

Date May, 1986**MATERIAL SAFETY DATA SHEET**

Page 1 of 6

Product Name:

DIASEAL[®] M
Lost Circulation
Material**DRILLING SPECIALTIES COMPANY**
A DIVISION OF PHILLIPS 66 COMPANY
Bartlesville, Oklahoma 74004

Emergency Phone Nos.

918-661-3865 (during business)

918-661-8118 (after hours)

**PRODUCT IDENTIFICATION**

Synonyms: Mixture

Chemical Name: Mixture

Chemical Family: Mixture

Chemical Formula: Mixture

CAS Reg. No: Mixture

Product No: NE

Product and/or Components Entered on EPA's TSCA Inventory: Yes ☒ No ☐**HAZARDOUS COMPONENTS**

<u>Ingredients</u>	<u>CAS Number</u>	<u>% By Wt.</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
Amorphous Silica	60676-86-0	80	80 mg/m ³ % SiO ₂	20 mppct
Calcium Hydroxide	1305-62-0	8	5 mg/m ³	5 mg/m ³

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PERSONAL PROTECTION INFORMATION

Ventilation: Use adequate ventilation to control below recommended exposure levels.

Respiratory Protection: For concentrations exceeding the recommended exposure level, use NIOSH/MSHA approved air purifying respirator.

Eye Protection: Use chemical goggles.

Skin Protection: Protective gloves for prolonged exposures. For splash protection use chemical goggles and face shield.

Note: Personal protection information shown above is based upon general information as to normal uses and conditions. Where special or unusual uses or conditions exist, it is suggested that the expert assistance of an industrial hygienist or other qualified professional be sought.

HANDLING AND STORAGE PRECAUTIONS

Avoid inhalation and skin and eye contact. Wash hands before eating, drinking or smoking. Store in dry area in sealed containers or bags.

REACTIVITY DATA

Stability: Stable ☒ Unstable ☐ Conditions to Avoid:

Incompatibility (Materials to Avoid): Fluorine, oxygen difluoride, chlorine trifluoride.

Hazardous Polymerization: Will not Occur ☒ May Occur ☐ Conditions to Avoid

Hazardous Decomposition Products: N E

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HEALTH HAZARD DATA

RECOMMENDED EXPOSURE LIMITS: None established for mixture as a whole. See Hazardous Components on Page 1 for exposure limits of components.

ACUTE EFFECTS OF OVEREXPOSURE:

EYE: May cause severe irritation if in eyes for prolonged period of time.

SKIN: May cause irritation.

INHALATION: May cause irritation to the mucous membranes of the nose, throat and upper respiratory tract.

INGESTION: May cause irritation to the gastrointestinal tract.

SUBCHRONIC AND CHRONIC EFFECTS OF OVEREXPOSURE:

In humans, diatomaceous earth is considered to be nonfibrogenic to weakly fibrogenic. Crystalline quartz content is usually associated with fibrosis.

OTHER HEALTH EFFECTS: No known applicable information.

HEALTH HAZARD CATEGORIES:

	Animal	Human		Animal	Human
Known Carcinogen	☐	☐	Toxic	☐	☐
Suspect Carcinogen	☐	☐	Corrosive	☐	☐
Mutagen	☐	☐	Irritant	☒	☐
Teratogen	☐	☐	Target Organ Toxin	☐	☐
Allergic Sensitizer	☐	☐	Specify _____		
Highly Toxic	☐	☐			

FIRST AID AND EMERGENCY PROCEDURES:

EYE: Hold eyelids apart and irrigate eyes with running water for at least 15 minutes. Remove any remaining particles that are present in the eyes. Seek immediate medical attention.

SKIN: Immediately wash with soap and water. If irritation develops, seek medical attention.

INHALATION: Remove from exposure. If illness or adverse symptoms develop, seek medical attention.

INGESTION: Give 2 glasses of water. If illness or adverse symptoms develop, seek medical attention.

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PHYSICAL DATA

Appearance: Light gray powder

Odor: Odorless

Boiling Point: NA

Vapor Pressure: NA

Vapor Density (Air = 1): NA

Solubility in Water: Negligible

Specific Gravity ($H_2O = 1$): NE

Percent Volatile by Volume: NA

Evaporation Rate (_____ = 1): NA

Viscosity: NA

FIRE and EXPLOSION DATA

Flash Point (Method Used): NA

Flammable Limits (% By Volume in Air): LEL NA UEL NA

Fire Extinguishing Media: NA

Special Fire Fighting Procedures: N A

Fire and Explosion Hazards: N A

SPILL, LEAK and DISPOSAL PROCEDURES

Precautions Required if Material is Released or Spilled: Protect against exposure. See Personal Protection Information (Page 2). Vacuum spill. If sweeping is necessary, wet down spill or use sweeping compound.

