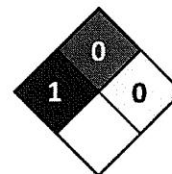




Date Prepared: 04-Nov-2013
 Revised: New Issue
 No. 6 Tile_GHS_001

| HMIS Ratings | |
|--------------------------|---|
| Health Hazard | 1 |
| Fire Hazard | 0 |
| Reactivity Hazard | 0 |
| Max. Personal Protection | E |



SAFETY DATA SHEET

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product trade name(s): **No. 6 Tile**
Common Name(s): **Kaolin, China Clay, Hydrous Aluminum Silicate**
Chemical Formula: $Al_2Si_2O_5(OH)_4$
CAS Number: 1332-58-7
Physical Form: Light gray to white solid

Recommended Uses: Non-exhaustive list: Ceramics, ceramic glazes, refractories, fiberglass compositions, industrial filler, extender, for paper, rubber, plastics, caulks/adhesives, pesticides, sorbents, catalyst supports

Restrictions on Use: Food ingredient, cosmetic ingredient

Manufacturer's Name & Address: Kentucky-Tennessee Clay Company
 100 Mansell Court East
 Suite 300
 Roswell, GA 30076

Telephone: 770-594-0660
Fax: 770-645-3460
Customer Service: 800-814-4538

Emergency Telephone: **For Chemical Emergency Call CHEMTREC (24 hours): 1-800-424-9300**
 (US, Canada, Puerto Rico, Virgin Islands)
 1-703-527-3887 (Outside Above Area) collect calls accepted

SECTION 2: HAZARDS IDENTIFICATION

Contains Crystalline Silica - <1% Respirable

Classification:

| | |
|--|--------------------------|
| Eye Damage/Irritation | Category 2 |
| Skin Corrosion/Irritation | Category 2 |
| Specific Target Organ Toxicity - Single Exposure | Category 3 - Respiratory |
| Specific Target Organ Toxicity - Repeated Exposure | Category 1 - Respiratory |
| Carcinogenicity | Category 1a |

Label Elements:



Signal Word:
WARNING

Hazard Statements: **H373:** May cause damage to lung through prolonged or repeated inhalation.

Precautionary Statements:

P260: Do not breathe dust.
P285: In case of inadequate ventilation wear respiratory protection.
P501: Dispose of contents/containers in accordance with local regulation.

SAFETY DATA SHEETProduct Name: **No. 6 Tile**
SDS ID: No. 6 Tile_GHS_001**SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS**

| Ingredient | Weight % (Approx.) | CAS N° | EINECS N° |
|-----------------------------|--------------------|------------|-----------|
| Kaolin | 60% - 100% | 1332-58-7 | 310-194-1 |
| Quartz - Crystalline Silica | 0.1% - 2% | 14808-60-7 | 238-878-4 |
| Titanium Dioxide | 1% - 5% | 13463-67-7 | 136-675-5 |
| Water | 1% - 20% | 7732-18-5 | 215-185-5 |

SECTION 4: FIRST AID MEASURES**Inhalation**

If adverse effects occur, get immediate medical attention. If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Give artificial

Skin

Wash immediately with soap and water. Get medical attention if irritation develops or persists.

Eyes

Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Ingestion

DO NOT induce vomiting. If swallowed, drink plenty of water, do NOT induce vomiting. Never make an unconscious person vomit or drink fluids. Get medical attention.

Symptoms: Immediate

eye irritation, skin irritation, respiratory tract irritation

Symptoms: Delayed

gastrointestinal effects

SECTION 5: FIREFIGHTING MEASURES**Flammable Properties**

Product is non-flammable.
Use extinguishing agents appropriate for surrounding fire.

Unsuitable Extinguishing Media

None known.

Protective Equipment and Precautions for Firefighters

No hazard is expected from the normal use of this product.

Fire Fighting Measures

No hazard expected

NFPA 704M Hazard Classification: Health: 1 Flammable: 0 Reactivity: 0

SECTION 6: ACCIDENTAL RELEASE MEASURES**Personal Precautions**

Keep unnecessary people away, isolate hazard area and deny entry. Wet material is slippery under foot.
Wear personal protective clothing and equipment, see Section 8.

Environmental Precautions

Avoid release to the environment.

Cleanup Methods

Collect spilled material in appropriate container for reuse or disposal.

SECTION 7: HANDLING AND STORAGE**Precautions for Safe Handling**

Avoid dust generation and accumulation. Do not use in poorly ventilated or confined spaces. Do not taste or swallow.
Avoid inhalation or contact. Wash thoroughly after handling.

Conditions for Safe Storage

Store in a cool, dry place. Store in a well-ventilated area.

