This SDS packet was issued with item:
070831586

The safety data sheets (SDS) in this packet apply to the individual products listed below. Please refer to invoice for specific item number(s).

071631514 071631530

The safety data sheets (SDS) in this packet apply to one or more components included in the items listed below. Items listed below may require one or more SDS. Please refer to invoice for specific item number(s).

070831578 070831602
Section 1. Chemical product & company identification

PRODUCT NAME: WHITE ALUMINIUM OXIDE
PRODUCT NAME/SYNONYMS: DURALUM SPECIAL WHITE - AB, BP, RF, SK
MOLECULAR FORMULA: Al₂O₃
HMIS
  HEALTH: 1
  FLAMMABILITY: 0
  PHYSICAL HAZARD: 0
  Personal Protection: E

PREPARATION/REVISION DATE: 2.2010

Section 2. Composition/information on ingredients

CHEMICAL NAME: Aluminum Oxide (non-fibrous)
CAS NO.: 1344-28-1
EINECS: 215-691-6
% BY WEIGHT: 99.5 – 99.76
OSHA PEL
  Total (TWA) 15 mg/m³
  Respirable (TWA) 5 mg/m³

CHEMICAL NAME: IMPURITIES
  SiO₂ + Fe₃O₃ + Na₂O + CaO + MgO + TiO₂
% BY WEIGHT: < 1.0

Section 3. Hazard Identification/Potential Health Effects

Emergency Overview: Dust irritating to eyes and respiratory tract

EYE
  Mechanical eye irritant. May cause tearing and redness.

SKIN
  Mechanical skin irritant. Prolonged contact may cause skin abrasion, redness, itching.

SENSITIZATION
  No data available

INGESTION
  May cause nausea and vomiting. No long-term health effects are anticipated.

INHALATION
  Dust may be slightly irritating to respiratory tract. May cause coughing or shortness of breath.

TARGET ORGANS
  Eyes, skin, respiratory system

ACUTE EFFECTS of EXPOSURE
  Exposure may include persistent cough, shortness of breath.

CHRONIC EFFECTS of EXPOSURE
  N/A

SIGNS & SYMPTOMS of EXPOSURE
  Coughing, shortness of breath

Section 4. First Aid Measures

EYES
  Flush eyes with large amounts of water. If signs/symptoms persist, seek medical attention.

SKIN
  Wash affected area with soap and water. If signs/symptoms persist, seek medical attention.

INHALATION
  Remove person to fresh air. If signs/symptoms develop,
seek medical attention.

INGESTION
Ingestion is an unlikely route of exposure. Leave decision to induce vomiting to qualified medical personnel, since particles may be aspirated into the lungs. Seek immediate medical attention.

Section 5. Fire Fighting Measures
COMBUSTIBLE PROPERTIES
None
EXTINGUISHING MEDIA
Extinguisher suitable for ordinary combustible materials. Class A extinguishing agents.
SPECIAL FIRE FIGHTING PROCEDURES
In fire conditions, fire-fighters should wear appropriate respiratory protection and full protective gear.
FIRE & EXPLOSION HAZARDS
Not applicable. None inherent in this product.

Section 6. Accidental Release Measures
PERSONAL SAFETY PRECAUTIONS
Avoid creating dust. Avoid contact with skin and eyes. Use with adequate ventilation.
ENVIRONMENTAL PRECAUTIONS
Ensure material is properly disposed of.
CLEANUP MEASURES
Collect spilled material mechanically and place in a suitable, compatible, properly labeled container. Avoid creating any dust. Ensure adequate ventilation and dispose of material in accordance with all applicable local, state and federal laws.

Section 7. Handling & Storage
HANDLING
Avoid contact with skin and eyes. Wash hands before eating. Prevent the formation of dust. Handle with adequate ventilation.
STORAGE
Normal Storage: Store in the original container in a cool, dry well ventilated area. Keep containers tightly sealed.

