



## Safety Data Sheet

Copyright, 2023, 3M Company.

All rights reserved. Copying and/or downloading of this information for the purpose of properly utilizing 3M products is allowed provided that: (1) the information is copied in full with no changes unless prior written agreement is obtained from 3M, and (2) neither the copy nor the original is resold or otherwise distributed with the intention of earning a profit thereon.

**Document Group:** 19-2381-2 **Version Number:** 9.01  
**Issue Date:** 03/23/23 **Supersedes Date:** 03/23/23

### SECTION 1: Identification

#### 1.1. Product identifier

3M™ Ceramic Mineral Abrasive Grain 321

#### 1.2. Recommended use and restrictions on use

##### Recommended use

Ceramic Mineral, For industrial/occupational use only. Not for consumer sale or use.

#### 1.3. Supplier's details

**MANUFACTURER:** 3M  
**DIVISION:** Abrasive Systems Division  
**ADDRESS:** 3M Center, St. Paul, MN 55144-1000, USA  
**Telephone:** 1-888-3M HELPS (1-888-364-3577)

#### 1.4. Emergency telephone number

1-800-364-3577 or (651) 737-6501 (24 hours)

### SECTION 2: Hazard identification

#### 2.1. Hazard classification

Not classified as hazardous according to OSHA Hazard Communication Standard, 29 CFR 1910.1200.

#### 2.2. Label elements

##### Signal word

Not applicable.

##### Symbols

Not applicable.

##### Pictograms

Not applicable.

4% of the mixture consists of ingredients of unknown acute oral toxicity.

### SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
Aluminum Oxide (non-fibrous)	1344-28-1	99 - 100

Aluminum Cobalt Oxide	12672-27-4	<= 0.25 Trade Secret *
Titanium Dioxide	13463-67-7	<= 0.6 Trade Secret *

\*The specific chemical identity and/or exact percentage (concentration) of this composition has been withheld as a trade secret.

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

**Inhalation:**

No need for first aid is anticipated. If symptoms develop, remove the affected person to fresh air. Get medical attention.

**Skin Contact:**

Wash with soap and water. If signs/symptoms develop, get medical attention.

**Eye Contact:**

Flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms persist, get medical attention.

**If Swallowed:**

Do not induce vomiting. Rinse mouth. If you feel unwell, get medical attention.

### 4.2. Most important symptoms and effects, both acute and delayed

No critical symptoms or effects. See Section 11.1, information on toxicological effects.

### 4.3. Indication of any immediate medical attention and special treatment required

Not applicable.

## SECTION 5: Fire-fighting measures

### 5.1. Suitable extinguishing media

Material will not burn. Use a fire fighting agent suitable for the surrounding fire.

### 5.2. Special hazards arising from the substance or mixture

None inherent in this product.

### Hazardous Decomposition or By-Products

Substance

None known.

Condition

During Combustion

### 5.3. Special protective actions for fire-fighters

No special protective actions for fire-fighters are anticipated.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapors, in accordance with good industrial hygiene practice. Observe precautions from other sections.

### 6.2. Environmental precautions

Not applicable.

### 6.3. Methods and material for containment and cleaning up

Not applicable.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Solids can generate static electricity charges when transferred and in mixing operations sufficient to be an ignition source. Evaluate the need for precautions, such as grounding and bonding, low energy transfer of material (e.g. low speed, short distance), or inert atmospheres.

### 7.2. Conditions for safe storage including any incompatibilities

No special storage requirements.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### Occupational exposure limits

If a component is disclosed in section 3 but does not appear in the table below, an occupational exposure limit is not available for the component.