SAFETY DATA SHEETProduct Name: **No. 6 Tile**
SDS ID: No. 6 Tile_GHS_001**SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION****Exposure Guidelines:**

Follow standard occupational hygiene control methods and procedures. Use an approved respirator if exposure limits are exceeded or if irritation develops or persists.

Component Exposure Limits:

| Hazardous Ingredient | Weight % (Approx.) | CAS N° | OSHA PEL* | ACGIH TLV* |
|--|--------------------|------------|---|---|
| Kaolin | 60% - 100% | 1332-58-7 | 15 mg/m ³ (Total Dust) 5 mg/m ³ (Respirable Fraction) | 2 mg/m ³ (Respirable Fraction) |
| Quartz - Crystalline Silica (Respirable Fraction < 1%) | 0.1% - 2% | 14808-60-7 | 0.1mg/m ³ (Respirable Fraction) | 0.025 mg/m ³ (Respirable Fraction) |
| Titanium Dioxide (Naturally Occurring) | 1% - 5% | 13463-67-7 | 15 mg/m ³ (Total Dust) | 10 mg/m ³ (Total Dust) |

* Unless otherwise noted, all PEL and TLV are reported as 8 hour time weighted average (TWA).

Component Analysis

There are no biological limit values for any of this product's components.

Engineering Controls

Ventilation: Use exhaust ventilation, if required, to maintain dust concentration below recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: Where there is potential for airborne exposure, use of a MSHA/NIOSH or OSHA/NIOSH approved respirator is recommended.

Eyes/Face: Wear side shield safety glasses or chemical resistant safety goggles.

Glove Recommendation: Rubber gloves are recommended for prolonged exposure.

Protective Clothing: Wear appropriate chemical resistant clothing. Contaminated clothing should be removed and laundered before reuse.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

| | |
|--|---|
| Physical State: Solid | Appearance: white to gray solid |
| Color: white to gray | Physical Form: powder to lump |
| Odor: earthy odor | Odor Threshold: Not applicable |
| pH: 4-6 (aqueous solution) | Melting Point: > 1500°C |
| Boiling Point: Not applicable | Flash Point: Will not ignite |
| Decomposition: loses crystalline water at > 500°C (930°F) | Evaporation Rate: Not applicable |
| LEL: Not applicable | UEL: Not applicable |
| Vapor Pressure: Not applicable | Vapor Density (air = 1): Not applicable |
| Density: Not applicable | Specific Gravity (water = 1): ~2.6 gm/cc |
| Water Solubility: None | Coeff> Water/Oil Dist: Not applicable |
| Auto Ignition: Will not ignite | Viscosity: Not applicable |
| Flow Point: Not applicable | Sublimation Point: Not applicable |
| VOC: None | |

SAFETY DATA SHEETProduct Name: **No. 6 Tile**
SDS ID: No. 6 Tile_GHS_001**SECTION 10: STABILITY AND REACTIVITY****Reactivity:**

No reactive hazard is expected.

Chemical Stability:

Stable at normal temperatures and pressure

Possibility of Hazardous Reactions:

Will not oxidize or polymerize.

Conditions to avoid:

None known.

Materials to Avoid (Incompatibilities):

None known.

Decomposition Products:

When exposed to high temperatures, free quartz can change crystal structure to form tridymite (above 870°C) or cristobalite (above 1470°C) which have greater health hazards than quartz. (Tridymite and cristobalite (TWA-TLV) =0.025 mg/m³.)

SECTION 11: TOXICOLOGICAL INFORMATION**Primary Route of Exposure:** Skin, Eye Contact, Inhalation and Ingestion**Acute Health Hazards:**

Eye contact may cause mechanical irritation.

Skin contact may aggravate existing dermatitis.

Inhalation from prolonged and continuous exposure to excessive quantities of dust may aggravate existing asthmatic or respiratory conditions.

Acute and Chronic Toxicity

May cause eye irritation, skin irritation, respiratory tract irritation, and gastrointestinal tract irritation. May cause damage to respiratory tract through prolonged or repeated exposure.

Occupationally inhaled kaolin produced pulmonary fibrosis with sites of action being the lung, the lymph nodes and the hilus. Kaolin when taken orally over a long period of time can cause granulomas of the stomach.

Exposure to quartz (the most stable and common form of crystalline silica) is responsible for the majority of clinically diagnosed silicosis. Silicosis is a fibronodular lung disease that occurs after occupational exposure to crystalline silica for 5 years or longer. Inhalation of quartz dusts may cause shortness of breath, limitation of chest expansion, dry cough, and a lessened capacity for work. Individuals with a pre-existing disease in, or a history of ailments involving the skin or respiratory tract, are at greater risk for developing adverse health effects when exposed to this material.