Section 8. Handling & Storage
ENGINEERING CONTROLS
Provide sufficient mechanical ventilation to reduce airborne concentrations and minimize exposure. Maintain employee exposure below applicable permissible exposure limits.
HYGIENIC MEASURES
Do not inhale dust/smoke/mist. Avoid contact with skin and eyes. Wash hands before eating.
RESPIRATORY PROTECTION
Avoid breathing dust. Assess exposure concentrations of all materials involved in the workplace. If concentrations exceed the exposure limits listed in Section 2, Exposure Guidelines, or irritation or other symptoms are experienced, follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard 149 approved respirator.
EYE PROTECTION
Avoid eye contact. To minimize the risk of injury to eyes, always wear appropriate protective safety glasses or chemical safety goggles.
SKIN PROTECTION
Avoid skin contact. Wear appropriate protective clothing to minimize risk of injury to skin from contact with dust or physical abrasion.
Section 9. Physical & Chemical Properties

FORMULA  Al2O3
PHYSICAL STATE  Solid-granular
BOILING POINT  N/A
MELTING POINT  2100°C
pH at 20°  N/A
APPEARANCE  White
ODOR  Odorless
FLASH POINT  N/A
DECOMPOSITION TEMPERATURE  N/A
VAPOR PRESSURE  N/A
VAPOR DENSITY  N/A
EXPLOSIVE PROPERTIES  None
SOLUBILITY  Insoluble
OXIDIZING PROPERTIES  N/A
SPECIFIC GRAVITY  3.6
BULK DENSITY  N/A

Section 10. Stability & Reactivity

THERMAL DECOMPOSITION  N/A
INCOMPATIBILITY  N/A
CONDITIONS TO AVOID  None known
HAZARDOUS DECOMPOSITION PRODUCTS  None expected
DANGEROUS REACTIONS  None known
HAZARDOUS POLYMERIZATION  Will not occur

Section 11. Toxological Information

CAS # 1344-28-1

COMPONENT ANALYSIS LD50/LC50
CARCINOGENICITY
EPIDEMIOLOGY
TERATOGENICITY  Data Not Available
NEUROTOXICITY
MUTAGENICITY
REPRODUCTIVE EFFECTS

Section 12. Ecological Information

ECOTOXICITY  Not Available

Section 13. Disposal Considerations

Solid or chemical waste generators must determine whether a discarded waste is classified as a hazardous waste. U.S. EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local waste regulations to ensure complete and accurate classification.
Section 14. Transportation Information

DOT This product is not regulated by USDOT as a Hazardous Material (49 CFR 172.101). No UN code assigned. No placard required for transportation.

IMDG Not regulated as a Hazardous Material.

ACAO/IATA Not regulated as a Hazardous Material.

EU (ADR, RID) Not regulated as a Hazardous Material.

Section 15. Regulatory Information

TSCA Aluminum Oxide is listed on the TSCA inventory under CAS# 1344-28-1

RCRA Aluminum Oxide is not classified as a hazardous material under RCRA or its regulations, 40 CFR 261.

CERCLA Aluminum Oxide is not classified as a hazardous substance under CERCLA regulations, 40 CFR 302.

SARA Aluminum Oxide is not an extremely hazardous substance in Section 302 and is not a toxic chemical subject to the requirements of 313.

The information above is believed to be accurate and represents the best information currently available to ceroglass. However, ceroglass makes no warranty of merchantability or any other warranty, express or implied, with respect to such information, and assumes no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall ceroglass be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if ceroglass has been advised of the possibility of such damages.
SECTION 1: Identification

Product identifier

Product name: Patterson Aluminum Oxide
Product code: 071631514, 071631530, 070831578, 070831586, 070831602

Recommended use of the product and restriction on use

Relevant identified uses: Not determined or not applicable.
Uses advised against: Not determined or not applicable.
Reasons why uses advised against: For professional dental applications.

Manufacturer or supplier details

Manufacturer:
Patterson Companies, Inc.
1031 Mendota Heights Road
St. Paul, MN 55120
1-800-328-5536 Fax:1-651-686-9331

Emergency telephone number:
United States CHEMTREC
Within USA and Canada: 1-800-424-9300 (CHEMTREC, 24 hours)
Outside USA and Canada: +1-703-527-3887 (CHEMTREC, 24 hours)

SECTION 2: Hazard(s) identification

GHS classification:
Carcinogenicity, category 2

Label elements

Hazard pictograms:

Signal word: Warning

Hazard statements:
H351 Suspected of causing cancer

Precautionary statements:
P201 Obtain special instructions before use
P202 Do not handle until all safety precautions have been read and understood
P281 Use personal protective equipment as required
P308+P313 If exposed or concerned: Get medical advice/attention
Patterson Aluminum Oxide

P405 Store locked up
P501 Dispose of contents and container as instructed in Section 13

Hazards not otherwise classified: None

SECTION 3: Composition/information on ingredients

<table>
<thead>
<tr>
<th>Identification</th>
<th>Name</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS number: 13463-67-7</td>
<td>Titanium Oxide</td>
<td>2.7</td>
</tr>
<tr>
<td>CAS number: 1344-28-1</td>
<td>Aluminum Oxide</td>
<td>96.4</td>
</tr>
<tr>
<td>CAS number: 7631-86-9</td>
<td>Silicon Dioxide</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Additional Information: None

SECTION 4: First aid measures

Description of first aid measures

General notes:
Not determined or not applicable.

