



MATERIAL SAFETY DATA SHEET

PRODUCT NAME: VOLCLAY POWDER

Prepared to European Community, U.S., O.S.H.A, CMA, ANSI,
Canadian WHMIS, and Australian WorkSafe Standards

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SECTION 1 IDENTIFICATION OF THE SUBSTANCE AND DETAILS OF THE COMPANY

Product Name: Volclay Powder

Date Prepared: June 15, 2005

Product Description: Bentonite

Manufacturer's Name and Address:

EMERGENCY CONTACT: CHEMTREC 800-424-9300

American Colloid Company
One North Arlington
1500 West Shure Drive
Arlington Heights, Illinois 60004

Telephone: 847-392-4600
Facsimile: 847-577-5560

Website: <http://www.colloid.com>

SECTION 2 COMPOSITION/ INFORMATION ON INGREDIENTS

Chemical Name: Bentonite

Chemical Family: Smectites

CAS No: 1302-78-9 (Bentonite is on the TSCA inventory)

Formula: Hydrated Sodium Calcium Aluminium Magnesium Silicate Hydroxide
 $C_x^+ [Si_{n1}Al_{8-n1}] (Al_{n1 + (n2-8)}) Fe(III)_{n3} Fe(II)_{n4} Mg_{n5} M_{n6} O_{20} (OH)_4 \cdot nH_2O$
C = cations that compensate the negative structural charge and are usually Ca^{2+} , Mg^{2+} , Na^+ , with charge x^+ lying between 0.5-1.2
M = unspecified structural cation e.g. lithium in the trioctahedral clay hectorite
 $n_i, i=1,2,3,4,5,6$ are stoichiometric coefficients associated with structural cations
for dioctahedral clays with divalent M the sum of n's =12
for trioctahedral clays with monovalent M the sum of n's =14

Name	Amount	CAS-No	EINECS No	EU Classification
Bentonite	100%	1302-78-9	215-108-5	No classification

Bentonite may contain crystalline silica (not classified as dangerous according to Directive 67/548/EEC) in quantities up to 6%.

SECTION 3 HAZARDS IDENTIFICATION

Bentonite is not classified as dangerous substance according to Directive 67/548 EEC as amended.

Route(s) of Entry: Skin? No Eye? Yes Ingestion? Yes Inhalation? Yes

Skin Contact: No adverse effects expected

Eye Contact: Contact may cause mechanical irritation and possible injury

Ingestion: No adverse effects expected for normal, incidental ingestion



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SECTION 3 HAZARDS IDENTIFICATION (continued)

Inhalation:

The grain size distribution of this product gives potential for generation of respirable dust during handling and use. Dust may contain respirable crystalline silica. Prolonged inhalation of respirable dust may cause lung fibrosis. Principal symptoms of lung fibrosis are cough and breathlessness. Occupational exposure to respirable dust and respirable crystalline silica should be monitored and controlled.

Avoid breathing dust. Use NIOSH/MSHA approved respirator where TLV for quartz may be exceeded. IARC Monographs on the evaluation of the Carcinogenic Risk of Chemicals to Humans (volume 68, 1997) concludes that quartz is carcinogenic to humans (IARC classification 1).

National Institute for Occupational Safety and Health (NIOSH) has recommended that the permissible exposure limit be changed to 50 micrograms respirable free silica per cubic meter of air (0.05 mg/ m³) as determined by a full shift sample up to a 10-hour working day, 40 hours per week. See: NIOSH criteria for a recommended Standard for Occupational Exposure to Crystalline Silica for more detailed information.

Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Principal symptoms of lung fibrosis are cough and breathlessness. Inhalation of dust may also cause irritation of the nose, throat and respiratory passages. Excessive inhalation of respirable crystalline silica dust may cause a progressive, disabling and sometimes-fatal lung disease called silicosis. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness and reduced pulmonary function. This disease is exacerbated by smoking. Individuals with silicosis are predisposed to develop tuberculosis.

SECTION 4 FIRST AID MEASURES

Eye Contact:	Flush the eyes immediately with large amounts of water, lifting the upper and lower lids occasionally. If irritation persists or for imbedded foreign body, get immediate medical attention.
Gross Inhalation:	Remove to fresh air. If breathing has stopped, perform artificial respiration. If breathing is difficult have qualified personnel administer oxygen. Get prompt medical attention.
Skin Contact:	No first aid should be needed since this product does not affect the skin. Wash exposed skin with soap and water before breaks and at the end of the shift.
Ingestion:	If large amounts are swallowed, get immediate medical attention.

SECTION 5 FIRE FIGHTING MEASURES

Non flammable, non explosive. No hazardous releases in case of fire.

Extinguishing Media: Use extinguishing media appropriate to the surrounding fire

Special Protective Equipment: None other than those suitable for the surrounding fire conditions.

Unusual Fire/Explosion Hazards: None known



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SECTION 6 ACCIDENTAL RELEASE MEASURES

- Personal Precautions:** In case of exposure to high level of airborne dust, wear a personal respirator in compliance with national legislation.
- Environmental Precautions:** No special requirement.
- Methods for Cleaning up:** Avoid dry sweeping and use water spraying or ventilated vacuum system to prevent dust formation.

