

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations Revision Date: 06/06/2013

Version: 1.0

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY

Product Identifier

Product Form: Mixture

Product Name: Missouri Fireclay, Flint Clay, Plastic Fireclay, Hawthorn Bond®, Hwthorn Red, Cement Clay, #2 Clay, #1 Clay, JSM

Clay, Christy Gold, Raw Flint Clay, Raw Plastic Clay

Intended Use of the Product

Use of the Substance/Mixture: High temperature bonding agent, raw feed stock in refractories

Name, Address, and Telephone of the Responsible Party

Christy Minerals LLC

833 Booneslick Rd.

High Hill, MO 63350

T (636)585-2214 christyco.com

Emergency Telephone Number

Emergency Number

: 1-800-535-5053 Domestic, 1-352-323-3500 International

HEALTH HAZARD FLAMMABILITY HAZARD INSTABILITY HAZARD PERSONAL PROTECTION

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture

GHS-US Classification

Carc. 1A H350

STOT RE 1 H372

Label Elements

GHS-US Labeling

Hazard Pictograms (GHS-US)



Signal Word (GHS-US)

Hazard Statements (GHS-US)

: Danger

: H350 - May cause cancer (inhalation)

H372 - Causes damage to organs through prolonged or repeated exposure (inhalation)

Precautionary Statements (GHS-

: P201 - Obtain special instructions before use.

P202 - Do not handle until all safety precautions have been read and understood.

P260 - Do not breathe dust.

P264 - Wash hands, forearms, and other exposed areas thoroughly after handling.

P270 - Do not eat, drink or smoke when using this product.

P271 - Use only outdoors or in a well-ventilated area.

P280 - Wear protective gloves, protective clothing, eye protection, respiratory protection. P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P308+P313 - If exposed or concerned: Get medical advice/attention.

P312 - Call a POISON CENTER or doctor if you feel unwell. P314 - Get medical advice and attention if you feel unwell.

P403+P233 - Store in a well-ventilated place. Keep container tightly closed.

P501 - Dispose of contents/container according to local, regional, national, territorial, provincial, and international regulations.

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Other Hazards Not available

Unknown Acute Toxicity (GHS-US): Not available

SECTION SECONDOSITION/INFORMATION ON INGREDIENTS

Substances

Wixture

Name	Product Identifier	% (w/w)	GHS-US Classification	
Kaolin	(CAS No) 1332-58-7	60 - 100	Not classified	
Quartz	(CAS No) 14808-60-7	20 - 30	Carc. 1A, H350 STOT RE 1, H372	
Titanium dioxide	(CAS No) 13463-67-7	0 - 2.75	Not classified	

Full text of H-phrases: see section 16

SECTION 4: FIRST AID MEASURES

Description of First Aid Measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

Inhalation: When symptoms occur: go into open air and ventilate suspected area. If exposed or concerned: Get medical advice/attention

Skin Contact: Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Obtain medical attention if irritation persists.

Eye Contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if pain, blinking or redness persist.

Ingestion: Rinse mouth.Do NOT induce vomiting.Seek medical attention.

Most Important Symptoms and Effects Both Acute and Delayed

General: Causes damage to organs through prolonged or repeated exposure (inhalation)

Inhalation: May cause cancer by inhalation. Dust from this product may cause irritation to the respiratory tract

Skin Contact: Prolonged contact with large amounts of dust may cause mechanical irritation.

Eye Contact: Prolonged contact with large amounts of dust may cause mechanical irritation.

Ingestion: If a large quantity has been ingested :intestinal blockage. Gastrointestinal irritation

Chronic Symptoms: Repeated or prolonged exposure to respirable crystalline silica dust will cause lung damage in the form of silicosis. Symptoms will include progressively more difficult breathing, cough, fever, and weight loss. Acute silicosis can be fatal.

Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention.

SECTION 5: FIREFIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Unsuitable Extinguishing Media: Do not use a heavy water stream. Use of heavy stream of water may spread fire.

Special Hazards Arising From the Substance or Mixture

Fire Hazard: Not flammable

Explosion Hazard: Product is not explosive

Reactivity: Hazardous reactions will not occur under normal conditions.

Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any chemical fire.

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Firefighting Instructions: Use water spray or fog for cooling exposed containers.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

Hazardous Combustion Products: Not available

Other information: Do not allow run-off from fire fighting to enter drains or water courses.

Reference to Other Sections

Refer to section 9 for flammability properties.

SECTION 6: ACCIDENTIAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Do not breathe dust. Avoid generating dust.

For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Ventilate area.

Environmental Precautions

Prevent entry to sewers and public waters.

Methods and Material for Containment and Cleaning Up

For Containment: Avoid generation of dust during clean-up of spills.