After inhalation:
Loosen clothing as necessary and position individual in a comfortable position
Maintain an unobstructed airway
Get medical advice/attention if you feel unwell

After skin contact:
Rinse affected area with soap and water
If symptoms develop or persist, seek medical attention

After eye contact:
Rinse/flush exposed eye(s) gently using water for 15-20 minutes
If symptoms develop or persist, seek medical attention

After swallowing:
Rinse mouth thoroughly
Seek medical attention if irritation, discomfort, or vomiting persists

Most important symptoms and effects, both acute and delayed

Acute symptoms and effects:
Not determined or not applicable.

Delayed symptoms and effects:
Not determined or not applicable.

Immediate medical attention and special treatment

Specific treatment:
Not determined or not applicable.

Notes for the doctor:
Not determined or not applicable.

SECTION 5: Firefighting measures

Extinguishing media
Suitable extinguishing media:
Use appropriate fire suppression agents for adjacent combustible materials or sources of ignition

Unsuitable extinguishing media:
Not determined or not applicable.

Specific hazards during fire-fighting:
Thermal decomposition can lead to release of irritating gases and vapors

Special protective equipment for firefighters:
Use typical firefighting equipment, self-contained breathing apparatus, special tightly sealed suit

Special precautions:
Carbon monoxide and carbon dioxide may form upon combustion
Heating causes a rise in pressure, risk of bursting and combustion

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures:
Ensure adequate ventilation
Ensure air handling systems are operational
Wear protective eye wear, gloves and clothing

Environmental precautions:
Should not be released into the environment
Prevent from reaching drains, sewer or waterway

Methods and material for containment and cleaning up:
Wear protective eye wear, gloves and clothing
Sweep or scoop up solid material while minimizing dust generation
Dispose of contents / container in accordance with local regulations

Reference to other sections:
Not determined or not applicable.

SECTION 7: Handling and storage

Precautions for safe handling:
Use only with adequate ventilation.
Avoid breathing dust.
Do not eat, drink, smoke or use personal products when handling chemical substances.

Conditions for safe storage, including any incompatibilities:
Keep container tightly sealed.
Keep container dry.
Store in a cool, well-ventilated area.

SECTION 8: Exposure controls/personal protection

Only those substances with limit values have been included below.

Occupational Exposure limit values:

<table>
<thead>
<tr>
<th>Country (Legal Basis)</th>
<th>Substance</th>
<th>Identifier</th>
<th>Permissible concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States (OSHA)</td>
<td>Aluminum Oxide</td>
<td>1344-28-1</td>
<td>OSHA PEL TWA 15.0 mg/m³ (total dust)</td>
</tr>
<tr>
<td></td>
<td>Aluminum Oxide</td>
<td>1344-28-1</td>
<td>OSHA PEL TWA 5.0 mg/m³ (respirable fraction)</td>
</tr>
<tr>
<td></td>
<td>Silicon Dioxide</td>
<td>7631-86-9</td>
<td>OSHA PEL 8 Hour TWA: 15 mg/m³</td>
</tr>
</tbody>
</table>
Country (Legal Basis) | Substance | Identifier | Permissible concentration
--- | --- | --- | ---
 | Titanium Oxide | 13463-67-7 | OSHA PEL TWA 15 mg/m³ (Total dust)
ACGIH | Aluminum Oxide | 1344-28-1 | ACGIH TLV TWA 1.0 mg/m³ (respirable fraction)
 | Titanium Oxide | 13463-67-7 | ACGIH TLV TWA 10.0 mg/m³
NIOSH | Silicon Dioxide | 7631-86-9 | NIOSH 10 hr Time Weighted Avg (TWA): 6 mg/m³
 | Silicon Dioxide | 7631-86-9 | NIOSH IDLH: 3000 mg/m³

Biological limit values:
No biological exposure limits noted for the ingredient(s).