Waste Disposal (Insure Conformity with all Applicable Disposal Regulations):
Place in permitted waste disposal facility.

MATERIAL SAFETY DATA SHEET

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DOT TRANSPORTATION

Shipping Name: NA

Hazard Class: NA

ID Number: NA

Marking: NA

Label: NA

Placard: NA

Hazardous Substance/RQ: NA

Shipping Description: NA

Packaging References: NA

RCRA CLASSIFICATION (FOR UNADULTERATED PRODUCT AS A WASTE)

NA

PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE OF CONTAMINATED EQUIPMENT

See Personal Protection Information on Page 2. Contact immediate supervisor for specific instructions before work is initiated.

HAZARD CLASSIFICATION

THIS PRODUCT MEETS THE FOLLOWING HAZARD DEFINITION(S) AS DEFINED BY OCCUPATIONAL SAFETY AND HEALTH REGULATIONS (29 CFR PART 1910. 1200):

- | | | |
|---|--|---|
| ☐ Not Hazardous | ☐ Flammable Solid | ☐ Oxidizer |
| ☐ Combustible Liquid | ☐ Flammable Aerosol | ☐ Pyrophoric |
| ☐ Compressed Gas | ☐ Explosive | ☐ Unstable |
| ☐ Flammable Gas | ☒ Health Hazard (See Page 3) | ☐ Water Reactive |
| ☐ Flammable Liquid | ☐ Organic Peroxide | |

MATERIAL SAFETY DATA SHEET

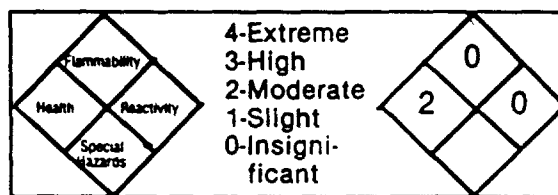
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ADDITIONAL COMMENTS

ENVIRONMENTAL TOXICITY:

Environmental effects testing has been conducted using Diaseal® M in a generic mud. The tests were conducted following the Environmental Protection Agency's (EPA), Region II drilling mud bioassay procedures.

The 96-hour LC_{50} for freshwater trout is $> 13,000$ ppm. The 96-hour LC_{50} for salt-water stickleback is $> 5,600$ ppm. The results of these tests classify Diaseal® M as a non-toxic drilling mud additive.



NFPA FIRE HAZARD SYMBOL

See NFPA 704 for detailed explanation.

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PHILLIPS PETROLEUM COMPANY

BARTLESVILLE, OKLAHOMA 74004
PHONE 918 661-6600 CABLE CODE: PHILPETROL TELEX: 49-2455

ENGINEERING AND SERVICES

February 22, 1979

Material Safety Data Sheet

Mr. W. B. Kirkland
Baroid Division
NL Industries, Inc.
P.O.Box 1675
Houston, TX 77001

Dear Mr. Kirkland:

As stated in Mr. F. J. Shell's letter of February 20, 1979, Diaseal M[®] has been reformulated and no longer contains chrysotile asbestos fiber.

We have revised our Material Safety Data Sheet accordingly and a copy is attached for your use. Please destroy the Data Sheet on Diaseal M presently in your files and replace with the attached updated copy.

Very truly yours,

R. R. Simmons
Senior Standards & Regulations
Analyst

RRS/vmr
Attachment

2-22-79

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OSHA No. 26-R1327

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME

Johns-Manville Corp & Subsidiaries

EMERGENCY TELEPHONE NO.