Methods for Cleaning Up: Clear up spills immediately and dispose of waste safely. Vacuum must be fitted with HEPA filter to prevent release of particulates during clean-up. Avoid generation of dust during clean-up of spills.

Reference to Other Sections

See heading 8, Exposure Controls and Personal Protection.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Additional Hazards When Processed: Do not breathe dust. Avoid dust production. Repeated or prolonged exposure to respirable crystalline silica dust will cause lung damage in the form of silicosis. Symptoms will include progressively more difficult breathing, cough, fever, and weight loss. Acute silicosis can be fatal.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work. Do not eat, drink or smoke when using this product. Wash hands, forearms, and other exposed areas thoroughly after handling.

Conditions for Safe Storage, Including Any Incompatibilities

Storage Conditions: Keep container closed when not in use.

Incompatible Materials: Strong acids, strong bases, strong oxidizers.

Specific End Use(s)

High temperature bonding agent, raw feed stock in refractories

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Mexico	OEL TWA (mg/m³)	0.1 mg/m³	
USA ACGIH	ACGIH TWA (mg/m³)	0.025 mg/m ³	
USA NIOSH	NIOSH REL (TWA) (mg/m3)	0.05 mg/m ³	
USA IDLH	US IDLH (mg/m3)	50 mg/m ³	

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Alberta	OEL TWA (mg/m³)	0.025 mg/m ³
British Columbia	OEL TWA (mg/m³)	0.025 mg/m³
Manitoba	OEL TWA (mg/m³)	0.025 mg/m³
New Brunswick	OEL TWA (mg/m³)	0.1 mg/m³
Newfoundland & Labrador	OEL TWA (mg/m³)	0.025 mg/m ³
Nova Scotia	OEL TWA (mg/m³)	0.025 mg/m ³
Nunavut	OEL TWA (mg/m³)	0.3 mg/m³ (total mass)
Northwest Territories	OEL TWA (mg/m³)	0.3 mg/m³ (total mass)
Ontario	OEL TWA (mg/m³)	0.10 mg/m³ (designated substance regulation)
Prince Edward Island	OEL TWA (mg/m³)	0.025 mg/m ³
Québec	VEMP (mg/m³)	0.1 mg/m ³
Saskatchewan	OEL TWA (mg/m³)	0.05 mg/m ³
Yukon	OEL TWA (mg/m³)	300 particle/mL
Titanium dioxide	(13463-67-7)	
Mexico	OEL TWA (mg/m³)	10 mg/m³
Mexico	OEL STEL (mg/m³)	20 mg/m ³
USA ACGIH	ACGIH TWA (mg/m³)	10 mg/m³
USA OSHA	OSHA PEL (TWA) (mg/m3)	15 mg/m ³
USA IDLH	US IDLH (mg/m3)	5000 mg/m³
Alberta	OEL TWA (mg/m³)	10 mg/m ³
British Columbia	OEL TWA (mg/m³)	3 mg/m³
Manitoba	OEL TWA (mg/m³)	10 mg/m ³

Mexico	OEL TWA (mg/m³)	10 mg/m³
Mexico	OEL STEL (mg/m³)	20 mg/m ³
USA ACGIH	ACGIH TWA (mg/m³)	10 mg/m³
USA OSHA	OSHA PEL (TWA) (mg/m3)	15 mg/m ³
USA IDLH	US IDLH (mg/m3)	5000 mg/m ³
Alberta	OEL TWA (mg/m³)	10 mg/m³
British Columbia	OEL TWA (mg/m³)	3 mg/m³
Manitoba	OEL TWA (mg/m³)	10 mg/m³
New Brunswick	OEL TWA (mg/m³)	10 mg/m³
Newfoundland & Labrador	OEL TWA (mg/m³)	10 mg/m ³
Nova Scotia	OEL TWA (mg/m³)	10 mg/m³
Nunavut	OEL TWA (mg/m³)	10 mg/m³ (total mass)
Northwest Territories	OEL TWA (mg/m³)	10 mg/m³ (total mass)
Ontario	OEL TWA (mg/m³)	10 mg/m ³
Prince Edward Island	OEL TWA (mg/m³)	10 mg/m ³
Québec	VEMP (mg/m³)	10 mg/m³ (containing no Asbestos and <1% Crystalline silica)
Saskatchewan	OEL STEL (mg/m³)	20 mg/m³
Saskatchewan	OEL TWA (mg/m³)	10 mg/m³
Yukon	OEL STEL (mg/m³)	20 mg/m³
Yukon	OEL TWA (mg/m³)	10 mg/m ³