In humans, chronic intermittent exposure to quartz caused pulmonary fibrosis, cough, and difficulty breathing. Overexposure to crystalline silica may cause silicosis, a form of disabling, progressive, and sometimes fatal pulmonary fibrosis characterized by the presence of typical nodulation in the lungs. Tuberculosis frequently complicates silicosis and the risk for tuberculosis is also increased in workers exposed to silica who have no radiographic evidence of silicosis. Crystalline silica can cause silicotic lesions in such organs as the liver, spleen and bone marrow. In humans, a causal relationship exists between exposure to crystalline silica and the development of autoimmune diseases. In multi-dose studies with animals, long term inhalation of quartz affected the lungs, endocrine system, immune system and blood.

This product contains quartz (respirable) as an impurity. Prolonged and/or massive exposure to respirable crystalline silica-containing dust may cause silicosis, a nodular pulmonary fibrosis caused by deposition in the lungs of fine respirable particles of 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 fibers, 1997, Vol. 68, IARC, Lyon, France.)

SAFETY DATA SHEET**Product Name: No. 6 Tile**
SDS ID: No. 6 Tile_GHS_001**Component Analysis - LD50/LC50**

The components of this material have been reviewed in various sources and the following selected endpoints are published:

Quartz - Crystalline Silica (14808-60-7)

Oral LD50 Rat 500 mg/kg

Titanium dioxide (13463-67-7)

Oral LD50 >10000 mg/kg

Water (7732-18-5)

Oral LD50 Rat >90 mL/kg

Irritation/Corrosivity Data

May cause eye irritation, skin irritation, respiratory tract irritation, and gastrointestinal tract irritation.

Respiratory Sensitizer

No test data available

Dermal Sensitizer

No test data available

Carcinogenicity**Component Carcinogenicity****Kaolin - CAS N° 1332-58-7**

ACGIH: A4 - Not Classifiable as a Human Carcinogen

Quartz - Crystalline Silica - CAS N° 14808-60-7

ACGIH: A2 - Suspected Human Carcinogen

IARC: Group 1 - Carcinogenic to humans

Titanium dioxide - CAS N° 13463-67-7

ACGIH: A4 - Not Classifiable as a Human Carcinogen

IARC: Group 2B - Possibly carcinogenic to humans

Mutagenic Data

No information available

Reproductive Effects Data

No information available

Specific Organ Toxicity - Single Exposure

Target organs include ears, skin, respiratory system, and gastrointestinal tract.

Specific Organ Toxicity - Repeated Exposure

Causes damage to eyes, skin, respiratory system, and gastrointestinal tract through prolonged or repeated exposure.

Aspiration Hazard

No data available

Medical Conditions Aggravated by Exposure

Individuals with pre-existing eye disorders, skin disorders, respiratory disorders and/or gastrointestinal disorders may have increased

SAFETY DATA SHEET

Product Name: **No. 6 Tile**
SDS ID: No. 6 Tile_GHS_001

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity

No information available for the product

Component Analysis - Aquatic Toxicity

No LOLI ecotoxicity data are available for this product's components

No information available for the product

Bioaccumulation

No information available for the product

Bioconcentration

This material is not believed to bioconcentrate

Biodegradation

This product is made from a naturally occurring, abundant, innocuous mineral

Persistence

This product is made from a naturally occurring, abundant, innocuous mineral

Mobility in Soil:

This product is insoluble in water

Results of PBT and vPvB Assessment

Not relevant

Other Toxicity

May affect turbidity if discharged in large quantities to lakes, streams or sewers.

SECTION 13: DISPOSAL CONSIDERATIONS

Non-hazardous waste - RCRA (40 CFR 261)

Dispose of waste materials in accordance with all local, state, and Federal requirements.

This product may not be disposed of in waterways or sewers.

SECTION 14: TRANSPORT INFORMATION

EPA Waste Number: Not regulated.

DOT Classification: Not regulated.

IMO Classification: Not regulated.

Internal UN: Not regulated.

IMDG Code: This product is not considered to be a marine pollutant.

SAFETY DATA SHEETProduct Name: **No. 6 Tile**
SDS ID: No. 6 Tile_GHS_001**SECTION 15: REGULATORY INFORMATION**

SARA Title III Section 302 Extremely Hazardous Substances: This product does not contain extremely hazardous subject to the reporting requirements of Section 302 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 355.