303/770-1000 Ext 2252

ADDRESS (Number, Street, City, State, and ZIP Code)

Greenwood Plaza, Denver, Colorado 80217

CHEMICAL NAME AND SYNONYMS

TRADE NAME AND SYNONYMS

Diaaseal M

CHEMICAL FAMILY

FORMULA

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
Natural diatomaceous earth				88	*
* For TLV's see attached Federal Register of 6/7/72 (1910.93 and 1910.93a - pg 11320, Vol 37, #110)					

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H ₂ O=1)	
VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			
APPEARANCE AND ODOR Gray powder - no odor			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used): Non-flammable	FLAMMABLE LIMITS	Let	Uel
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			

Product: _____

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

See Section II

EFFECTS OF OVEREXPOSURE

Long term exposure to high airborne concentrations of this material may cause pulmonary disease

EMERGENCY AND FIRST AID PROCEDURES

SECTION VI - REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

INCOMPATIBILITY (Materials to avoid)

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

X

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Vacuum clean spillage. If sweeping is necessary, wet spilled material or use sweeping compounding.

WASTE DISPOSAL METHOD

Dispose of waste in closed containers.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

NIOSH approved for protection against pneumoconiosis-producing dusts

VENTILATION

LOCAL EXHAUST

SPECIAL

MECHANICAL (General)

OTHER

PROTECTIVE GLOVES

EYE PROTECTION

OTHER PROTECTIVE EQUIPMENT

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

OTHER PRECAUTIONS

PAGE (2)

CPG 920-520

While the information and recommendations set forth herein are believed to be accurate as of the date hereof, JOHNS-MANVILLE CORPORATION MAKES NO WARRANTY WITH RESPECT

Form OSHA-20
Rev. May 72

1910.93 Air contaminants.

TABLE O 3—MINERAL DUSTS

Substance	Appel	Mg/D
Fibers:		
Crystalline: Quartz (respirable).....	250'	10mg/D ¹ =
Quartz (total dust).....	%SiO ₂ +4	%SiO ₂ +2
Crystalline: Use 1/2 the value calculated from the amount of silica formula for quartz.		%SiO ₂ +2
Tridymite: Use 1/2 the value calculated from the formula for quartz.		
Amorphous, including natural diatomaceous earth.....	20	80mg/D ¹
		%SiO ₂
Silicates (less than 1% crystalline silica):		
Alite.....	20	
Tridymite.....	20	
Tridymite.....	20	
Portland cement.....	20	
Graphite (natural).....	10	
Coal dust (respirable fraction less than 5% SiO ₂).....		2.4mg/D ¹ or 10mg/D ¹
For more than 5% SiO ₂		%SiO ₂ +2
Inert or Nuisance Dust:		
Respirable fraction.....	15	5mg/D ¹
Total dust.....	50	15mg/D ¹

NOTE: Conversion factors—
 1 mg/D¹ = 1 million particles per cubic meter
 1 particle per c.c.

¹Number of particles per cubic foot of air, based on exposure samples obtained by light-field techniques.

²The percentage of crystalline silica in the formula is the amount determined from airborne samples, except in those instances in which other methods have been shown to be applicable.

³As determined by the membrane filter method at 10% relative humidity.

⁴Both concentration and percent quartz for the purposes of this table are to be determined from the fraction passing a size-selector with the following characteristics:

Aerodynamic diameter (unit density sphere)	Percent passing selector
2	80
2.5	75
2.5	60
5.0	25
10	0

The measurements under this table refer to the use of an AEC instrument. If the respirable fraction of a dust is determined with a NIOSH instrument, the conversion factor of 2.5 mg/D¹ must be used for each dust.

2. A new § 1910.93a is added to Part 1910, reading as follows:

§ 1910.93a Asbestos.

(a) **Definitions.** For the purpose of this section, (1) "Asbestos" includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

(2) "Asbestos fibers" means asbestos fibers longer than 5 micrometers.

(b) **Permissible exposure to airborne concentrations of asbestos fibers—(1) Standard effective July 7, 1972.** The 8-hour time-weighted average airborne concentrations of asbestos fibers to which any employee may be exposed shall not exceed five fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (c) of this section.

(2) **Standard effective July 1, 1976.** The 8-hour time-weighted average airborne concentrations of asbestos fibers

to which any employee may be exposed shall not exceed two fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (c) of this section.

(3) **Ceiling concentration.** No employee shall be exposed at any time to airborne concentrations of asbestos fibers in excess of 10 fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (c) of this section.

(c) **Methods of compliance—(1) Engineering methods.** (i) **Engineering controls.** Engineering controls, such as, but not limited to, isolation, enclosure, exhaust ventilation, and dust collection, shall be used to meet the exposure limits prescribed in paragraph (b) of this section.

(ii) **Local exhaust ventilation.** (a) Local exhaust ventilation and dust collection systems shall be designed, constructed, installed, and maintained in accordance with the American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, ANSI Z9.2-1971, which is incorporated by reference herein.

