

EXHIBIT 21

Material Safety Data Sheet, Gelest, Inc., Morrisville, PA

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Substance
 Physical state : Solid
 Substance name : SODIUM MONTMORILLONITE CLAY
 Product code : SIS6985.0
 Formula : $(\text{Na}, 0,5\text{Ca})0,7(\text{Al}, \text{Mg}, \text{Fe})4(\text{Si}, \text{Al})8\text{O}_{20}(\text{OH})4 \cdot \text{XH}_2\text{O}$
 Synonyms : BENTONITE; MONTMORILLONITE; ALUMINIUM SILICATE
 Chemical family : INORGANIC SILICATE

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Chemical intermediate
 For research and industrial use only

1.3. Details of the supplier of the safety data sheet

GELEST, INC.
 11 East Steel Road
 Morrisville, PA 19067
 USA
 T 215-547-1015 - F 215-547-2484 - (M-F): 8:00 AM - 5:30 PM EST
info@gelest.com - www.gelest.com

1.4. Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300 (USA); +1 703-527-3887 (International)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (GHS-US)
 Not classified

2.2. Label elements

GHS-US labeling
 No labeling applicable

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS US)

No data available

SECTION 3: Composition/Information on ingredients

3.1. Substance

Substance type : Multi-constituent
 Name : SODIUM MONTMORILLONITE CLAY
 CAS No : 1318-93-0
 EC no : 215-288-5

Name	Product identifier	%	Classification (GHS-US)
Montmorillonite	(CAS No) 1318-93-0	97 - 100	Not classified
Silicon dioxide	(CAS No) 7631-86-9	< 3	Not classified

3.2. Mixture

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Remove contaminated clothing and shoes. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). If possible show this sheet; if not available show packaging or label. IF exposed or concerned: Get medical advice/attention.

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First-aid measures after inhalation	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If you feel unwell, seek medical advice.
First-aid measures after skin contact	: Wash with plenty of soap and water. Get medical advice/attention.
First-aid measures after eye contact	: Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.
First-aid measures after ingestion	: Never give anything by mouth to an unconscious person. Get medical advice/attention.
4.2. Most important symptoms and effects, both acute and delayed	
Symptoms/injuries after inhalation	: May cause irritation to the respiratory tract. Exposure to respirable silica can cause silicosis, a fibrosis (scarring) of the lungs.
Symptoms/injuries after skin contact	: May cause skin irritation. There is evidence that silica can exacerbate scleroderma, an immune disorder of the skin.
Symptoms/injuries after eye contact	: May cause eye irritation. May cause abrasion of cornea.
Symptoms/injuries after ingestion	: No information available.
Chronic symptoms	: There are small amounts of silica in this product. Silicosis can occur after many years of exposure to relatively low levels of airborne respirable silica. IARC has concluded that there was sufficient evidence of the carcinogenicity of crystalline silica to experimental animals, but that there was limited evidence of carcinogenicity of crystalline silica to humans.
4.3. Indication of any immediate medical attention and special treatment needed	
No additional information available	

SECTION 5: Firefighting measures

5.1. Extinguishing media	
Suitable extinguishing media	: Not combustible.
Unsuitable extinguishing media	: None known.
5.2. Special hazards arising from the substance or mixture	
Fire hazard	: None known.
5.3. Advice for firefighters	
Protection during firefighting	: Avoid contact with skin and eyes. Do not breathe dust.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures	
6.1.1. For non-emergency personnel	
Protective equipment	: Wear protective equipment as described in Section 8.
Emergency procedures	: Evacuate unnecessary personnel.
6.1.2. For emergency responders	
Protective equipment	: Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to section 8: "Exposure controls/personal protection".
6.2. Environmental precautions	
Prevent entry to sewers and public waters. Notify authorities if product enters sewers or public waters.	
6.3. Methods and material for containment and cleaning up	
For containment	: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.
Methods for cleaning up	: Sweep or shovel spills into appropriate container for disposal.
6.4. Reference to other sections	
See Heading 8. Exposure controls and personal protection.	

