Safety Data Sheet

according to 29 CFR 1910.1200(g)

ANSI / ASHRAE Standard 52.1 / 52.2 Test Dust

Revision date: 06.04.2020 Page 1 of 10

1. Identification

Product identifier
ANSI / ASHRAE Standard 52.1 / 52.2 Test Dust

Recommended use of the chemical and restrictions on use
Use of the substance/mixture
test dust

Details of the supplier of the safety data sheet
Company name: Powder Technology Inc.
Street: 1300 Grey Fox Road
Place: USA-55112 Arden Hills, MN
Telephone: +1 952 894 -8737
e-mail: sales@powdertechnologyinc.com
Internet: http://www.powdertechnologyinc.com
Emergency phone number: +1 952 894 -8737

2. Hazard(s) identification

Classification of the chemical
29 CFR Part 1910.1200
Carcinogenicity: Carc. 2
Specific target organ toxicity repeated or prolonged exposure: STOT RE 1
Combustible Dust: Comb. Dust

Label elements
29 CFR Part 1910.1200
Signal word: Danger
Pictograms:

Hazard statements
Suspected of causing cancer
Causes damage to organs through prolonged or repeated exposure

Precautionary statements
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe dust/fume/gas/mist/vapors/spray.
Wash hands thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wear protective gloves/protective clothing/eye protection/face protection.
If exposed or concerned; Get medical advice/attention.
Store locked up.

Special labelling of certain mixtures
May form combustible dust concentrations in air.

Hazards not otherwise classified
No information available.

3. Composition/information on ingredients

Mixtures
Chemical characterization
Powder-Sand, Fibres (Second-cut cotton linters (cellulose))

Mineral bound:
Aluminium oxide; Alumina
CAS No. 2 1344-28-1
potassium oxide (mineral)
CAS No. 12136-45-7
sodium oxide (mineral)
CAS No. 1313-59-3
Iron (III) oxide (hematite)
CAS No. 1309-37-1
Magnesium oxide
CAS No. 1309-48-4

Hazardous components

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Components</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>14808-60-7</td>
<td>Silica (fine dust)</td>
<td>53.28 %</td>
</tr>
<tr>
<td>1305-78-8</td>
<td>calcium oxide (mineral)</td>
<td>2.52 %</td>
</tr>
<tr>
<td>13463-67-7</td>
<td>titanium dioxide</td>
<td>0.72 %</td>
</tr>
</tbody>
</table>

4. First-aid measures

Description of first aid measures

**General information**
In all cases of doubt, or when symptoms persist, seek medical advice.

**After inhalation**
Provide fresh air. In case of irregular breathing or respiratory arrest provide artificial respiration. If experiencing respiratory symptoms: Call a doctor.

**After contact with skin**
Wash with plenty of water. Take off immediately all contaminated clothing and wash it before reuse. In case of skin reactions, consult a physician.

**After contact with eyes**
Rinse immediately carefully and thoroughly with eye-bath or water. Remove contact lenses, if present and easy to do. Continue rinsing. In case of eye irritation consult an ophthalmologist.

**After ingestion**
Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an unconscious person or a person with cramps. Call a physician immediately.

**Most important symptoms and effects, both acute and delayed**
No information available.

**Indication of any immediate medical attention and special treatment needed**
Treat symptomatically.

5. Fire-fighting measures

Extinguishing media

**Suitable extinguishing media**
Co-ordinate fire-fighting measures to the fire surroundings.
### Unsuitable extinguishing media

### Specific hazards arising from the chemical
- May form combustible dust concentrations in air.
- In case of fire: Carbon dioxide (CO2), Carbon monoxide (CO), Gases/vapours, irritant.

### Special protective equipment and precautions for fire-fighters
- Wear a self-contained breathing apparatus and chemical protective clothing. Full protection suit.

### Additional information
- Knock down dust with water spray jet. Suppress gases/vapours/mists with water spray jet. Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

### 6. Accidental release measures

#### Personal precautions, protective equipment and emergency procedures
- Keep away from sources of ignition - No smoking. Provide adequate ventilation. Avoid dust formation. Do not breathe dust. Avoid contact with skin, eyes and clothes. Use personal protection equipment. Remove persons to safety.