SARA Title III Section 311 and 312 Health and Physical Hazard Categories per 40 CFR 370.2:

| Immediate | Delayed | Fire | Pressure | Reactivity |
|-----------|---------|------|----------|------------|
| Yes | Yes | No | No | No |

SARA Section 313 Notification: This product does not contain toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

TSCA: Product is listed in Initial Inventory, Vol. 1, Appendix A, CAS No. 1332-58-7

FDA: Kaolin is generally recognized as safe (GRAS) under the FDA in accordance with 21 CFR 186.1256. Additionally, kaolin is established as a component of the uncoated or coated food contact surface of paper and paperboard in accordance with 21 CFR 176.170 (aqueous and fatty foods) and CFR 176.180 (dry foods).

CERCLA: Kaolin is not a CERCLA listed hazardous substance.

California Proposition 65: WARNING: This product may also contain extremely small amounts of one or more naturally-occurring materials known to the State of California to cause cancer, birth defects, or other reproductive harm.

NJ Special Health Hazardous Substances List [4]: RTK Hazardous Substance List; Substance number 4016.

PA Special Hazardous Substances List: Regulated under PA Code Chapter 323.

Stockholm Convention: This product is not subject to the Stockholm Convention.

Montreal Protocol: This product is not subject to the Montreal Protocol.

Rotterdam Convention: This product is not subject to the Rotterdam Convention.

National Inventories:

DSL (Canada): Listed
NDSL (Canada): Not Listed
PICCS (Philippines): Listed
KECL (Korea): Listed
ENCS (MITI) (Japan): Listed
AICS (Australia): Listed
IECSC (China): Listed
EINECS (Europe): Listed

REACH Status: Exempt (Annex v.7). Product is a naturally occurring mineral.

SAFETY DATA SHEETProduct Name: **No. 6 Tile**
SDS ID: No. 6 Tile_GHS_001**SECTION 16: OTHER INFORMATION****Training**

Workers must be informed of the presence of crystalline silica and trained in the proper use and handling of this product as required under applicable regulations.

Summary of Changes

New SDS 04-Nov-2013

Key / Legend

| | |
|----------|---|
| ACGIH | American Conference of Governmental Industrial Hygienists |
| AICS | Australian Inventory of Chemical Substances |
| CAS | Chemical Abstract Service |
| CERCLA | Comprehensive Environmental Response, Compensation and Liability Act |
| CFR | Code of Federal Regulations |
| CHEMTREC | Chemical Transportation Emergency Center |
| DOT | Department of Transportation |
| DSL | Canadian Domestic Substances List |
| EINECS | European Inventory of New and Existing Chemical Substances |
| ENCS | Existing and New Substances Inventory |
| EPA | Environmental Protection Agency |
| FDA | Food and Drug Administration |
| HMIS | Hazardous Materials Identification System |
| IARC | International Agency for Research on Cancer |
| IECSC | Inventory of Existing Chemical Substances Produced or Imported in China |
| IMDG | International Maritime Dangerous Goods Code |
| IMO | International Maritime Organization |
| KECI | Korean Existing Chemicals Inventory |
| LEL | Lower Explosive Limit |
| LOLI | List Of Lists |
| MITI | Japanese Ministry of International Trade and Industry |
| MSHA | Mine Safety and Health Administration |
| NDSL | Canadian Non-Domestic Substance List |
| NIOSH | National Institute of Occupational Safety and Health |
| NFPA | National Fire Protection Agency |
| OSHA | Occupational Health and Safety Administration |
| PBT | Persistent Bioaccumulative Toxic Chemical |
| PEL | Permissible Exposure Limit |
| PICCS | Philippine Inventory of Chemicals and Chemical Substances |
| RCRA | Resource Conservation and Recovery Act |
| REACH | Registration, Evaluation, Authorization and Restriction of Chemicals |
| RTK | Right to Know |
| SARA | Superfund Amendments and Reauthorization Act |
| SDS | Safety Data Sheet |
| STOT | Specific Target Organ Toxicity |
| TLV | Threshold Limit Value |
| TSCA | Toxic Substances Control Act |
| TWA | Time Weighted Average |
| UEL | Upper Explosive Limit |
| UN | United Nations |
| VOC | Volatile Organic Content |
| vPvB | Very Powerful Very Bioaccumulative |

SAFETY DATA SHEET

Product Name: **No. 6 Tile**
SDS ID: No. 6 Tile_GHS_001

Disclaimer

Such information is to the best of IMERY'S knowledge and believed 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 himself as to the suitability and completeness of such information for his own particular use. IMERY'S NORTH AMERICA CERAMICS MAKES NO WARRANTY WITH RESPECT HERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

IMERY'S is a business name that includes Imerys North America Ceramics of which Kentucky-Tennessee Clay Company is a member. Registered in the USA. Registered office: 100 Mansell Court East, Suite 300, Roswell, GA 30076

Prepared By: Imerys North America Ceramics Technical Group.