Information on monitoring procedures:
Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. Biological monitoring may also be appropriate for some substances.

Appropriate engineering controls:
Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor and mists below the applicable workplace exposure limits (Occupational Exposure Limits-OELs) indicated above.

Personal protection equipment

Eye and face protection:
Safety goggles or glasses, or appropriate eye protection.

Skin and body protection:
Select glove material impermeable and resistant to the substance. Wear appropriate clothing to prevent any possibility of skin contact.

Respiratory protection:
If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.

General hygienic measures:
Avoid contact with skin, eyes and clothing. Wash hands before breaks and at the end of work. Wash contaminated clothing before reuse.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Powder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odor</td>
<td>Not determined or not available.</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>Not determined or not available.</td>
</tr>
<tr>
<td>pH</td>
<td>9.4 - 10.1</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>Not determined or not available.</td>
</tr>
<tr>
<td>Initial boiling point/range</td>
<td>Not determined or not available.</td>
</tr>
<tr>
<td>Flash point (closed cup)</td>
<td>5,396 °F (2,980°C)</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not determined or not available.</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not determined or not available.</td>
</tr>
</tbody>
</table>
Safety Data Sheet

Initial preparation date: 11.21.2017

Patterson Aluminum Oxide

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper flammability/explosive limit</td>
<td>Not determined or not available.</td>
</tr>
<tr>
<td>Lower flammability/explosive limit</td>
<td>Not determined or not available.</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>Not determined or not available.</td>
</tr>
<tr>
<td>Vapor density</td>
<td>Not determined or not available.</td>
</tr>
<tr>
<td>Density</td>
<td>Not determined or not available.</td>
</tr>
<tr>
<td>Relative density</td>
<td>Not determined or not available.</td>
</tr>
<tr>
<td>Solubilities</td>
<td>Not determined or not available.</td>
</tr>
<tr>
<td>Partition coefficient (n-octanol/water)</td>
<td>Not determined or not available.</td>
</tr>
<tr>
<td>Auto/Self-ignition temperature</td>
<td>Not determined or not available.</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not determined or not available.</td>
</tr>
<tr>
<td>Dynamic viscosity</td>
<td>Not determined or not available.</td>
</tr>
<tr>
<td>Kinematic viscosity</td>
<td>Not determined or not available.</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not determined or not available.</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>Not determined or not available.</td>
</tr>
</tbody>
</table>

Other information

SECTION 10: Stability and reactivity

Reactivity:
- Does not react under normal conditions of use and storage.

Chemical stability:
- Stable under normal conditions of use and storage.

Possibility of hazardous reactions:
- None under normal conditions of use and storage.

Conditions to avoid:
- None known.

Incompatible materials:
- None known.

Hazardous decomposition products:
- None known.

SECTION 11: Toxicological information

Acute toxicity
- Assessment: Based on available data, the classification criteria are not met.
- Product data: No data available.
- Substance data: No data available.

Skin corrosion/irritation
- Assessment: Based on available data, the classification criteria are not met.
- Product data: No data available.
- Substance data: No data available.

Serious eye damage/irritation
- Assessment: Based on available data, the classification criteria are not met.
- Product data: No data available.
- Substance data: No data available.
Respiratory or skin sensitization
- **Assessment:** Based on available data, the classification criteria are not met.
- **Product data:** No data available.
- **Substance data:** No data available.

Carcinogenicity
- **Assessment:** Suspected of causing cancer
- **Product data:** No data available.
- **Substance data:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Species</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium Oxide</td>
<td></td>
<td>Airborne, unbound particles of respirable size are known to cause cancer.</td>
</tr>
</tbody>
</table>

International Agency for Research on Cancer (IARC):
- **Name**
- **Classification**

<table>
<thead>
<tr>
<th>Name</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicon Dioxide</td>
<td>Group 3 - Not classifiable as to its carcinogenicity to humans</td>
</tr>
<tr>
<td>Titanium Oxide</td>
<td>Group 2B - Possibly carcinogenic to humans</td>
</tr>
</tbody>
</table>

National Toxicology Program (NTP): None of the ingredients are listed.

Germ cell mutagenicity
- **Assessment:** Based on available data, the classification criteria are not met.
- **Product data:** No data available.
- **Substance data:** No data available.

Reproductive toxicity
- **Assessment:** Based on available data, the classification criteria are not met.
- **Product data:** No data available.
- **Substance data:** No data available.