#### Environmental precautions
- Do not allow to enter into surface water or drains.

#### Methods and material for containment and cleaning up
- Take up mechanically. Treat the recovered material as prescribed in the section on waste disposal.

#### Reference to other sections
- Safe handling: see section 7
- Personal protection equipment: see section 8
- Disposal: see section 13

### 7. Handling and storage

#### Precautions for safe handling
- **Advice on safe handling**
  - If handled uncovered, arrangements with local exhaust ventilation have to be used. Avoid dust formation. Do not breathe dust. Wear personal protection equipment. Avoid contact with skin, eyes and clothes.

- **Advice on protection against fire and explosion**
  - May form combustible dust concentrations in air. Keep away from sources of ignition - No smoking.

#### Conditions for safe storage, including any incompatibilities
- **Requirements for storage rooms and vessels**
  - Keep container tightly closed. Keep locked up. Store in a place accessible by authorized persons only. Provide adequate ventilation as well as local exhaust at critical locations.

- **Hints on joint storage**
  - Do not store together with: Hydrofluoric acid; Fluorine; Oxidising agent, strong; Acid, concentrated.

### 8. Exposure controls/personal protection

#### Control parameters
Exposure limits

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>Substance</th>
<th>ppm</th>
<th>mg/m³</th>
<th>f/cc</th>
<th>Category</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1305-78-8</td>
<td>Calcium oxide</td>
<td>-</td>
<td>5</td>
<td></td>
<td>TWA (8 h)</td>
<td>PEL</td>
</tr>
<tr>
<td>1333-86-4</td>
<td>Carbon black (inhalable fraction)</td>
<td>3</td>
<td></td>
<td></td>
<td>TWA (8 h)</td>
<td>ACGIH-2019</td>
</tr>
<tr>
<td>9004-34-6</td>
<td>Cellulose (total)</td>
<td>10</td>
<td></td>
<td></td>
<td>TWA (8 h)</td>
<td>PEL</td>
</tr>
<tr>
<td>9004-34-6</td>
<td>Cellulose Respirable fraction</td>
<td>5</td>
<td></td>
<td></td>
<td>TWA (8 h)</td>
<td>PEL</td>
</tr>
<tr>
<td>9004-34-6</td>
<td>Cellulose Total dust</td>
<td>15</td>
<td></td>
<td></td>
<td>TWA (8 h)</td>
<td>PEL</td>
</tr>
<tr>
<td>1309-37-1</td>
<td>Iron oxide (Fe2O3) (respirable fraction)</td>
<td>5</td>
<td></td>
<td></td>
<td>TWA (8 h)</td>
<td>ACGIH-2019</td>
</tr>
<tr>
<td>1309-37-1</td>
<td>Iron oxide dust and fume (as Fe)</td>
<td>5</td>
<td></td>
<td></td>
<td>TWA (8 h)</td>
<td>REL</td>
</tr>
<tr>
<td>1309-37-1</td>
<td>Iron oxide fume</td>
<td>10</td>
<td></td>
<td></td>
<td>TWA (8 h)</td>
<td>PEL</td>
</tr>
<tr>
<td>1309-48-4</td>
<td>Magnesium oxide (inhalable fraction)</td>
<td>10</td>
<td></td>
<td></td>
<td>TWA (8 h)</td>
<td>ACGIH-2019</td>
</tr>
<tr>
<td>1309-48-4</td>
<td>Magnesium oxide fume Total Particulate</td>
<td>15</td>
<td></td>
<td></td>
<td>TWA (8 h)</td>
<td>PEL</td>
</tr>
<tr>
<td>14808-60-7</td>
<td>Silica, crystalline (as respirable dust)</td>
<td>0.025</td>
<td></td>
<td></td>
<td>TWA (8 h)</td>
<td>ACGIH-2019</td>
</tr>
<tr>
<td>14808-60-7</td>
<td>Silica, crystalline - alpha-quartz (respirable fraction)</td>
<td>(Z-3)</td>
<td>0.025</td>
<td></td>
<td>TWA (8 h)</td>
<td>PEL</td>
</tr>
<tr>
<td>14808-60-7</td>
<td>Silica, crystalline quartz, respirable dust</td>
<td>(Z-3)</td>
<td></td>
<td></td>
<td>TWA (8 h)</td>
<td>PEL</td>
</tr>
<tr>
<td>13463-67-7</td>
<td>Titanium dioxide Total dust</td>
<td>15</td>
<td></td>
<td></td>
<td>TWA (8 h)</td>
<td>PEL</td>
</tr>
<tr>
<td>13463-67-7</td>
<td>Titanium dioxide</td>
<td>10</td>
<td></td>
<td></td>
<td>TWA (8 h)</td>
<td>ACGIH-2019</td>
</tr>
<tr>
<td>1344-28-1</td>
<td>alpha-Alumina Respirable fraction</td>
<td>5</td>
<td></td>
<td></td>
<td>TWA (8 h)</td>
<td>PEL</td>
</tr>
<tr>
<td>1344-28-1</td>
<td>alpha-Alumina Total dust</td>
<td>15</td>
<td></td>
<td></td>
<td>TWA (8 h)</td>
<td>PEL</td>
</tr>
</tbody>
</table>

