

MATERIAL SAFETY DATA SHEET

BENTONITE / VOLCLAY, SOLID

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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PRODUCT IDENTIFICATION

Product Name: Bentonite / Volclay, Solid.
Chemical Name: Montmorillonite.
Synonyms: Activated Clay (ET-1) "B"; Activated Clay (ET-1) "C"; Bentonite Cleartreat 1000; Volclay 325 Mesh; Bentonite 325 Mesh; Volclay HPM-20; Volclay KWK Krystal Klear; Volclay SPV 200; Volclay NF-BC; Natural Gel; Hydrated Aluminium Silicate; Aluminium III Silicate; Cleartreat 1000; Bentonite ET1; Modified Bentonite Clay; Modified Natural Mineral; Wyoming Gel; Wyoming (Western) Bentonite.
Chemical Family: Naturally occurring mineral.
Molecular Formula: Not available.
Product Use: Waste water treatment. Adsorbent. Oil well treating compound. Oilfield chemical. Filtration media. Chemical intermediate.

WHMIS Classification / Symbol:

D-2A: Very Toxic (carcinogen, chronic effects)



READ THE ENTIRE MSDS FOR THE COMPLETE HAZARD EVALUATION OF THIS PRODUCT.

2. COMPOSITION, INFORMATION ON INGREDIENTS (Not Intended As Specifications)

<i>Ingredient</i>	<i>CAS#</i>	<i>ACGIH TLV</i>	<i>% Concentration</i>
Montmorillonite Clay / Bentonite	1302-78-9	---	90 - 100
Silica, Crystalline, Quartz	14808-60-7	0.05 mg/m ³ *A2	1 - 10

A2 = Suspected Human Carcinogen (ACGIH-A2).

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Harmful if inhaled. Dust may cause mechanical irritation to skin, eyes and respiratory tract. Severe exposure may cause lung damage. Cancer hazard. See "Other Health Effects" Section. Can decompose at high temperatures forming toxic gases.

POTENTIAL HEALTH EFFECTS

Inhalation:	Product is irritating to the nose, throat and respiratory tract. Excessive contact with powder may cause drying of mucous membranes of nose and throat due to absorption of moisture and oils. See "Other Health Effects" Section.
Skin Contact:	This product may cause irritation due to abrasive action. Excessive contact with powder may cause drying of the skin due to absorption of moisture and oils. May cause defatting, drying and cracking of the skin.
Skin Absorption:	Not applicable.
Eye Contact:	This product may cause irritation, redness and possible damage due to abrasiveness. Excessive contact with powder may cause drying of mucous membranes of the eyes due to absorption of moisture and oils. May cause lachrymation (excessive tears).
Ingestion:	This product may cause mild gastrointestinal discomfort. Ingestion of large amounts may cause intestinal obstruction.
Other Health Effects:	<p>Effects (irritancy) on the skin and eyes may be delayed. Strict adherence to first aid measures following any exposure is essential.</p> <p>In general, long-term exposure to high concentrations of dust may cause increased mucous flow in the nose and respiratory system airways. This condition usually disappears after exposure stops. Controversy exists as to the role exposure to dust has in the development of chronic bronchitis (inflammation of the air passages into the lungs). Other factors such as smoking and general air pollution are more important, but dust exposure may contribute. (4)</p> <p>May cause silicosis and pneumoconiosis. Silicosis develops gradually over a period of 20 years or more. Silicosis is characterized by cough, production of sputum, dyspnea, wheeze, silicotic nodules on lungs, and impaired pulmonary function. In advanced stages: fever, weight loss, cyanosis, clubbing of fingers, bacterial infections and death due to complications involving tuberculosis may occur. Early symptoms of silicosis are non-specific, so the development of silicosis may not be detected in its early stages. Silicosis can continue to develop even after exposure has stopped. Evidence of silicosis can be seen on X-rays. (4)</p> <p>Silicosis can vary in severity from minimal to severe. Mild silicosis typically has no impairment of respiratory function, however there is X-ray evidence of lung injury. Severe cases have significant and increasingly severe respiratory impairment. There is no proven treatment for the disease. Life expectancy is reduced, depending on the severity. Death is not due to a direct result of silicosis, but cor pulmonale (cardiac failure) may occur as it becomes increasingly difficult for the heart to pump blood through the lungs. Silicosis may be complicated by the development of bacterial infections, including tuberculosis. (4)</p> <p>"Accelerated" silicosis results from exposure to high concentrations of crystalline silica over 5 to 10 years. The disease continues to develop after exposure has stopped and is associated with autoimmune diseases such as scleroderma. (4)</p> <p>"Acute" silicosis (also known as "silicotic alveolar proteinosis") is rare in humans, but can develop if very high concentrations of crystalline silica dusts are inhaled over 1 - 2 years. Acute silicosis may result in death within a few years, often with tuberculosis as a complication. (4)</p> <p>Inhalation of quartz has been associated with a number of other harmful effects. These effects include: kidney damage (glomerulonephritis), changes to the liver, effects on the spleen and immune system disorders. (4)</p> <p>Pneumoconiosis is the deposition of dust in the lungs and the tissue's reaction to its presence. When exposure to the dust is severe or prolonged, the lungs' defenses are overwhelmed.</p>