Ingredient	C.A.S. No.	Agency	Limit type	Additional Comments
Aluminum, insoluble compounds	12672-27-4	ACGIH	TWA(respirable fraction):1 mg/m <sup>3</sup>	A4: Not class. as human carcin
Cobalt, inorganic compounds	12672-27-4	ACGIH	TWA(as Co, inhalable fraction):0.02 mg/m <sup>3</sup> ;TWA(as Co):0.02 mg/m <sup>3</sup>	A3: Confirmed animal carcin., Dermal/Respiratory Sensitizer
Aluminum Oxide (non-fibrous)	1344-28-1	OSHA	TWA(as total dust):15 mg/m <sup>3</sup> ;TWA(respirable fraction):5 mg/m <sup>3</sup>	
Aluminum, insoluble compounds	1344-28-1	ACGIH	TWA(respirable fraction):1 mg/m <sup>3</sup>	A4: Not class. as human carcin
Titanium Dioxide	13463-67-7	ACGIH	TWA(Respirable nanoscale particles):0.2 mg/m <sup>3</sup> ;TWA(Respirable finescale particles):2.5 mg/m <sup>3</sup>	A3: Confirmed animal carcin.
Titanium Dioxide	13463-67-7	OSHA	TWA(as total dust):15 mg/m <sup>3</sup>	

ACGIH : American Conference of Governmental Industrial Hygienists

AIHA : American Industrial Hygiene Association

CMRG : Chemical Manufacturer's Recommended Guidelines

OSHA : United States Department of Labor - Occupational Safety and Health Administration

TWA: Time-Weighted-Average

STEL: Short Term Exposure Limit

CEIL: Ceiling

### 8.2. Exposure controls

#### 8.2.1. Engineering controls

Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment.

#### 8.2.2. Personal protective equipment (PPE)

##### Eye/face protection

To minimize the risk of injury to face and eyes, always wear eye and face protection when working at sanding or grinding operations or when near such operations. Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:

Safety Glasses with side shields

**Skin/hand protection**

Wear appropriate gloves to minimize risk of injury to skin from contact with dust or physical abrasion from grinding or sanding.

**Respiratory protection**

Assess exposure concentrations of all materials involved in the work process. Consider material being abraded when determining the appropriate respiratory protection. Select and use appropriate respirators to prevent inhalation overexposure.

An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure:

Half facepiece or full facepiece air-purifying respirator suitable for particulates

For questions about suitability for a specific application, consult with your respirator manufacturer.

**SECTION 9: Physical and chemical properties****9.1. Information on basic physical and chemical properties****Appearance****Physical state**

Solid

**Color**

Blue

**Specific Physical Form:**

Mineral

**Odor**

Odorless

**Odor threshold***Not Applicable***pH***Not Applicable***Melting point***Not Applicable***Boiling Point***Not Applicable***Flash Point**

No flash point

**Evaporation rate***Not Applicable***Flammability (solid, gas)**

Not Classified

**Flammable Limits(LEL)**

None detected

**Flammable Limits(UEL)**

None detected

**Vapor Pressure***No Data Available***Vapor Density***Not Applicable***Density***No Data Available***Specific Gravity**

3.8 - 4.0 [Ref Std: WATER=1]

**Solubility in Water***Not Applicable***Solubility- non-water***Not Applicable***Partition coefficient: n-octanol/ water***No Data Available***Autoignition temperature***Not Applicable***Decomposition temperature***Not Applicable***Viscosity***Not Applicable***Molecular weight***Not Applicable***Percent volatile***Not Applicable***SECTION 10: Stability and reactivity****10.1. Reactivity**

This material is considered to be non reactive under normal use conditions.

**10.2. Chemical stability**

Stable.

**10.3. Possibility of hazardous reactions**

Hazardous polymerization will not occur.

**10.4. Conditions to avoid**

None known.

**10.5. Incompatible materials**

None known.

**10.6. Hazardous decomposition products**

**Substance**

**Condition**

None known.

Refer to section 5.2 for hazardous decomposition products during combustion.

**SECTION 11: Toxicological information**

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

**11.1. Information on Toxicological effects**

**Signs and Symptoms of Exposure**

Based on test data and/or information on the components, this material may produce the following health effects:

**Inhalation:**

No known health effects.

**Skin Contact:**

Mechanical Skin irritation: Signs/symptoms may include abrasion, redness, pain, and itching.