END OF SHEET

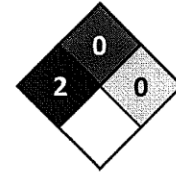
No. 6 Tile_GHS_001



Date Prepared: 04-Nov-2013
Revised: New Issue
SDS ID: TN #5_GHS_001

HMS Ratings

| | |
|--------------------------|---|
| Health Hazard | 2 |
| Fire Hazard | 0 |
| Reactivity Hazard | 0 |
| Max. Personal Protection | E |



SAFETY DATA SHEET

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product trade name(s): Tennessee #5
Common Name(s): Ball Clay, Kaolinic Clay
Chemical Formula: Al₂Si₂O₅(OH)₄
CAS Number: 999999-99-4
Physical Form: Light gray to brown solid

Recommended Uses: Non-exhaustive list: Ceramics, ceramic glazes, porcelain insulators, gypsum wallboard, ceiling tile, coal tar sealing emulsions

Restrictions on Use: Food ingredient, cosmetic ingredient, agricultural feed, pesticide

Manufacturer's Name & Address: Kentucky-Tennessee Clay Company
 100 Mansell Court East
 Suite 300
 Roswell, GA 30076

Telephone: 770-594-0660
Fax: 770-645-3460
Customer Service: 800-814-4538

Emergency Telephone: For Chemical Emergency Call CHEMTREC (24 hours): 1-800-424-9300
 (US, Canada, Puerto Rico, Virgin Islands)
 1-703-527-3887 (Outside Above Area) collect calls accepted

SECTION 2: HAZARDS IDENTIFICATION

Contains Crystalline Silica ≥1% ≤10% Respirable

Classification: Eye Damage/Irritation Category 2
 Skin Corrosion/Irritation Category 2

Specific Target Organ Toxicity - Single Exposure Category 3 - Respiratory
 Specific Target Organ Toxicity - Repeated Exposure Category 1 - Respiratory
 Carcinogenicity Category 1a

Label Elements:



Signal Word:
WARNING

Hazard Statements: H373: May cause damage to lung through prolonged or repeated inhalation.

Precautionary Statements: P260: Do not breathe dust.
 P285: In case of inadequate ventilation wear respiratory protection.
 P501: Dispose of contents/containers in accordance with local regulation.

SAFETY DATA SHEETProduct Name: **Tennessee #5**
SDS ID: TN #5_GHS_001**SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS**

| Ingredient | Weight % (Approx.) | CAS N° | EINECS N° |
|-----------------------------|--------------------|------------|-----------|
| Kaolin | 60% - 90% | 1332-58-7 | 310-194-1 |
| Quartz - Crystalline Silica | 10% - 30% | 14808-60-7 | 238-878-4 |
| Titanium Dioxide | 1% - 5% | 13463-67-7 | 136-675-5 |
| Water | 1% - 20% | 7732-18-5 | 215-185-5 |

SECTION 4: FIRST AID MEASURES**Inhalation**

If adverse effects occur, get immediate medical attention. If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Give artificial

Skin

Wash immediately with soap and water. Get medical attention if irritation develops or persists.

Eyes

Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Ingestion

DO NOT induce vomiting. If swallowed, drink plenty of water, do NOT induce vomiting. Never make an unconscious person vomit or drink fluids. Get medical attention.

Symptoms: Immediate

eye irritation, skin irritation, respiratory tract irritation

Symptoms: Delayed

gastrointestinal effects

SECTION 5: FIREFIGHTING MEASURES**Flammable Properties**

Product is non-flammable.
Use extinguishing agents appropriate for surrounding fire.

Unsuitable Extinguishing Media

None known.

Protective Equipment and Precautions for Firefighters

No hazard is expected from the normal use of this product.

Fire Fighting Measures

No hazard expected

NFPA 704M Hazard Classification: Health: 2 Flammable: 0 Reactivity: 0

SECTION 6: ACCIDENTAL RELEASE MEASURES**Personal Precautions**

Keep unnecessary people away, isolate hazard area and deny entry. Wet material is slippery under foot.
Wear personal protective clothing and equipment, see Section 8.

Environmental Precautions

Avoid release to the environment.

Cleanup Methods

Collect spilled material in appropriate container for reuse or disposal.

SECTION 7: HANDLING AND STORAGE**Precautions for Safe Handling**

Avoid dust generation and accumulation. Do not use in poorly ventilated or confined spaces. Do not taste or swallow.
Avoid inhalation or contact. Wash thoroughly after handling.

Conditions for Safe Storage

Store in a cool, dry place. Store in a well-ventilated area.