SECTION 7 HANDLING AND STORAGE

- Safe Handling Advice:** Avoid dust formation. Provide appropriate exhaust ventilation at places where dust is formed. In case of insufficient ventilation, wear suitable respiratory equipment.
- Storage:** No specific requirements. Provide appropriate ventilation and store bags such as to prevent any accidental damage. Prevent clay becoming wet.

SECTION 8 EXPOSURE CONTROL/PERSONAL PROTECTIVE EQUIPMENT

Components with Workplace Control Parameters

(Specific Chemical Identity - Common Name(s))	OSHA PEL (TWA)	ACGIH TLV (TWA)	EH40/2002 (TWA)
Respirable Quartz:	0.1 mg/m ³	50 µg/m ³	0.3 mg/m ³
Nuisance Dust			
Respirable:	5 mg/m ³	3 mg/m ³	
Total Dust:	15 mg/m ³	10 mg/m ³	

OSHA PEL: OSHA Permissible Exposure Limit, 8 hour Time-Weighted Average

ACGIH TLV: American Conference of Governmental Industrial Hygienists Threshold Limit Value, 8 hr. TWA

UK EH40/2002: United Kingdom EH40/2002 Occupational Exposure Limits, 8 hr. TWA

- Engineering Controls:** Use local exhaust as required to maintain exposures below applicable occupational exposure limits
- Personal Protective Equipment:** Use appropriate respiratory protection for respirable particulate based on consideration of airborne workplace concentration and duration of exposure arising from intended end use.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Light gray or beige colored powder, odorless

Specific Gravity (Water = 1.0): 2.4

Vapor Pressure (mm Hg): Not Applicable

Evaporation Rate (Butyl Acetate = 1.0): Not Applicable

Flash Point (°C): Not Applicable

Explosive Properties: Not Applicable

Solubility in Water: Negligible

Melting Point: Not Applicable

Boiling Point: Not Applicable

Flammability: Not Applicable

pH Value (6 g/100 ml H₂O): 3.0 – 5.0



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SECTION 10 STABILITY AND REACTIVITY

Stability: Stable

Incompatibility (Materials to Avoid): Hydrofluoric acid, Strong Alkali

Hazardous Decomposition or By-products: None Known

Hazardous Polymerization: Will Not Occur

SECTION 11 TOXICOLOGICAL INFORMATION

Skin irritation: Not irritant to skin

Eyes irritation: Mild irritant to eyes (according to the modified Kay & Calandra criteria)

Acute Oral Toxicity: By analogy to similar materials, the acute LD50 (rat) is expected to be > 5000 mg/kg.

Carcinogenicity: Bentonite is not listed as a carcinogen by IARC, NTP, OSHA, or ACGIH.

Reproductive Toxicity: No data for product. No effects anticipated.

Teratogenicity: No data for product. No effects anticipated.

Prolonged inhalation of respirable crystalline silica

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 it pointed out that not all industrial circumstances, nor all crystalline silica types, were to be incriminated. (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)

There is a body of evidence supporting the fact that increased cancer risk would be limited to people already suffering from silicosis. According to the current state of the art, worker protection against silicosis can be consistently assured by respecting the existing regulatory occupational exposure limits

SECTION 12 ECOLOGICAL INFORMATION

No specific adverse effect known.

SECTION 13 DISPOSAL INFORMATION

Waste from residues / unused products: Follow local and national regulations for solid waste. The material should be buried to prevent airborne respirable dust being emitted. Where possible, recycling should be preferred to disposal.

Packaging: No specific requirements. In all cases dust formation from residues in the packaging should be avoided and suitable worker protection be assured.



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SECTION 14 TRANSPORT INFORMATION

DOT – Proper Shipping Name: Not a DOT/IMO Hazardous Material.

Road Transport ADR/RID: Not a dangerous substance as defined in the above regulations.

Inland Navigation AND/ADNR: Not a dangerous substance as defined in the above regulations.

Maritime Transport IMDG: Not a dangerous substance as defined in the above regulations.

Air Transport ICAO/IATA: Not a dangerous substance as defined in the above regulations.

SECTION 15 REGULATORY INFORMATION

SARA 311/312: Hazard Categories for SARA Section 311/312 Reporting: Chronic Health

SARA 313: This product contains the following chemicals subject to annual release reporting requirements under the SARA section 313 (40 CFR 372): None

CERCLA Section 103 Reportable Quantity: None

Toxic Substances Control Act: All of the components of this product are listed on the EPA TSCA Inventory or are exempt from notification requirements.

European Inventory of Commercial Chemical Substances: All the components of this product are listed on the EINECS Inventory or exempt from notification requirements. (The EINECS number for Quartz: 231-545-5.)

Canadian Environmental Protection Act: All the components of this product are listed on the Canadian Domestic Substances List or exempt from notification requirements.

Japan MITI: All the components of this product are existing chemical substances as defined in the Chemical Substance Control Law

Australian Inventory of Chemical Substances: All the components of this product are listed on the AICS Inventory or exempt from notification requirements.

Canadian WHMIS Classification: This product contains crystalline silica (respirable), classified as a Class D, Division 2, Subdivision A substance.

SECTION 16 OTHER INFORMATION

Training Workers (and your customers or users in case of resale) must be informed of the presence of crystalline silica and potential hazards. Provide appropriate training in the proper use and handling of this product as required under applicable regulations.

Liability Such information is the best of American Colloid's knowledge and belief accurate and reliable as of the date indicated. However, no representation, warranty or guarantee is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy itself as to the suitability and completeness of such information for their particular use.