4. FIRST AID MEASURES

FIRST AID PROCEDURES

Inhalation:	If respiratory problems arise, move the victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Give cardiopulmonary resuscitation (CPR) if there is no breathing AND no pulse. Obtain medical advice IMMEDIATELY.
Skin Contact:	Start flushing while removing contaminated clothing. Wash affected areas thoroughly with soap and water. If irritation, redness, or a burning sensation develops and persists, obtain medical advice.
Eye Contact:	Immediately flush eyes thoroughly for 5 minutes with running water. Hold eyelids open during flushing. If irritation persists, repeat flushing. Obtain medical attention.
Ingestion:	Do not attempt to give anything by mouth to an unconscious person. If victim is alert and not convulsing, rinse mouth out and give 1/2 to 1 glass of water to dilute material. DO NOT induce vomiting. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. Obtain medical attention IMMEDIATELY.

Note to Physicians: Treat symptomatically. Medical conditions that may be aggravated by exposure to this product include neurological and cardiovascular disorders, diseases of the skin, eyes or respiratory tract, preexisting liver and kidney disorders.

5. FIRE-FIGHTING MEASURES

<i>Flashpoint</i> (°C)	<i>Autolgnition Temperature</i> (°C)	<i>Flammability Limits in Air (%)</i>	
		<i>LEL</i>	<i>UEL</i>
Non-combustible (does not burn).	204 (3)	Not applicable.	Not applicable.
Flammability Class (WHMIS):	Not regulated.		
Hazardous Combustion Products:	Thermal decomposition products are toxic and may include silicon, oxides of carbon and irritating gases.		
Unusual Fire or Explosion Hazards:	Minimize air borne spreading of dust. Spilled material may cause floors and contact surfaces to become slippery. Ignites on contact with fluorine. Do not flush with water as aqueous solutions or powders that become wet render surfaces extremely slippery.		
Sensitivity to Mechanical Impact:	Not expected to be sensitive to mechanical impact.		
Rate of Burning:	Not available.		
Explosive Power:	Not available.		
Sensitivity to Static Discharge:	Not expected to be sensitive to static discharge.		
EXTINGUISHING MEDIA			
Fire Extinguishing Media:	Use media appropriate for surrounding fire and/or materials: Foam. Dry chemical, carbon dioxide or water spray.		
FIRE FIGHTING INSTRUCTIONS			
Instructions to the Fire Fighters:	Fire-exposed containers should be kept cool by spraying with water to reduce pressure. Spilled material may cause floors and contact surfaces to become slippery. Do not flush with water as aqueous solutions or powders that become wet render surfaces extremely slippery.		
Fire Fighting Protective Equipment:	Use self-contained breathing apparatus and protective clothing.		

6. ACCIDENTAL RELEASE MEASURES

Information in this section is for responding to spills, leaks or releases in order to prevent or minimize the adverse effects on persons, property and the environment. There may be specific reporting requirements associated with spills, leaks or releases, which change from region to region.

Containment and Clean-Up Procedures: In all cases of leak or spill contact vendor at Emergency Number shown on the front page of this MSDS. Minimize air borne spreading of dust. Wear respirator, protective clothing and gloves. Avoid dry sweeping. Do not use compressed air to clean surfaces. Vacuuming or wet sweeping is preferred. Return all material possible to container for proper disposal. Do not allow to enter sewers or watercourses. Collect product for recovery or disposal. Ventilate enclosed spaces. Notify applicable government authority if release is reportable or could adversely affect the environment.

Where a package (drum or bag) is damaged and / or leaking, repair it, or place it into an over-pack drum immediately so as to avoid or minimize material loss and contamination of surrounding environment. Any recovered product can be used for the usual purpose, depending on the extent and kind of contamination.

7. HANDLING AND STORAGE

HANDLING

Handling Practices: Use normal "good" industrial hygiene and housekeeping practices. Minimize air borne spreading of dust. Clean up immediately to eliminate slipping hazard.

Ventilation Requirements: See Section 8, "Engineering Controls".

Other Precautions: Use only with adequate ventilation and avoid breathing dusts. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Wash contaminated clothing thoroughly before re-use.