**Eye Contact:**

Mechanical eye irritation: Signs/symptoms may include pain, redness, tearing and corneal abrasion.

**Ingestion:**

No known health effects.

**Carcinogenicity:**

<b>Ingredient</b>	<b>CAS No.</b>	<b>Class Description</b>	<b>Regulation</b>
Titanium dioxide	13463-67-7	Grp. 2B: Possible human carc.	International Agency for Research on Cancer

**Additional Information:**

This document covers only the 3M product. For complete assessment, when determining the degree of hazard, the material being abraded must also be considered.

This product contains titanium dioxide. Cancer of the lungs has been observed in rats that inhaled high levels of titanium dioxide. No exposure to inhaled titanium dioxide is expected during the normal handling and use of this product. Titanium dioxide was not detected when air sampling was conducted during simulated use of similar products containing titanium dioxide. Therefore, the health effects associated with titanium dioxide are not expected during the normal use of this product.

**Toxicological Data**

If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

**Acute Toxicity**

Name	Route	Species	Value
Overall product	Ingestion		No data available; calculated ATE >5,000 mg/kg
Aluminum Oxide (non-fibrous)	Dermal		LD50 estimated to be > 5,000 mg/kg
Aluminum Oxide (non-fibrous)	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 2.3 mg/l
Aluminum Oxide (non-fibrous)	Ingestion	Rat	LD50 > 5,000 mg/kg
Titanium Dioxide	Dermal	Rabbit	LD50 > 10,000 mg/kg
Titanium Dioxide	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 6.82 mg/l
Titanium Dioxide	Ingestion	Rat	LD50 > 10,000 mg/kg
Aluminum Cobalt Oxide	Dermal	Professional judgement	LD50 estimated to be > 5,000 mg/kg
Aluminum Cobalt Oxide	Ingestion	Rat	LD50 > 2,000 mg/kg

ATE = acute toxicity estimate

**Skin Corrosion/Irritation**

Name	Species	Value
Aluminum Oxide (non-fibrous)	Rabbit	No significant irritation
Titanium Dioxide	Rabbit	No significant irritation
Aluminum Cobalt Oxide	In vitro data	No significant irritation

**Serious Eye Damage/Irritation**

Name	Species	Value
Aluminum Oxide (non-fibrous)	Rabbit	No significant irritation
Titanium Dioxide	Rabbit	No significant irritation
Aluminum Cobalt Oxide	In vitro data	No significant irritation

**Skin Sensitization**

Name	Species	Value
Titanium Dioxide	Human and animal	Not classified
Aluminum Cobalt Oxide	similar compounds	Sensitizing

**Respiratory Sensitization**

Name	Species	Value
Aluminum Cobalt Oxide	similar compounds	Sensitizing

**Germ Cell Mutagenicity**

Name	Route	Value
Aluminum Oxide (non-fibrous)	In Vitro	Not mutagenic
Titanium Dioxide	In Vitro	Not mutagenic

Titanium Dioxide	In vivo	Not mutagenic
Aluminum Cobalt Oxide	In Vitro	Some positive data exist, but the data are not sufficient for classification
Aluminum Cobalt Oxide	In vivo	Mutagenic

**Carcinogenicity**

Name	Route	Species	Value
Aluminum Oxide (non-fibrous)	Inhalation	Rat	Not carcinogenic
Titanium Dioxide	Ingestion	Multiple animal species	Not carcinogenic
Titanium Dioxide	Inhalation	Rat	Carcinogenic
Aluminum Cobalt Oxide	Inhalation	similar compounds	Carcinogenic

**Reproductive Toxicity**

**Reproductive and/or Developmental Effects**

Name	Route	Value	Species	Test Result	Exposure Duration
Aluminum Cobalt Oxide	Ingestion	Toxic to development	similar compounds	NOAEL 5 mg/kg/day	during gestation
Aluminum Cobalt Oxide	Ingestion	Toxic to male reproduction	similar compounds	NOAEL Not available	
Aluminum Cobalt Oxide	Inhalation	Toxic to male reproduction	similar compounds	NOAEL Not available	

**Target Organ(s)**

**Specific Target Organ Toxicity - single exposure**

For the component/components, either no data are currently available or the data are not sufficient for classification.

