

## CERAMIC PRODUCT

### SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

**Product Identifier:** CERAMIC PRODUCT

**Recommended Use**

Cutting tools for mainly metal removing and wear resistant tools for industrial parts

**Restrictions on Use**

None known.

**Manufacturer Information**

TaeguTec

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### SECTION 2 HAZARDS IDENTIFICATION

**GHS Classification**

Eye Damage / Irritation, Category 2A

Carcinogenicity, Category 1B

Specific Target Organ Toxicity - Single Exposure, Category 1 (respiratory system)

Specific Target Organ Toxicity - Repeated Exposure, Category 1 (lungs)

**GHS LABEL ELEMENTS**

**Symbol(s)**



**Signal Word**

DANGER

**Hazard Statement(s)**

Causes serious eye irritation

May cause cancer

Causes damage to respiratory system.

Causes damage to lungs through prolonged or repeated exposure.

**Precautionary Statement(s)**

**Prevention**

Do not breathe dust. Wash thoroughly after handling. Wear eye/face protection. Do not eat, drink, or smoke when using this product. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required.

**Response**

IF exposed: Call a POISON CENTER or doctor/physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

**Storage**

Store locked up.

**Disposal**

Dispose in accordance with all applicable regulations.

**Other Hazards which do not Result in Classification**

May form combustible dust concentrations in air (during handling or processing).

**SECTION 3 COMPOSITION, INFORMATION ON INGREDIENTS**

CAS No.	Component	Percent
1344-28-1	ALUMINUM OXIDE	60 - 100
409-21-2	SILICON CARBIDE	90 - 100
12033-89-5	SILICON NITRIDE	80 - 99
12069-32-8	BORON CARBIDE	60 - 70
10043-11-5	BORON NITRIDE	20 - 30
12070-08-5	TITANIUM CARBIDE	20 - 30
12627-33-7	TITANIUM CARBO-NITRIDE	0 - 10
1314-23-4	ZIRCONIUM OXIDE	1 - 5
24304-00-5	ALUMINUM NITRIDE	1 - 5
1309-48-4	MAGNESIUM OXIDE	1 - 3
1314-36-9	YTTRIUM OXIDE	1 - 3

**Component Related Regulatory Information**

This product may be regulated, have exposure limits or other information identified as the following: Aluminium compounds, Aluminum insoluble compounds, Aluminium oxides, Aluminum Oxide (135152-65-7), Titanium compounds, Zirconium compounds, n.o.s., Yttrium compounds, magnesium inorganic compounds.

**SECTION 4 FIRST AID MEASURES****Inhalation**

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

**Skin**

Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

**Eyes**

Flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Then get immediate medical attention.

**Ingestion**

If swallowed, get medical attention.

**Symptoms: Immediate**

respiratory tract irritation, eye irritation, respiratory system damage

**Symptoms: Delayed**

cancer, lung damage

**SECTION 5 FIRE FIGHTING MEASURES**

See Section 9 for Flammability Properties

**Flammable Properties**

Negligible fire hazard. Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

**Extinguishing Media**

Use extinguishing agents appropriate for surrounding fire.

**Unsuitable Extinguishing Media**

None known.

**Protective Equipment and Precautions for Firefighters**

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

**Fire Fighting Measures**

Move container from fire area if it can be done without risk. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

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

Wear personal protective clothing and equipment, see Section 8.

**Environmental Precautions**

Avoid release to the environment.

**Methods for Containment**

Do not touch spilled material. Keep unnecessary people away, isolate hazard area and deny entry. If sweeping of a contaminated area is necessary, use a dust suppressant agent.

**Cleanup Methods**

Collect spill using a vacuum cleaner with a HEPA filter or wet and scoop up dry spills. Avoid sweeping spilled dry material. Eliminate ignition sources including sources of electrical, static or frictional sparks. Collect spilled material in appropriate container for disposal.

**SECTION 7 HANDLING AND STORAGE****Handling Procedures**

Do not breathe dust. Wash thoroughly after handling. Wear eye/face protection. Do not eat, drink, or smoke when using this product. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Avoid significant deposits of material, especially on horizontal surfaces, which may become airborne and form combustible dust clouds and may contribute to secondary explosions.

**Storage Procedures**

Store and handle in accordance with all current regulations and standards. Store locked up. See original container for storage recommendations. Keep separated from incompatible substances.