SECTION 7: Handling and storage

7.1. Precautions for safe handling	
Additional hazards when processed	: While not flammable, the ability of fumed silica to generate static charge may present a hazard when used in combination with flammable liquids.
Precautions for safe handling	: Avoid contact with skin and eyes. Do not breathe dust. Avoid dust formation. Provide local exhaust or general room ventilation to minimize exposure to dust.
Hygiene measures	: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Wash contaminated clothing before reuse.
7.2. Conditions for safe storage, including any incompatibilities	
Storage conditions	: Keep container tightly closed.
Incompatible materials	: None known.
Storage area	: Store in a well-ventilated place. Store away from heat.

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7.3. Specific end use(s)
No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Montmorillonite (1318-93-0)		
USA ACGIH	ACGIH TWA (mg/m ³)	10 mg/m ³
USA OSHA	OSHA PEL (TWA) (mg/m ³)	15 mg/m ³ nuisance dust
Silicon dioxide (7631-86-9)		
USA ACGIH	ACGIH TWA (mg/m ³)	0.1 mg/m ³
USA NIOSH	NIOSH REL (TWA) (mg/m ³)	6 mg/m ³
USA OSHA	OSHA PEL (TWA) (mg/m ³)	10 mg/m ³
USA IDLH	US IDLH (mg/m ³)	3000 mg/m ³

8.2. Exposure controls

- Appropriate engineering controls : Provide local exhaust or general room ventilation.
- Personal protective equipment : Avoid all unnecessary exposure. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

- Hand protection : Neoprene or nitrile rubber gloves.
- Eye protection : Safety glasses. Contact lenses should not be worn.
- Skin and body protection : Wear suitable protective clothing.
- Respiratory protection : Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. NIOSH-certified dust and mist (orange cartridge) respirator.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

- Physical state : Solid
- Appearance : Powder.
- Color : White.
- Odor : No data available
- Odor threshold : No data available
- Refractive index : 1.48
- pH : No data available
- Relative evaporation rate (butyl acetate=1) : No data available
- Melting point : No data available
- Freezing point : No data available
- Boiling point : No data available
- Flash point : No data available
- Auto-ignition temperature : No data available
- Decomposition temperature : No data available
- Flammability (solid, gas) : No data available
- Vapor pressure : < 0.01 mm Hg @ 20°C
- Relative vapor density at 20 °C : No data available
- Relative density : 2.3
- VOC content : 0 %
- Solubility : Insoluble in water.
- Log Pow : No data available
- Log Kow : No data available
- Viscosity, kinematic : No data available
- Viscosity, dynamic : No data available
- Explosive properties : No data available
- Oxidizing properties : No data available
- Explosion limits : No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Stable.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

None known.

10.5. Incompatible materials

None known.

10.6. Hazardous decomposition products

None known.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Silicon dioxide (7631-86-9)	
LD50 oral rat	> 5000 mg/kg
LD50 dermal rabbit	> 2000 mg/kg
LC50 inhalation rat (mg/l)	> 2.2 mg/l (Exposure time: 1 h)

Skin corrosion/irritation : Not classified

Serious eye damage/irritation : Not classified

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Silicon dioxide (7631-86-9)	
IARC group	3 - Not classifiable

Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure) : Not classified

Aspiration hazard : Not classified

Symptoms/injuries after inhalation : May cause irritation to the respiratory tract. Exposure to respirable silica can cause silicosis, a fibrosis (scarring) of the lungs.

Symptoms/injuries after skin contact : May cause skin irritation. There is evidence that silica can exacerbate scleroderma, an immune disorder of the skin.

Symptoms/injuries after eye contact : May cause eye irritation. May cause abrasion of cornea.

Symptoms/injuries after ingestion : No information available.

Chronic symptoms : There are small amounts of silica in this product. Silicosis can occur after many years of exposure to relatively low levels of airborne respirable silica. IARC has concluded that there was sufficient evidence of the carcinogenicity of crystalline silica to experimental animals, but that there was limited evidence of carcinogenicity of crystalline silica to humans.

