



SPINKS CLAY COMPANY, INC.

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MATERIAL SAFETY DATA SHEET

I. PRODUCT IDENTIFICATION

PRODUCT: Ball Clay (CAS# 1332-58-7) EMERGENCY TELEPHONE NUMBER: Spinks (731) 642-5414
TRADE NAME: Various*
CHEMICAL NAME: Hydrous Aluminum Silicate
CHEMICAL FAMILY: Kaolinite
FORMULA: $Al_2O_3 \cdot 2SiO_2 \cdot 2H_2O$ + impurities DATE REVISED: January 28, 2000

* The information contained in this MSDS is applicable to all Spinks non-slurry ball clay products.

II. HAZARDOUS INGREDIENTS

| COMPONENT | CAS# | PERCENT | ACGIH-TLV | OSHA-PEL |
|-----------------------------|------------|---------|------------------------|--|
| Crystalline Silica (Quartz) | 14808-60-7 | 5-30% | 0.05 mg/m ³ | 0.1 mg/m ³ |
| Titanium Dioxide | 13463-67-7 | 3% | 10 mg/m ³ | 15 mg/m ³ |
| Clay Dust (as a whole) | | | | 10 mg/m ³ ÷ (%SiO ₂ + 2) |

The limits listed above are for the respirable fraction of each contaminant.
The exposure limits are based on a TWA for an eight- (8) hour shift/ 40-hour week.

This product may contain trace amounts of 2,3,7,8 TCDD (dioxin). Test results indicate concentrations in the in the low part per trillion (ppt) range can be expected. Typically these concentrations are below 100 ppt.

III. HEALTH HAZARD DATA

CARCINOGENICITY INFORMATION: (silica)

OSHA REGULATED: Yes

NTP LISTED: Yes

IARC LISTED: Yes

WARNING! This product contains crystalline silica. IARC Monograph Volume 68, 1997 concludes " There is sufficient evidence in humans for the carcinogenicity of inhaled crystalline silica in the form of quartz or cristobalite from occupational sources." IARC classification - Group 1.

The National Toxicology Program (NTP), in the 6th Annual Report on Carcinogens, 1991, has included crystalline silica on its list of substances that are "reasonably anticipated to be carcinogens".

NIOSH has identified crystalline silica as a *Potential Occupational Carcinogen* using the OSHA classification system outlined in 29 CFR 1910.103.

WARNING! This product contains titanium dioxide. NIOSH has identified titanium dioxide as a potential occupational carcinogen.

ROUTES OF ENTRY

EYES :

INHALATION:

INGESTION:

SKIN:

HEALTH EFFECTS

Contact may cause irritation and temporary discomfort.

Primary route of exposure! Symptoms of acute exposure include coughing, wheezing, difficult breathing, and upper respiratory track irritation. Prolonged and repeated exposure to concentrations in excess of the TLV or PEL may contribute to delayed respiratory complications.

No information available.

None expected, but constant contact may cause irritation.

CHAMPION BALL CLAY

IV. FIRST AID AND EMERGENCY PROCEDURES

INHALATION: Move away from exposure into fresh air conditions. If breathing difficulties continue consult a physician.
EYE CONTACT: Flush with water immediately. Consult a physician if irritation persists.
IF SWALLOWED: None believed to be necessary for coincidental ingestion. Consult a physician for ingestion of large quantities.
SKIN CONTACT: Wash with mild soap and water.

V. PHYSICAL AND CHEMICAL CHARACTERISTICS

| | | | |
|-----------------------------|--|----------------------------|----|
| APPEARANCE: | A solid of various shades of white, gray and black | | |
| ODOR: | Earthy odor | | |
| BOILING POINT: | NA | VAPOR PRESSURE: | NA |
| MELTING POINT: | NA | VAPOR DENSITY: | NA |
| SPECIFIC GRAVITY: | 2.4 - 2.6 | EVAPORATION RATE: | NA |
| SOLUBILITY IN WATER: | Insoluble | PERCENT VOLATILITY: | NA |
| PH: | 4.0 - 8.0 | VISCOSITY: | NA |

VI. FIRE AND EXPLOSION HAZARD DATA

| | | | |
|-----------------------------|---------------|--|------------|
| FLASH POINT: | Non-Flammable | SPECIAL FIREFIGHTING PROCEDURES: | None |
| EXTINGUISHING MEDIA: | NA | UNUSUAL FIRE AND EXPLOSION HAZARDS: | None Known |
| FLAMMABLE LIMITS: | NA | | |

VII. REACTIVITY DATA

| | | | |
|----------------------------------|----------------|-----------------------------|------------|
| STABILITY: | Stable | INCOMPATIBILITIES: | None Known |
| HAZARDOUS DECOMPOSITION: | None | CONDITIONS TO AVOID: | None Known |
| HAZARDOUS POLYMERIZATION: | Will not occur | | |

VIII. SPILL, LEAK AND DISPOSAL INFORMATION

SPILL AND LEAK RESPONSE: Minimize dust generation during cleanup. Vacuum or scoop spilled material into a container for reclamation or disposal.