Specific target organ toxicity (single exposure)
- **Assessment:** Based on available data, the classification criteria are not met.
- **Product data:** No data available.
- **Substance data:** No data available.

Specific target organ toxicity (repeated exposure)
- **Assessment:** Based on available data, the classification criteria are not met.
- **Product data:** No data available.
- **Substance data:** No data available.

Aspiration toxicity
- **Assessment:** Based on available data, the classification criteria are not met.
- **Product data:** No data available.
- **Substance data:** No data available.

Information on likely routes of exposure:
No data available.

Symptoms related to the physical, chemical and toxicological characteristics:
No data available.
SECTION 12: Ecological information

Acute (short-term) toxicity
   Assessment: Based on available data, the classification criteria are not met.
   Product data: No data available.
   Substance data: No data available.

Chronic (long-term) toxicity
   Product data: No data available.
   Substance data: No data available.

Persistence and degradability
   Product data: No data available.
   Substance data: No data available.

Bioaccumulative potential
   Product data: No data available.
   Substance data: No data available.

Mobility in soil
   Product data: No data available.
   Substance data: No data available.

Other adverse effects: No data available.

SECTION 13: Disposal considerations

Disposal methods:
   It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities.

SECTION 14: Transport information

United States Transportation of dangerous goods (49 CFR DOT)

<table>
<thead>
<tr>
<th>UN number</th>
<th>Not regulated</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN proper shipping name</td>
<td>Not regulated</td>
</tr>
<tr>
<td>UN transport hazard class(es)</td>
<td>None</td>
</tr>
<tr>
<td>Packing group</td>
<td>None</td>
</tr>
<tr>
<td>Environmental hazards</td>
<td>None</td>
</tr>
<tr>
<td>Special precautions for user</td>
<td>None</td>
</tr>
</tbody>
</table>

International Maritime Dangerous Goods (IMDG)

<table>
<thead>
<tr>
<th>UN number</th>
<th>Not regulated</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN proper shipping name</td>
<td>Not regulated</td>
</tr>
<tr>
<td>UN transport hazard class(es)</td>
<td>None</td>
</tr>
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<td>Packing group</td>
<td>None</td>
</tr>
<tr>
<td>Environmental hazards</td>
<td>None</td>
</tr>
<tr>
<td>Special precautions for user</td>
<td>None</td>
</tr>
</tbody>
</table>

International Air Transport Association Dangerous Goods Regulations (IATA-DGR)
SECTION 15: Regulatory information

United States regulations

Inventory listing (TSCA):

<table>
<thead>
<tr>
<th>UN number</th>
<th>Substance</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1344-28-1</td>
<td>Aluminum Oxide</td>
<td>Listed</td>
</tr>
<tr>
<td>7631-86-9</td>
<td>Silicon Dioxide</td>
<td>Listed</td>
</tr>
<tr>
<td>13463-67-7</td>
<td>Titanium Oxide</td>
<td>Listed</td>
</tr>
</tbody>
</table>

Significant New Use Rule (TSCA Section 5): Not determined.

Export notification under TSCA Section 12(b): Not determined.

SARA Section 302 extremely hazardous substances: Not determined.

SARA Section 313 toxic chemicals:

<table>
<thead>
<tr>
<th>UN number</th>
<th>Substance</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1344-28-1</td>
<td>Aluminum Oxide</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

CERCLA: Not determined.

RCRA: Not determined.

Section 112(r) of the Clean Air Act (CAA): Not determined.

Massachusetts Right to Know: Not determined.

New Jersey Right to Know: Not determined.

New York Right to Know: Not determined.

Pennsylvania Right to Know: Not determined.

California Proposition 65:

WARNING: This product contains a chemical known to the State of California to cause cancer.

<table>
<thead>
<tr>
<th>UN number</th>
<th>Substance</th>
</tr>
</thead>
<tbody>
<tr>
<td>13463-67-7</td>
<td>Titanium Oxide</td>
</tr>
</tbody>
</table>

SECTION 16: Other information

Abbreviations and Acronyms: None

Disclaimer:

This product has been classified in accordance with OSHA HCS 2012 guidelines. The information provided in this SDS is correct, to the best of our knowledge, based on information available. The information given is designed only as a guidance for safe handling, use, storage, transportation and disposal and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials, unless specified in the text. The responsibility to provide a safe workplace remains with the user.

Initial preparation date: 11.21.2017

End of Safety Data Sheet