Exposure controls

**Appropriate engineering controls**

If handled uncovered, arrangements with local exhaust ventilation have to be used. If local exhaust ventilation is not possible or not sufficient, the entire working area should be ventilated by technical means.

**Protective and hygiene measures**

Do not breathe dust. Avoid dust formation. Draw up and observe skin protection programme. Wash hands and face before breaks and after work and take a shower if necessary. When using do not eat, drink, smoke, sniff. Avoid contact with skin, eyes and clothes.

**Eye/face protection**

Wear eye protection/face protection.

Suitable eye protection: Dust protection goggles.

**Hand protection**

Wear suitable gloves.

The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

**Skin protection**

Wear suitable protective clothing.
Respiratory protection
In case of inadequate ventilation wear respiratory protection. Respiratory protection necessary at:
Generation/formation of dust.

Suitable respiratory protective equipment: particulates filter device (DIN EN 143). Filtering device (full mask or
mouthpiece) with filter: FFP2 / N95; High efficiency particulate air filter (HEPA filter).

Environmental exposure controls
Avoid release to the environment.

9. Physical and chemical properties

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>solid</td>
</tr>
<tr>
<td>Color</td>
<td>grey</td>
</tr>
<tr>
<td>Odor</td>
<td>odourless</td>
</tr>
<tr>
<td>pH-Value</td>
<td>not determined</td>
</tr>
</tbody>
</table>

Changes in the physical state

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting point/freezing point</td>
<td>not determined</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>2980 °C</td>
</tr>
<tr>
<td>Flash point</td>
<td>210 °C</td>
</tr>
</tbody>
</table>

Flammability

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid</td>
<td>not applicable</td>
</tr>
<tr>
<td>Gas</td>
<td>not applicable</td>
</tr>
</tbody>
</table>

Explosive properties

The product is not: Explosive. May form combustible dust concentrations in air.

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower explosion limits</td>
<td>not determined</td>
</tr>
<tr>
<td>Upper explosion limits</td>
<td>not determined</td>
</tr>
<tr>
<td>Ignition temperature</td>
<td>not determined</td>
</tr>
</tbody>
</table>

Auto-ignition temperature

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid</td>
<td>407 °C</td>
</tr>
<tr>
<td>Gas</td>
<td>not applicable</td>
</tr>
</tbody>
</table>

Decomposition temperature: not determined

Oxidizing properties

Not oxidising.

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vapor pressure</td>
<td>not determined</td>
</tr>
<tr>
<td>(at 20 °C)</td>
<td></td>
</tr>
<tr>
<td>Density</td>
<td>~2 g/cm³</td>
</tr>
<tr>
<td>Water solubility</td>
<td>Immiscible</td>
</tr>
</tbody>
</table>

Solubility in other solvents

not determined

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partition coefficient</td>
<td>not determined</td>
</tr>
<tr>
<td>Viscosity / dynamic</td>
<td>not applicable</td>
</tr>
<tr>
<td>Viscosity / kinematic</td>
<td>not applicable</td>
</tr>
<tr>
<td>Vapor density</td>
<td>not determined</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>not determined</td>
</tr>
</tbody>
</table>

Other information

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid content</td>
<td>100,00 %</td>
</tr>
</tbody>
</table>
10. Stability and reactivity

Reactivity
No hazardous reaction when handled and stored according to provisions.