(b) See § 1910.6 concerning the availability of ANSI Z9.2-1971, and the maintenance of a historic file in connection therewith. The address of the American National Standards Institute is given in § 1910.100.

(iii) **Particular tools.** All hand-operated and power-operated tools which may produce or release asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section, such as, but not limited to, saws, scorers, abrasive wheels, and drills, shall be provided with local exhaust ventilation systems in accordance with subdivision (ii) of this subparagraph.

(2) **Work practices—(i) Wet methods.** Insofar as practicable, asbestos shall be handled, mixed, applied, removed, cut, scored, or otherwise worked in a wet state sufficient to prevent the emission of airborne fibers in excess of the exposure limits prescribed in paragraph (b) of this section, unless the usefulness of the product would be diminished thereby.

(ii) **Particular products and operations.** No asbestos cement, mortar, coating, grout, plaster, or similar material containing asbestos shall be removed from bags, cartons, or other containers in which they are shipped, without being either wetted, or enclosed, or ventilated so as to prevent effectively the release of airborne asbestos fibers in excess of the limits prescribed in paragraph (b) of this section.

(iii) **Spraying, demolition, or removal.** Employees engaged in the spraying of asbestos, the removal, or demolition of pipes, structures, or equipment covered or insulated with asbestos, and in the removal or demolition of asbestos insulation or coverings shall be provided with respiratory equipment in accordance with paragraph (d)(2)(iii) of this section and with special clothing in accordance with paragraph (d)(3) of this section.

(d) **Personal protective equipment.** (i) Compliance with the exposure limits prescribed by paragraph (b) of this section may not be achieved by the use of respirators or shift rotation of employees, except:

(i) During the time period necessary to install the engineering controls and to institute the work practices required by paragraph (c) of this section;

(ii) In work situations in which the methods prescribed in paragraph (c) of this section are either technically not feasible or infeasible to an extent insufficient to reduce the airborne concentrations of asbestos fibers below the limits prescribed by paragraph (b) of this section; or

(iii) In emergencies.

(iv) Where both respirators and personnel rotation are allowed by subdivisions (i), (ii), or (iii) of this subparagraph, and both are practicable, personnel rotation shall be preferred and used.

(2) Where a respirator is permitted by subparagraph (1) of this paragraph, it shall be selected from among those approved by the Bureau of Mines, Department of the Interior, or the National Institute for Occupational Safety and Health, Department of Health, Education, and Welfare, under the provisions of 30 CFR Part 11 (37 FR 6244, Mar. 25, 1972), and shall be used in accordance with subdivisions (i), (ii), (iii), and (iv) of this subparagraph.

(i) **Air purifying respirators.** A reusable or single use air-purifying respirator, or a respirator described in subdivision (ii) or (iii) of this subparagraph, shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits presented in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average airborne concentrations of asbestos fibers are reasonably expected to exceed no more than 10 times those limits.

(ii) **Powered air-purifying respirators.** A full facepiece powered air-purifying respirator, or a powered air-purifying respirator, or a respirator described in subdivision (iii) of this subparagraph, shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average concentrations of asbestos fibers are reasonably expected to exceed 10 times, but not 100 times, those limits.

(iii) **Type "C" supplied-air respirators, continuous flow or pressure-demand class.** A type "C" continuous flow or pressure-demand, supplied-air respirator shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average airborne concentrations of asbestos fibers are reasonably expected to exceed 100 times those limits.

(iv) **Establishment of a respirator program.** (a) The employer shall establish a respirator program in accordance with

1/29/76

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OSHA No. 26-R-11227

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME Johns-Manville Corp & Subsidiaries		EMERGENCY TELEPHONE NO. 303/770-1000 Ext 2252
ADDRESS (Number, Street, City, State, and ZIP Code) Greenwood Plaza, Denver, Colorado 80217		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Diaseal M
CHEMICAL FAMILY	FORMULA	

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
Natural diatomaceous earth				88	*
Chrysotile asbestos fiber				10	*
* For TLV's see attached Federal Register of 6/7/72 (1910.93 and 1910.93a pg 11320, Vol 37, #110)				-	

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H ₂ O=1)	
VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ %)	
SOLUBILITY IN WATER			
APPEARANCE AND ODOR	Gray powder - no odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used): Non-flammable	FLAMMABLE LIMITS	Let	Uet
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			