SAFETY DATA SHEET

Product Name: **Tennessee #5**
 SDS ID: TN #5_GHS_001

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines:

Follow standard occupational hygiene control methods and procedures. Use an approved respirator if exposure limits are exceeded or if exposure limits are exceeded or if irritation develops or persists.

Component Exposure Limits:

| Hazardous Ingredient | Weight % (Approx.) | CAS N° | OSHA PEL* | ACGIH TLV* |
|---|--------------------|------------|---|---|
| Kaolin | 60% - 90% | 1332-58-7 | 15 mg/m ³ (Total Dust) 5 mg/m ³ (Respirable Fraction) | 2 mg/m ³ (Respirable Fraction) |
| Quartz - Crystalline Silica (Respirable Fraction 1-10%) | 10% - 30% | 14808-60-7 | 0.1mg/m ³ (Respirable Fraction) | 0.025 mg/m ³ (Respirable Fraction) |
| Titanium Dioxide (Naturally Occurring) | 1% - 5% | 13463-67-7 | 15 mg/m ³ (Total Dust) | 10 mg/m ³ (Total Dust) |

* Unless otherwise noted, all PEL and TLV are reported as 8 hour time weighted average (TWA).

Component Analysis

There are no biological limit values for any of this product's components.

Engineering Controls

Ventilation: Use exhaust ventilation, if required, to maintain dust concentration below recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: Where there is potential for airborne exposure, use of a MSHA/NIOSH or OSHA/NIOSH approved respirator is recommended.

Eyes/Face: Wear side shield safety glasses or chemical resistant safety goggles.

Glove Recommendation: Rubber gloves are recommended for prolonged exposure.

Protective Clothing: Wear appropriate chemical resistant clothing. Contaminated clothing should be removed and laundered before reuse.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid

Color: light gray to brown

Odor: earthy odor

pH: 4-6 (aqueous solution)

Boiling Point: Not applicable

Decomposition: loses crystalline water at > 500°C (930°F)

LEL: Not applicable

Vapor Pressure: Not applicable

Density: Not applicable

Water Solubility: None

Auto Ignition: Will not ignite

Flow Point: Not applicable

VOC: None

Appearance: light gray to brown solid

Physical Form: powder to lump

Odor Threshold: Not applicable

Melting Point: > 1500°C

Flash Point: Will not ignite

Evaporation Rate: Not applicable

UEL: Not applicable

Vapor Density (air = 1): Not applicable

Specific Gravity (water = 1): ~2.6 gm/cc

Coeff> Water/Oil Dist: Not applicable

Viscosity: Not applicable

Sublimation Point: Not applicable

SAFETY DATA SHEETProduct Name: **Tennessee #5**
SDS ID: TN #5_GHS_001**SECTION 10: STABILITY AND REACTIVITY****Reactivity:**

No reactive hazard is expected.

Chemical Stability:

Stable at normal temperatures and pressure

Possibility of Hazardous Reactions:

Will not oxidize or polymerize.

Conditions to avoid:

None known.

Materials to Avoid (Incompatibilities):

None known.

Decomposition Products:

When exposed to high temperatures, free quartz can change crystal structure to form tridymite (above 870°C) or cristobalite (above 1470°C) which have greater health hazards than quartz. (Tridymite and cristobalite (TWA-TLV) =0.025 mg/m³.)

SECTION 11: TOXICOLOGICAL INFORMATION**Primary Route of Exposure:** Skin, Eye Contact, Inhalation and Ingestion**Acute Health Hazards:**

Eye contact may cause mechanical irritation.

Skin contact may aggravate existing dermatitis.

Inhalation from prolonged and continuous exposure to excessive quantities of dust may aggravate existing asthmatic or respiratory conditions.

Acute and Chronic Toxicity

May cause eye irritation, skin irritation, respiratory tract irritation, and gastrointestinal tract irritation. May cause damage to respiratory tract through prolonged or repeated exposure.

Occupationally inhaled ball clay produced pulmonary fibrosis with sites of action being the lung, the lymph nodes and the hilus. Ball clay when taken orally over a long period of time can cause granulomas of the stomach.

Exposure to quartz (the most stable and common form of crystalline silica) is responsible for the majority of clinically diagnosed silicosis. Silicosis is a fibronodular lung disease that occurs after occupational exposure to crystalline silica for 5 years or longer. Inhalation of quartz dusts may cause shortness of breath, limitation of chest expansion, dry cough, and a lessened capacity for work. Individuals with a pre-existing disease in, or a history of ailments involving the skin or respiratory tract, are at greater risk for developing adverse health effects when exposed to this material.