Chemical stability
Stability: Stable

The product is stable under storage at normal ambient temperatures.

Possibility of hazardous reactions
Hazardous reactions: May occur

Explosive reaction with: Hydrofluoric acid; Fluorine.
May form combustible dust concentrations in air.

Conditions to avoid
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Incompatible materials
Hydrofluoric acid; Fluorine; Oxidising agent, strong; Acid, concentrated.

Hazardous decomposition products

11. Toxicological information

Information on toxicological effects

Route(s) of Entry
Inhalation, Eye contact, dermal, oral.

Acute toxicity
Based on available data, the classification criteria are not met.

Irritation and corrosivity
Based on available data, the classification criteria are not met.

Sensitizing effects
Based on available data, the classification criteria are not met.

Carcinogenic/mutagenic/toxic effects for reproduction
Suspected of causing cancer (titanium dioxide)
Germ cell mutagenicity: Based on available data, the classification criteria are not met.
Reproductive toxicity: Based on available data, the classification criteria are not met.
Contains: Silica (fine dust).

Specific target organ toxicity (STOT) - single exposure
Based on available data, the classification criteria are not met.

Specific target organ toxicity (STOT) - repeated exposure
Causes damage to organs through prolonged or repeated exposure (Silica (fine dust))

Silicosis: The major concern is silicosis, caused by the inhalation and retention of respirable crystalline silica dust. Silicosis can exist in several forms, chronic (or ordinary), accelerated, or acute. Chronic or Ordinary Silicosis (often referred to as Simple Silicosis) is the most common form of silicosis, and can occur after many years of exposure to relatively low levels of airborne respirable crystalline silica dust. It is further defined as either simple or complicated silicosis. Simple silicosis is characterized by lung lesions (shown as radiographic opacities) less than 1 centimeter in diameter, primarily in the upper lung zones. Often, simple silicosis is not associated with symptoms, detectable changes in lung function or disability. Simple silicosis may be progressive and may develop into complicated silicosis or progressive massive fibrosis (PMF). Complicated silicosis or PMF is characterized by lung lesions (shown as radiographic opacities) greater than 1 centimeter in diameter. Although there may be no symptoms associated with complicated silicosis or PMF, the symptoms, if present, are shortness of breath, wheezing, cough and sputum production. Complicated silicosis or PMF may be associated with decreased lung function and may be disabling. Advanced complicated silicosis or PMF may lead to death. Advanced complicated silicosis or PMF can result in heart disease secondary to the lung disease (corpumpulare). Accelerated Silicosis can occur with exposure to high concentrations of respirable crystalline silica over a relatively short period; the lung lesions can appear within five (5) years of initial exposure. Progression can be rapid. Accelerated silicosis is similar to chronic or ordinary silicosis, except that lung lesions appear earlier and progression is more rapid. Acute Silicosis can occur with exposures to very high concentrations of respirable crystalline silica over a very short time period, sometimes as short as a few months. The symptoms of acute silicosis include progressive shortness of breath, fever, cough and weight loss. Acute silicosis is fatal.

Carcinogenicity (OSHA): No ingredient of this mixture is listed.

Carcinogenicity (IARC): Silica dust, crystalline, in the form of quartz or cristobalite (CAS 14808-60-7) is listed in group 1. Carbon black (CAS 1333-86-4) is listed in group 2B. Ferric oxide (CAS 1309-37-1) is listed in group 3. Titanium dioxide (CAS 13463-67-7) is listed in group 2B.

Carcinogenicity (NTP): No ingredient of this mixture is listed.

Aspiration hazard

Based on available data, the classification criteria are not met.

Further information

Inhalation of dust may cause irritation of the respiratory system. The following symptoms may occur:
Respiratory complaints, Cough.

Extended inhalation at levels above the workplace limit value can cause irreversible damage to the lungs (silicosis). Symptoms: Respiratory complaints, Fever, Cough. acute Symptoms: Fatal if inhaled.