STORAGE

Storage Temperature (°C): See below.

Ventilation Requirements: General exhaust is acceptable.

Storage Requirements: Store in a cool, dry and well-ventilated area. Keep away from heat, sparks and flames. Keep containers closed. Avoid moisture contamination. Prolonged storage may result in lumping or caking. Protect from direct sunlight. Protect against physical damage.

Special Materials to be Used for Packaging or Containers: Materials of construction for storing the product include: polyethylene, paper bags or sacks. Confirm suitability of any material before using.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Recommendations listed in this section indicate the type of equipment, which will provide protection against overexposure to this product. Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

ENGINEERING CONTROLS

Engineering Controls: Local exhaust ventilation required. Make up air should be supplied to balance air that is removed by local or general exhaust ventilation. Ventilate low lying areas such as sumps or pits where dense dust may collect.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Eye Protection: Safety glasses with side shields are recommended to prevent eye contact. Use chemical safety goggles when there is potential for eye contact. Contact lenses should not be worn when working with this material.

Skin Protection: Gloves and protective clothing made from neoprene, PVC or rubber should be impervious under conditions of use. Prior to use, user should confirm impermeability. Discard contaminated gloves.

Respiratory Protection: No specific guidelines available. A NIOSH/MSHA-approved air-purifying respirator equipped with dust, mist, fume cartridges for concentrations up to 0.5 mg/m³ Silica, Crystalline Quartz. An air-supplied respirator if concentrations are higher or unknown.

Other Personal Protective Equipment: Wear regular work clothing. The use of coveralls is recommended. Locate safety shower and eyewash station close to chemical handling area. Take all precautions to avoid personal contact.

EXPOSURE GUIDELINES

SUBSTANCE	ACGIH TLV (STEL)	OSHA PEL		NIOSH REL	
		(TWA)	(STEL)	(TWA)	(STEL)
Silica, Crystalline, Quartz	—	250 mppcf / (% SiO ₂ + 5) (Respirable dust)	10 mg/m ³ / (% SiO ₂ + 2) (Respirable dust)	0.05 mg/m ³	---

9. PHYSICAL AND CHEMICAL PROPERTIES (Not intended as Specifications)

Physical State:	Solid.
Appearance:	Pale grey to buff powder or granules.
Odour:	Odourless.
Odour Threshold (ppm):	Not available.
Boiling Range (°C):	Not applicable.
Melting/Freezing Point (°C):	1 450 - 1 580. (3)
Vapour Pressure (mm Hg at 20° C):	0.
Vapour Density (Air = 1.0):	Not applicable.
Relative Density (g/cc):	2.4 - 2.6. (3)
Bulk Density:	55 - 58 lbs / cu.ft.; 883 kg/m ³ . (3)
Viscosity:	Not applicable.
Evaporation Rate (Butyl Acetate = 1.0):	Not applicable.
Solubility:	Practically insoluble in water.
% Volatile by Volume:	0 %.

pH:	8.0 - 10.0 (5 % suspension).
Coefficient of Water/Oil Distribution:	Not applicable.
Volatile Organic Compounds (VOC):	Not applicable.
Flashpoint (°C):	Non-combustible (does not burn).

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY

Under Normal Conditions:	Stable.
Under Fire Conditions:	Not flammable.
Hazardous Polymerization:	Will not occur.
Conditions to Avoid:	High temperatures, sparks, open flames and all other sources of ignition. Minimize air borne spreading of dust. Moisture. Keep tightly closed to protect quality.
Materials to Avoid:	None known. (3)
Decomposition or Combustion Products:	Thermal decomposition products are toxic and may include silicon, oxides of carbon and irritating gases.

11. TOXICOLOGICAL INFORMATION

TOXICOLOGICAL DATA:

Meaningful toxicological test data could not be found for this product.