In humans, chronic intermittent exposure to quartz caused pulmonary fibrosis, cough, and difficulty breathing. Overexposure to crystalline silica may cause silicosis, a form of disabling, progressive, and sometimes fatal pulmonary fibrosis characterized by the presence of typical nodulation in the lungs. Tuberculosis frequently complicates silicosis and the risk for tuberculosis is also increased in workers exposed to silica who have no radiographic evidence of silicosis. Crystalline silica can cause silicotic lesions in such organs as the liver, spleen and bone marrow. In humans, a causal relationship exists between exposure to crystalline silica and the development of autoimmune diseases. In multi-dose studies with animals, long term inhalation of quartz affected the lungs, endocrine system, immune system and blood.

This product contains quartz (respirable) as an impurity. Prolonged and/or massive exposure to respirable crystalline silica-containing dust may cause silicosis, a nodular pulmonary fibrosis caused by deposition in the lungs of fine respirable particles of 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 fibers, 1997, Vol. 68, IARC, Lyon, France.)

The material may contain trace amounts (parts per trillion) of naturally occurring dioxin congeners (PCDD, PCDF) including TCDD. 2, 3, 7,8. TCDD has been classified as a known human carcinogen by the IARC in Monograph 69 (1997).

These trace amounts are not believed to be a health risk, but Special Protections and Special Precautions (Section 8) are advised.

IARC Monograph Vol. 69 (1997) concludes that 2,3,7,8-TCDD (dioxin) is carcinogenic to humans.

Methods of transmission may include inhalation, ingestion or dermal absorption.

SAFETY DATA SHEETProduct Name: **Tennessee #5**
SDS ID: **TN #5_GHS_001****Component Analysis - LD50/LC50**

The components of this material have been reviewed in various sources and the following selected endpoints are published:

Quartz - Crystalline Silica (14808-60-7)

Oral LD50 Rat 500 mg/kg

Titanium dioxide (13463-67-7)

Oral LD50 >10000 mg/kg

Water (7732-18-5)

Oral LD50 Rat >90 mL/kg

Irritation/Corrosivity Data

May cause eye irritation, skin irritation, respiratory tract irritation, and gastrointestinal tract irritation.

Respiratory Sensitizer

No test data available

Dermal Sensitizer

No test data available

Carcinogenicity**Component Carcinogenicity****Kaolin - CAS N° 1332-58-7****ACGIH:** A4 - Not Classifiable as a Human Carcinogen**Quartz - Crystalline Silica - CAS N° 14808-60-7****ACGIH:** A2 - Suspected Human Carcinogen**IARC:** Group 1 - Carcinogenic to humans**Titanium dioxide - CAS N° 13463-67-7****ACGIH:** A4 - Not Classifiable as a Human Carcinogen**IARC:** Group 2B - Possibly carcinogenic to humans**Mutagenic Data**

No information available

Reproductive Effects Data

No information available

Specific Organ Toxicity - Single Exposure

Target organs include ears, skin, respiratory system, and gastrointestinal tract.

Specific Organ Toxicity - Repeated Exposure

Causes damage to eyes, skin, respiratory system, and gastrointestinal tract through prolonged or repeated exposure.

Aspiration Hazard

No data available

Medical Conditions Aggravated by Exposure

Individuals with pre-existing eye disorders, skin disorders, respiratory disorders and/or gastrointestinal disorders may have increased susceptibility to the effects of exposure.

SAFETY DATA SHEET

Product Name: **Tennessee #5**
SDS ID: TN #5_GHS_001

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity

No information available for the product

Component Analysis - Aquatic Toxicity

No LOLI ecotoxicity data are available for this product's components

No information available for the product

Bioaccumulation

No information available for the product

Bioconcentration

This material is not believed to bioconcentrate

Biodegradation

This product is made from a naturally occurring, abundant, innocuous mineral

Persistence

This product is made from a naturally occurring, abundant, innocuous mineral

Mobility in Soil:

This product is insoluble in water

Results of PBT and vPvB Assessment

Not relevant

Other Toxicity

May affect turbidity if discharged in large quantities to lakes, streams or sewers.

SECTION 13: DISPOSAL CONSIDERATIONS

Non-hazardous waste - RCRA (40 CFR 261)

Dispose of waste materials in accordance with all local, state, and Federal requirements.

This product may not be disposed of in waterways or sewers.

SECTION 14: TRANSPORT INFORMATION

EPA Waste Number: Not regulated.

DOT Classification: Not regulated.

IMO Classification: Not regulated.

Internal UN: Not regulated.

IMDG Code: This product is not considered to be a marine pollutant.