**Specific Target Organ Toxicity - repeated exposure**

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Aluminum Oxide (non-fibrous)	Inhalation	pneumoconiosis	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL Not available	occupational exposure
Aluminum Oxide (non-fibrous)	Inhalation	pulmonary fibrosis	Not classified	Human	NOAEL Not available	occupational exposure
Titanium Dioxide	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Rat	LOAEL 0.01 mg/l	2 years
Titanium Dioxide	Inhalation	pulmonary fibrosis	Not classified	Human	NOAEL Not available	occupational exposure
Aluminum Cobalt Oxide	Inhalation	respiratory system	Causes damage to organs through prolonged or repeated exposure	similar compounds	NOAEL Not available	13 weeks

**Aspiration Hazard**

For the component/components, either no data are currently available or the data are not sufficient for classification.

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

**SECTION 12: Ecological information**

**Ecotoxicological information**

Please contact the address or phone number listed on the first page of the SDS for additional ecotoxicological information on this material and/or its components.

**Chemical fate information**

Please contact the address or phone number listed on the first page of the SDS for additional chemical fate information on this material and/or its components.

**SECTION 13: Disposal considerations**

**13.1. Disposal methods**

Dispose of contents/ container in accordance with the local/regional/national/international regulations.

Prior to disposal, consult all applicable authorities and regulations to insure proper classification. The substrate that was abraded must be considered as a factor in the disposal method for this product. Dispose of waste product in a permitted industrial waste facility. As a disposal alternative, incinerate in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. If no other disposal options are available, waste product may be placed in a landfill properly designed for industrial waste.

**SECTION 14: Transport Information**

For Transport Information, please visit <http://3M.com/Transportinfo> or call 1-800-364-3577 or 651-737-6501.

**SECTION 15: Regulatory information**

**15.1. US Federal Regulations**

Contact 3M for more information.

**EPCRA 311/312 Hazard Classifications:**

<b>Physical Hazards</b>
Not applicable

<b>Health Hazards</b>
Not applicable

**Section 313 Toxic Chemicals subject to the reporting requirements of that section and 40 CFR part 372 (EPCRA):**

<u>Ingredient</u>	<u>C.A.S. No</u>	<u>% by Wt</u>
Aluminum Cobalt Oxide (Cobalt compounds)	12672-27-4	Trade Secret <= 0.25
Aluminum Cobalt Oxide (Cobalt, inorganic compounds)	12672-27-4	Trade Secret <= 0.25

**15.2. State Regulations**

Contact 3M for more information.

**15.3. Chemical Inventories**

The components of this product are in compliance with the chemical notification requirements of TSCA. All required components of this product are listed on the active portion of the TSCA Inventory.

Contact 3M for more information.

## 15.4. International Regulations

Contact 3M for more information.

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

## SECTION 16: Other information

### NFPA Hazard Classification

Health: 2 Flammability: 1 Instability: 0 Special Hazards: None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

<b>Document Group:</b>	19-2381-2	<b>Version Number:</b>	9.01
<b>Issue Date:</b>	03/23/23	<b>Supersedes Date:</b>	03/23/23

DISCLAIMER: The information in this Safety Data Sheet (SDS) is believed to be correct as of the date issued. 3M MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of use or application. Given the variety of factors that can affect the use and application of a 3M product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for user's method of use or application.

3M provides information in electronic form as a service to its customers. Due to the remote possibility that electronic transfer may have resulted in errors, omissions or alterations in this information, 3M makes no representations as to its completeness or accuracy. In addition, information obtained from a database may not be as current as the information in the SDS available directly from 3M.

3M USA SDSs are available at [www.3M.com](http://www.3M.com)