Kaolin (1332-	58-7)		
Mexico	OEL TWA (mg/m³)	10 mg/m³	
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Mexico	OEL STEL (mg/m³)	20 mg/m ³
USA ACGIH	ACGIH TWA (mg/m³)	2 mg/m³
USA OSHA	OSHA PEL (TWA) (mg/m3)	5 mg/m³
USA NIOSH	NIOSH REL (TWA) (mg/m3)	5 mg/m³
Alberta	OEL TWA (mg/m³)	2 mg/m³
British Columbia	OEL TWA (mg/m³)	2 mg/m³ (particulate matter containing no Asbestos and <1% Crystalline silica)
Manitoba	OEL TWA (mg/m³)	2 mg/m³
New Brunswick	OEL TWA (mg/m³)	2 mg/m³
Newfoundland & Labrador	OEL TWA (mg/m³)	2 mg/m³
Nova Scotia	OEL TWA (mg/m³)	2 mg/m³
Nunavut	OEL TWA (mg/m³)	10 mg/m³ (total mass)
Northwest Territories	OEL TWA (mg/m³)	10 mg/m³ (total mass)
Ontario	OEL TWA (mg/m³)	2 mg/m³ (containing no Asbestos and <1% Crystalline silica)
Prince Edward Island	OEL TWA (mg/m³)	2 mg/m³
Québec	VEMP (mg/m³)	5 mg/m³ (containing no Asbestos and <1% Crystalline silica)
Saskatchewan	OEL STEL (mg/m³)	4 mg/m³
Saskatchewan	OEL TWA (mg/m³)	2 mg/m³
Yukon	OEL STEL (mg/m³)	20 mg/m ³
Yukon	OEL TWA (mg/m³)	10 mg/m³

Exposure Controls

Appropriate Engineering Controls: Provide adequate ventilation to minimize dust concentrations. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Personal Protective Equipment: Respiratory protection of the dependent type. Protective clothing. Protective goggles. Gloves.









Materials for Protective Clothing: Chemically resistant materials and fabrics

Hand Protection: Protective gloves.

Eye Protection: Chemical goggles or safety glasses.

Skin and Body Protection: Wear suitable protective clothing.

Respiratory Protection: Use NIOSH-approved air-purifying or supplied-air respirator where airborne concentrations of dust are

expected to exceed exposure limits.

Other Information: When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State ; Solid

Appearance : White to grey, aggregate to powder, lumps to powder

Odor : Earth

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Odor Threshold Not available 6 - 8 Relative Evaporation Rate (butylacetate=1) Not available > 1200 °C (>2192°F) **Melting Point** Not available Freezing Point Not available **Boiling Point** Flash Point Not available Not available **Auto-ignition Temperature** Not available **Decomposition Temperature** Not available Flammability (solid, gas) Not available Lower Flammable Limit Not available **Upper Flammable Limit** Not available Vapor Pressure Relative Vapor Density at 20 °C Not available Not available Relative Density 1.5-2.5 g/cc Specific Gravity Not available Solubility Not available Log Pow Not available Log Kow Not available Viscosity, Kinematic Not available Viscosity, Dynamic Not available Explosion Data - Sensitivity to Mechanical Impact Explosion Data - Sensitivity to Static Discharge Not available

SECTION 10: STABILITY AND REACTIVITY

Reactivity: Hazardous reactions will not occur under normal conditions.
Chemical Stability: Stable at standard temperature and pressure.

Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

Conditions to Avoid: Incompatible materials.

Incompatible Materials: Strong acids, strong bases, strong oxidizers.

Hazardous Decomposition Products: Not available

SECTION 11: TOXICOLOGICAL INFORMATION

Information on Toxicological Effects - Product

Acute Toxicity
LD50 and LC50 Data Not available

: Not classified

Skin Corrosion/Irritation: Not classified pH: 6 - 8
Serious Eye Damage/Irritation: Not classified pH: 6 - 8
Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: May cause cancer (inhalation).

Specific Target Organ Toxicity (Repeated Exposure): Causes damage to organs through prolonged or repeated exposure

(inhalation).

Reproductive Toxicity: Not classified

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Specific Target Organ Toxicity (Single Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: May cause cancer by inhalation. Dust from this product may cause irritation to the respiratory tract

Symptoms/Injuries After Skin Contact: Prolonged contact with large amounts of dust may cause mechanical irritation.

Symptoms/Injuries After Eye Contact: Prolonged contact with large amounts of dust may cause mechanical irritation.

Symptoms/Injuries After Ingestion: If a large quantity has been ingested: intestinal blockage. Gastrointestinal irritation.

Chronic Symptoms: Repeated or prolonged exposure to respirable crystalline silica dust will cause lung damage in the form of silicosis. Symptoms will include progressively more difficult breathing, cough, fever, and weight loss. Acute silicosis can be fatal.

Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data

Quartz (14808-60-7)		
LD50 Oral Rat	> 5000 mg/kg	
Titanium dioxide (13463-67-7)		
LD50 Oral Rat	> 10000 mg/kg	
Quartz (14808-60-7)		
IARC Group	1	
National Toxicity Program (NTP) Status	2	
Titanium dioxide (13463-67-7)		
IARC Group	28	
National Toxicity Program (NTP) Status	1	

SECTION 12: ECOLOGICAL INFORMATION

Toxicity

Not available

Persistence and Degradability

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Missouri Fireclay, Flint Clay, Plastic Firecla	y, Hawthorn Bond®, Hwthorn Red, Cement Clay, #2 Clay, #1 Clay, JSM Clay, Christy
Gold, Raw Flint Clay, Raw Plastic Clay	
Persistence and Degradability	Not established.

Bioaccumulative Potential

Missouri Fireclay, Flint Clay, Plastic Fireclay, Hawthorn Bond®, Hwthorn Red, Cement Clay, #2 Clay, #1 Clay, JSM Clay, Christy Gold, Raw Flint Clay, Raw Plastic Clay

Bioaccumulative Potential Not established.

Mobility in Soil Not available

Other Adverse Effects

Other Information: Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.

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SECTION 14: TRANSPORT INFORMATION

In Accordance With ICAO/IATA/DOT/TDG

UN Number

Not regulated for transport

UN Proper Shipping Name Not regulated for transport

Additional Information Not regulated for transport

Transport by Sea Not regulated for transport

Air Transport Not regulated for transport

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US Federal Regulations

Missouri Fireclay, Flint Clay, Plastic Fireclay, I	Hawthorn Bond®, Hwthorn Red, Cement Clay, #2 Clay, #1 Clay, JSM Clay, Christy
Gold, Raw Flint Clay, Raw Plastic Clay	
SARA Section 311/312 Hazard Classes	Delayed (chronic) health hazard

Immediate (acute) health hazard

Quartz (14808-60-7)

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

Titanium dioxide (13463-67-7)

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

Kaolin (1332-58-7)

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

US State Regulations

Quartz (14808-60-7)	
U.S California - Proposition 65 - Carcinogens List	WARNING: This product contains chemicals known to the State of California to cause cancer.
Titanium dioxide (13463-67-7)	
U.S California - Proposition 65 - Carcinogens List	WARNING: This product contains chemicals known to the State

of California to cause cancer.

Quartz (14808-60-7)

- U.S. Massachusetts Right To Know List
- U.S. New Jersey Right to Know Hazardous Substance List
- U.S. Pennsylvania RTK (Right to Know) List

Titanium dioxide (13463-67-7)

- U.S. Massachusetts Right To Know List
- U.S. New Jersey Right to Know Hazardous Substance List
- U.S. Pennsylvania RTK (Right to Know) List

Kaolin (1332-58-7)

- U.S. Massachusetts Right To Know List
- U.S. New Jersey Right to Know Hazardous Substance List
- U.S. Pennsylvania RTK (Right to Know) List

Canadian Regulations

Missouri Fireclay, Flint Clay, F	lastic Fireclay, Hawthorn Bond®, Hwthorn Red, Cement Clay, #2 Clay, #1 Clay, JSM Clay, Christy
Gold, Raw Flint Clay, Raw Pla	stic Clay
WHMIS Classification	Class D Division 2 Subdivision A - Very toxic material causing other toxic effects Class D Division 2 Subdivision B - Toxic material causing other toxic effects

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Quartz (14808-60-7)

Listed on the Canadian DSL (Domestic Sustances List) inventory.

Listed on the Canadian Ingredient Disclosure List

WHMIS Classification

Class D Division 2 Subdivision A - Very toxic material causing other toxic effects

Titanium dioxide (13463-67-7)

Listed on the Canadian DSL (Domestic Sustances List) inventory.

WHMIS Classification

Class D Division 2 Subdivision A - Very toxic material causing other toxic effects

Kaolin (1332-58-7)

Listed on the Canadian DSL (Domestic Sustances List) inventory.

WHMIS Classification

Class D Division 2 Subdivision A - Very toxic material causing other toxic effects

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by CPR.

SECTION 16: OTHER INFORMATION

Indication of Changes Other Information : 06/06/2013

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: This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

GHS Full Text Phrases:

Carc. 1A	Carcinogenicity Category 1A
Carc. 2	Carcinogenicity Category 2
STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1
H350	May cause cancer
H351	Suspected of causing cancer
H372	Causes damage to organs through prolonged or repeated exposure

Party Responsible for the Preparation of This Document

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