SAFETY DATA SHEET

Product Name: **Tennessee #5**
SDS ID: **TN #5_GHS_001**

SECTION 15: REGULATORY INFORMATION

SARA Title III Section 302 Extremely Hazardous Substances: This product does not contain extremely hazardous subject to the reporting requirements of Section 302 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 355.

SARA Title III Section 311 and 312 Health and Physical Hazard Categories per 40 CFR 370.2:

| Immediate | Delayed | Fire | Pressure | Reactivity |
|------------------|----------------|-------------|-----------------|-------------------|
| Yes | Yes | No | No | No |

SARA Section 313 Notification: This product does not contain toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

TSCA: Product is listed in Initial Inventory, Vol. 1, Appendix A, CAS No. 1332-58-7

CERCLA: Ball Clay is not a CERCLA listed hazardous substance.

California Proposition 65: WARNING: This product may also contain extremely small amounts of one or more naturally-occurring materials known to the State of California to cause cancer, birth defects, or other reproductive harm.

NJ Special Health Hazardous Substances List [4]: RTK Hazardous Substance List; Substance number 4016.

PA Special Hazardous Substances List: Regulated under PA Code Chapter 323.

Stockholm Convention: This product is not subject to the Stockholm Convention.

Montreal Protocol: This product is not subject to the Montreal Protocol.

Rotterdam Convention: This product is not subject to the Rotterdam Convention.

National Inventories:

DSL (Canada): Listed
NDSL (Canada): Not Listed
PICCS (Philippines): Listed
KECI (Korea): Listed
ENCS (MITI) (Japan): Listed
AICS (Australia): Listed
IECSC (China): Listed
EINECS (Europe): Listed

REACH Status: Exempt (Annex v.7). Product is a naturally occurring mineral.

SAFETY DATA SHEETProduct Name: **Tennessee #5**
SDS ID: TN #5_GHS_001**SECTION 16: OTHER INFORMATION****Training**

Workers must be informed of the presence of crystalline silica and trained in the proper use and handling of this product as required under applicable regulations.

Summary of Changes

New SDS 04-Nov-2013

Key / Legend

| | |
|----------|---|
| ACGIH | American Conference of Governmental Industrial Hygienists |
| AICS | Australian Inventory of Chemical Substances |
| CAS | Chemical Abstract Service |
| CERCLA | Comprehensive Environmental Response, Compensation and Liability Act |
| CFR | Code of Federal Regulations |
| CHEMTREC | Chemical Transportation Emergency Center |
| DOT | Department of Transportation |
| DSL | Canadian Domestic Substances List |
| EINECS | European Inventory of New and Existing Chemical Substances |
| ENCS | Existing and New Substances Inventory |
| EPA | Environmental Protection Agency |
| FDA | Food and Drug Administration |
| HMIS | Hazardous Materials Identification System |
| IARC | International Agency for Research on Cancer |
| IECSC | Inventory of Existing Chemical Substances Produced or Imported in China |
| IMDG | International Maritime Dangerous Goods Code |
| IMO | International Maritime Organization |
| KECI | Korean Existing Chemicals Inventory |
| LEL | Lower Explosive Limit |
| LOLI | List Of Lists |
| MITI | Japanese Ministry of International Trade and Industry |
| MSHA | Mine Safety and Health Administration |
| NDSL | Canadian Non-Domestic Substance List |
| NIOSH | National Institute of Occupational Safety and Health |
| NFPA | National Fire Protection Agency |
| OSHA | Occupational Health and Safety Administration |
| PBT | Persistent Bioaccumulative Toxic Chemical |
| PEL | Permissible Exposure Limit |
| PICCS | Philippine Inventory of Chemicals and Chemical Substances |
| RCRA | Resource Conservation and Recovery Act |
| REACH | Registration, Evaluation, Authorization and Restriction of Chemicals |
| RTK | Right to Know |
| SARA | Superfund Amendments and Reauthorization Act |
| SDS | Safety Data Sheet |
| STOT | Specific Target Organ Toxicity |
| TLV | Threshold Limit Value |
| TSCA | Toxic Substances Control Act |
| TWA | Time Weighted Average |
| UEL | Upper Explosive Limit |
| UN | United Nations |
| VOC | Volatile Organic Content |
| vPvB | Very Powerful Very Bioaccumulative |

SAFETY DATA SHEET

Product Name: **Tennessee #5**
SDS ID: **TN #5_GHS_001**

Disclaimer

Such information is to the best of IMERYS knowledge and believed 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 himself as to the suitability and completeness of such information for his own particular use. IMERYS NORTH AMERICA CERAMICS MAKES NO WARRANTY WITH RESPECT HERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

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END OF SHEET

TN #5_GHS_001