Carcinogenicity Data:	Silica, Crystalline Quartz is classified as carcinogenic by IARC (International Agency for Research on Cancer) (IARC-1), NTP (National Toxicology Program) (NTP-K), ACGIH (American Conference of Governmental Industrial Hygienists) (ACGIH-A2) and NIOSH (National Institute for Occupational Safety and Health) (NIOSH-Ca).
Reproductive Data:	No adverse reproductive effects are anticipated.
Mutagenicity Data:	No adverse mutagenic effects are anticipated.
Teratogenicity Data:	No adverse teratogenic effects are anticipated.
Respiratory / Skin Sensitization Data:	None known.
Synergistic Materials:	Silica, Crystalline Quartz: Although there is a disagreement about whether tobacco smoke increases the severity of silica dust on respiratory impairment, it is known that carcinogens such as benzo(a)pyrene can increase the carcinogenicity of silica dust. A synergistic effect between smoking and crystalline silica and/or silicosis on risk of lung cancer is likely. (4)
Other Studies Relevant to Material:	<p>Silica, Crystalline Quartz: Foreign body reactions (granulomas) have been observed after crystalline silica was accidentally introduced under the skin as a result of injury. The effects were often delayed for periods ranging from weeks to more than 50 years. (4)</p> <p>Silicosis and alveolar proteinosis have been observed in several different species following exposures from one week to 27 months. (4)</p> <p>Rats exposed for 28 days to 38 and 50 mg/Kg of pure alpha-quartz developed silicosis and alveolar proteinosis after 34 weeks. Silicosis similar to that seen in humans was observed in rats exposed to 30,000 particles/mL quartz dust for up to 420 days. Alveolar proteinosis was observed following exposure of rats to 40 mg/M3 pure quartz for 12 weeks. (4)</p> <p>Studies have shown an increased incidence of lung tumours in rats following exposure to quartz by inhalation for up to 2 years. Female mice exposed to quartz for up to 570 days had no increased incidence in lung tumors. The International Agency for Research on Cancer has determined that there is sufficient evidence that crystalline silica is carcinogenic to experimental animals. (4)</p> <p>The frequency of chromosomal aberrations and sister chromatid exchange was elevated in a group of 50 employees exposed to stone dust. The stone dust was mainly composed of silica (50 - 60 %) and other metal oxides. These observations could not be explained by the consumption of alcohol and/or smoking, and other confounding factors were not studied. (4)</p>

12. ECOLOGICAL INFORMATION

Ecotoxicity:	Not available. May be harmful to aquatic life.
Environmental Fate:	Not available. Product has an unaesthetic appearance and can be a nuisance. May be hazardous if allowed to enter drinking water intakes. Do not contaminate domestic or irrigation water supplies, lakes, streams, ponds, or rivers.

13. DISPOSAL CONSIDERATIONS

Deactivating Chemicals:	None required.
Waste Disposal Methods:	This information applies to the material as manufactured. Reevaluation of the product may be required by the user at the time of disposal since the product uses, transformations, mixtures and processes may influence waste classification. Dispose of waste material at an approved (hazardous) waste treatment/disposal facility in accordance with applicable local, provincial and federal regulations. Do not dispose of waste with normal garbage, or to sewer systems.
Safe Handling of Residues:	See "Waste Disposal Methods".
Disposal of Packaging:	Empty containers retain product residue and can be hazardous. Dispose of waste material at an approved (hazardous) waste treatment/disposal facility in accordance with applicable local, provincial and federal regulations.

14. TRANSPORTATION INFORMATION

CANADIAN TDG ACT SHIPPING DESCRIPTION:

This product is not regulated by TDG.

Label(s): Not applicable. Placard: Not applicable.

ERAP Index: ----. Exemptions: None known.

US DOT CLASSIFICATION (49CFR 172.101, 172.102):

This product is not regulated by DOT.

Label(s): Not applicable. Placard: Not applicable.

CERCLA-RQ: Not available. Exemptions: None known.

15. REGULATORY INFORMATION

CANADA

CEPA - NSNR: All constituents of this product are included on the DSL.

CEPA - NPRI: Not included.

Controlled Products Regulations Classification (WHMIS):

D-2A: Very Toxic (carcinogen, chronic effects)

USA

Environmental Protection Act: All constituents of this product are included on the TSCA inventory.

OSHA HCS (29CFR 1910.1200): Chronic Effects, Carcinogenic.

NFPA: 1 Health, 0 Fire, 0 Reactivity (3)

HMIS: 1 Health, 0 Fire, 0 Reactivity (3)

INTERNATIONAL

Not available.

16. OTHER INFORMATION

REFERENCES

1. RTECS-Registry of Toxic Effects of Chemical Substances, Canadian Centre for Occupational Health and Safety RTECS database.
2. Clayton, G.D. and Clayton, F.E., Eds., Patty's Industrial Hygiene and Toxicology, 3rd ed., Vol. IIA,B,C, John Wiley and Sons, New York, 1981.

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3. Supplier's Material Safety Data Sheet(s).
 4. CHEMINFO, through "CCINFOdisc", Canadian Centre for Occupational Health and Safety, Hamilton, Ontario, Canada.
 5. Guide to Occupational Exposure Values, 2007, American Conference of Governmental Industrial Hygienists, Cincinnati, 2007.
 6. Regulatory Affairs Group, Brenntag Canada Inc.
 7. The British Columbia Drug and Poison Information Centre, Poison Managements Manual, Canadian Pharmaceutical Association, Ottawa, 1981.
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