SECTION 12: Ecological information

12.1. Toxicity

Silicon dioxide (7631-86-9)	
LC50 fish 1	5000 mg/l (Exposure time: 96 h - Species: Brachydanio rerio [static])
EC50 Daphnia 1	7600 mg/l (Exposure time: 48 h - Species: Ceriodaphnia dubia)

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

Silicon dioxide (7631-86-9)	
BCF fish 1	(no bioaccumulation expected)

12.4. Mobility in soil

No additional information available

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12.5. Other adverse effects

- Effect on ozone layer : No additional information available
 Effect on the global warming : No known ecological damage caused by this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

- Sewage disposal recommendations : Do not dispose of waste into sewer.
 Waste disposal recommendations : Landfill. Dispose in a safe manner in accordance with local/national regulations.
 Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport Information

14.1. UN number

Not regulated for transport.

14.2. UN proper shipping name

Not applicable

14.3. Additional information

Other information : No supplementary information available.

Transport by sea

No additional information available

Air transport

No additional information available

SECTION 15: Regulatory Information

15.1. US Federal regulations

SODIUM MONTMORILLONITE CLAY (1318-93-0)

TSCA Exemption/Exclusion : Exempt-Naturally Occurring Substances in accordance with 40 CFR 710.4(b).

Montmorillonite (1318-93-0)

Not listed on the United States TSCA (Toxic Substances Control Act) inventory

Silicon dioxide (7631-86-9)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

Montmorillonite (1318-93-0)

Listed on the AICS (Australian Inventory of Chemical Substances)
 Listed on the Canadian DSL (Domestic Substances List)
 Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
 Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
 Listed on the Korean ECL (Existing Chemicals List)
 Listed on NZIoC (New Zealand Inventory of Chemicals)
 Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

Silicon dioxide (7631-86-9)

Listed on the AICS (Australian Inventory of Chemical Substances)
 Listed on the Canadian DSL (Domestic Substances List)
 Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
 Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
 Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
 Listed on the Korean ECL (Existing Chemicals List)
 Listed on NZIoC (New Zealand Inventory of Chemicals)
 Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
 Listed on the Canadian IDL (Ingredient Disclosure List)
 Listed on INSQ (Mexican national Inventory of Chemical Substances)
 Listed on Turkish inventory of chemical

15.3. US State regulations

SODIUM MONTMORILLONITE CLAY(1318-93-0)

U.S. - California - Proposition 65 - Carcinogens List	No
U.S. - California - Proposition 65 - Developmental Toxicity	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Female	No
U.S. - California - Proposition 65 - Reproductive	No

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SODIUM MONTMORILLONITE CLAY(1318-93-0)				
Toxicity - Male				
Montmorillonite (1318-93-0)				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significance risk level (NSRL)
No	No	No	No	
Silicon dioxide (7631-86-9)				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significance risk level (NSRL)
No	No	No	No	

SECTION 16: Other information

Abbreviations and acronyms

: Abbreviations: ND: Not Determined, No Data; NA: Not Applicable; LD: Lethal Dose; LC: Lethal Concentration; ATE: Acute Toxicity Estimates; H: hour; °: °C unless otherwise stated; mm: millimeters Hg, torr; PEL: permissible exposure level; TWA: time weighted average; TLV: threshold limit value; TG: Test Guideline; NIOSH: National Institute for Occupational Safety and Health; IARC: International Agency for Research on Cancer; NTP: National Toxicology Program; HMIS: Hazardous Material Information System; CAS No.: Chemical Abstract Service Registration Number; EC No.: European Commission Registration Number; EC Index No.: European Commission Index Number; OECD: The Organisation for Economic Co-operation and Development.

HMIS III Rating

Health

: 1 Slight Hazard - Irritation or minor reversible injury possible

Flammability

: 0 Minimal Hazard

Physical

: 0 Minimal Hazard

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SDS US (GHS HazCom 2012) - Custom

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