WASTE DISPOSAL: Consult state and local authorities for disposal of products.
Ball clay is not considered a hazardous waste as defined by 40 CFR, Part 261.

IX. SPECIAL HANDLING AND PERSONAL PROTECTION INFORMATION

Avoid unnecessary product agitation to keep dust level to a minimum.
Local exhaust ventilation is recommended for dust generating processes.
Use NIOSH or MSHA approved respirators if dust concentrations exceed the TLV or PEL.
Eye wash stations are recommended in areas where this product is used.
Floors or surfaces covered with this product become extremely slippery when wet.

X. SPECIAL REGULATORY INFORMATION

California Proposition 65: Ball clay contains crystalline silica and trace amounts of 2,3,7,8 TCDD (dioxin). Both are included on the list of chemicals known to the state of California to be carcinogens or reproductive toxicants as defined by California Proposition 65.

Toxic Substances Control Act: Ball Clay is included on the TSCA inventory as a naturally occurring chemical substance, 40 CFR, Part 710.4(b).

Department of Transportation: Ball Clay is not regulated by the DOT.

To the best of our knowledge the information contained herein is accurate. However there is no warranty of any kind expressed or implied, as to the completeness or accuracy thereof. Final determination of the suitability of this information for a particular use of this product is the sole responsibility of the user.

CHAMPION

Application: a white firing ball clay for use manufacturing that requires strength and high levels of plasticity and thermal expansion.

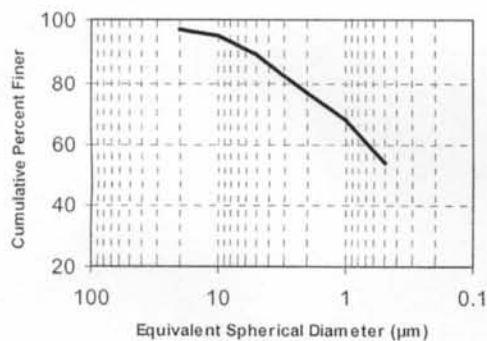
Chemical Properties

| | | | |
|--------------------------------------|--------|------------------------|-------------|
| SiO ₂ | 59.0 % | CaO..... | 0.1 % |
| Al ₂ O ₃ | 25.9 % | K ₂ O..... | 0.7 % |
| Fe ₂ O ₃ | 1.0 % | Na ₂ O..... | 0.2 % |
| TiO ₂ | 1.8 % | Ignition Loss..... | 9.9 % |
| MgO..... | 0.2 % | % Total Carbon | 0.45 – 0.55 |

Physical Properties

| | |
|---|-------|
| % Fired Shrinkage (cone10) | 11.2 |
| Modulus of Rupture (50% clay/50% flint) (psi) | 680 |
| Raw Color | grey |
| Fired Color | white |

Particle Size Distribution



| | |
|-----------------|----|
| CPFT 20 µm..... | 97 |
| 10 µm..... | 95 |
| 5 µm..... | 89 |
| 2 µm..... | 77 |
| 1 µm..... | 68 |
| 0.5 µm..... | 54 |

Specific Surface Area (m²/g) ..25.0

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Typical Analysis

ALL CLAY (HYDROUS ALUMINUM SILICATE) THIS PRODUCT IS: NON-FLAMMABLE; NON-TOXIC; NON-EXPLOSIVE. WARNING: BALL CLAYS (CAS#1332-58-7) CONTAIN FREE SILICA (CAS#14808-60-7). DO NOT BREATHE DUST. PROLONGED INHALATION MAY CAUSE LUNG INJURY OR OTHERWISE MAY BE INJURIOUS TO YOUR HEALTH. FOLLOW OSHA SAFETY AND HEALTH STANDARDS FOR CRYSTALLINE SILICA (QUARTZ). SEE MATERIAL SAFETY DATA SHEET FOR COMPLETE INFORMATION.

Our technical information resulted from work on materials thought to be representative and accordingly is believed to be correct. However, this information shall not constitute any representation, condition or warranty as to any fact contained herein. Rev 2 (6/2000)