dose (LD50, LC50): Median Lethal Dose (MLD) refers to the Lethal Dose (LD) or Lethal Concentration (LC) of the material which will produce death in 50 percent of the test animals. LDLO is the single lowest reported dose that has proven to be fatal in one individual. TDLO is the single lowest reported dose which has caused a specific toxic effect in an individual.

## SECTION XI. U.S. GOVERNMENT AND OTHER REGULATORY AGENCY CONTROLS

Indicates if the use and marketing of the product is restricted by the indicated federal regulatory agencies or state and local regulations. This list is not intended as a comprehensive review of all regulations or concerned agencies; rather, it is a quick check of several major agencies or regulations.