Skin contact: slightly irritant but not relevant for classification.
After eye contact: slightly irritant but not relevant for classification.

After ingestion: Gastrointestinal complaints, Nausea, Vomiting.

12. Ecological information

Ecotoxicity

The product is not: Ecotoxic.

Persistence and degradability

The product has not been tested.

Bioaccumulative potential

The product has not been tested.

Mobility in soil

The product has not been tested.

Other adverse effects

No information available.
Further information
Avoid release to the environment.

13. Disposal considerations

Waste treatment methods

Disposal recommendations
Dispose of waste according to applicable legislation.

Contaminated packaging
Dispose of waste according to applicable legislation.

14. Transport information

US DOT 49 CFR 172.101
Proper shipping name: Not a hazardous material with respect to these transport regulations.

Marine transport (IMDG)
UN number: No dangerous good in sense of this transport regulation.
UN proper shipping name: No dangerous good in sense of this transport regulation.
Transport hazard class(es): No dangerous good in sense of this transport regulation.
Packing group: No dangerous good in sense of this transport regulation.

Air transport (ICAO-TI/IATA-DGR)
UN number: No dangerous good in sense of this transport regulation.
UN proper shipping name: No dangerous good in sense of this transport regulation.
Transport hazard class(es): No dangerous good in sense of this transport regulation.
Packing group: No dangerous good in sense of this transport regulation.

Environmental hazards
ENVIRONMENTALLY HAZARDOUS: no

Special precautions for user
No information available.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
not applicable

15. Regulatory information

U.S. Regulations

National Inventory TSCA
CAS No. 14808-60-7: Yes.
CAS No. 13463-67-7: Yes.
CAS No. 1305-78-8: Yes.
CAS No. 1333-86-4: Yes.
CAS No. 9004-34-6: Yes.
CAS No. 1344-28-1: Yes.
CAS No. 12136-45-7: Yes.
CAS No. 1313-59-3: Yes.
CAS No. 1309-37-1: Yes.
CAS No. 1309-48-4: Yes.

National regulatory information
SARA Section 311/312 Hazards:
Silica (fine dust) (14808-60-7): Delayed (chronic) health hazard
calcium oxide (mineral) (1305-78-8): Immediate (acute) health hazard
titanium dioxide (13463-67-7): Delayed (chronic) health hazard
SARA Section 313 Toxic release inventory:
Aluminum oxide (fibrous forms) (1344-28-1): De minimis limit = 1.0 %, Reportable threshold = Standard

State Regulations

Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65, State of California)
This product can not expose you to chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

16. Other information

Hazardous Materials Information Label (HMIS)
Health: *3
Flammability: 1
Physical Hazard: 0

NFPA Hazard Ratings
Health: 3
Flammability: 1
Reactivity: 1
Unique Hazard:
Revision date: 06.04.2020
Revision No: 1,00

Abbreviations and acronyms
ACGIH: American Conference of Governmental Industrial Hygienists
CFR: Code of Federal Regulations
DOT: Department of Transportation
ICAO: International Civil Aviation Organization
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
IARC: International Agency for Research on Cancer
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
CAS: Chemical Abstracts Service
NFPA: National Fire Protection Association
NTP: National Toxicology Program
OSHA: Occupational Safety and Health Administration
PEL: permissible exposure limit
REL: recommended exposure limit
SARA: Superfund Amendments and Reauthorization Act
STEL: Short-term exposure limit
TSCA: Toxic Substances Control Act
TWA: time-weighted average
TI: Technical Instructions
DGR: Dangerous Goods Regulations
UN: United Nations
ATE: Acute toxicity estimate
LC50: Lethal concentration, 50%
LD50: Lethal dose, 50%
LL50: Lethal loading, 50%
EL50: Effect loading, 50%
EC50: Effective Concentration 50%
ErC50: Effective Concentration 50%, growth rate
NOEC: No Observed Effect Concentration
BCF: Bio-concentration factor
MARPOL: International Convention for the Prevention of Marine Pollution from Ships
The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

(Per the data for the hazardous ingredients were taken respectively from the last version of the sub-contractor’s safety data sheet.)