**Incompatibilities** No data available.

**SECTION 8 EXPOSURE CONTROLS, PERSONAL PROTECTION****Component Exposure Limits****ALUMINUM OXIDE (1344-28-1)**

**ACGIH:** 1 mg/m<sup>3</sup> TWA (respirable fraction, related to Aluminum insoluble compounds)

**OSHA:** 15 mg/m<sup>3</sup> TWA (total dust); 5 mg/m<sup>3</sup> TWA (respirable fraction)

**OSHA (Vacated):** 10 mg/m<sup>3</sup> TWA (total dust); 5 mg/m<sup>3</sup> TWA (respirable fraction)

**Korea:** 10 mg/m<sup>3</sup> TWA (Serial No. 379)

**SILICON CARBIDE (409-21-2)**

**ACGIH:** 10 mg/m<sup>3</sup> TWA (nonfibrous, inhalable fraction, particulate matter containing no asbestos and <1% crystalline silica); 3 mg/m<sup>3</sup> TWA (nonfibrous, respirable fraction, particulate matter containing no asbestos and <1% crystalline silica); 0.1 fiber/cm<sup>3</sup> TWA (as determined by the membrane filter method at 400-450X magnification (4-mm objective), using phase-contrast illumination., respirable fibers, including whiskers, length >5 μm, aspect ratio ≥3:1)

**NIOSH:** 10 mg/m<sup>3</sup> TWA (total dust); 5 mg/m<sup>3</sup> TWA (respirable dust)

**OSHA:** 15 mg/m<sup>3</sup> TWA (total dust); 5 mg/m<sup>3</sup> TWA (respirable fraction)

**OSHA (Vacated):** 10 mg/m<sup>3</sup> TWA (total dust); 5 mg/m<sup>3</sup> TWA (respirable fraction)

**Korea:** 10 mg/m<sup>3</sup> TWA (limited to fibrous materials, Serial No. 344)

1B - Presumed Human Carcinogen based on demonstrated animal carcinogenicity (limited to fibrous materials, Serial No. 344)

**ZIRCONIUM OXIDE (1314-23-4)**

**ACGIH:** 5 mg/m<sup>3</sup> TWA (as Zr, related to Zirconium compounds, n.o.s.)

10 mg/m<sup>3</sup> STEL (as Zr, related to Zirconium compounds, n.o.s.)

**NIOSH:** 5 mg/m<sup>3</sup> TWA (except Zirconium tetrachloride, as Zr, related to Zirconium compounds, n.o.s.)

10 mg/m<sup>3</sup> STEL (except Zirconium tetrachloride, as Zr, related to Zirconium compounds, n.o.s.)

**OSHA:** 5 mg/m<sup>3</sup> TWA (as Zr, related to Zirconium compounds, n.o.s.)

**OSHA (Vacated):** 10 mg/m<sup>3</sup> STEL (as Zr, related to Zirconium compounds, n.o.s.)

5 mg/m<sup>3</sup> TWA (as Zr, related to Zirconium compounds, n.o.s.)

**Korea:** 5 mg/m<sup>3</sup> TWA (as Zr, Serial No. 489, related to Zirconium compounds, n.o.s.)

10 mg/m<sup>3</sup> STEL (as Zr, Serial No. 489, related to Zirconium compounds, n.o.s.)

**YTTRIUM OXIDE (1314-36-9)**

**ACGIH:** 1 mg/m<sup>3</sup> TWA (as Y, related to Yttrium compounds)

**NIOSH:** 1 mg/m<sup>3</sup> TWA (as Y, related to Yttrium compounds)

**Korea:** 1 mg/m<sup>3</sup> TWA (as Y, Serial No. 489)

**MAGNESIUM OXIDE (1309-48-4)**

**ACGIH:** 10 mg/m<sup>3</sup> TWA (inhalable fraction)

**OSHA:** 15 mg/m<sup>3</sup> TWA (fume, total particulate)

**OSHA (Vacated):** 10 mg/m<sup>3</sup> TWA (fume and total particulate)

**Korea:** 10 mg/m<sup>3</sup> TWA (fume, Serial No. 272)

**Component Biological Limit Values**

There are not biological limit values for any of this product's components.

**Engineering Controls**

Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment).

**PERSONAL PROTECTIVE EQUIPMENT****Eye Protection**

Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

**Body Protection**

Wear appropriate chemical resistant clothing.

**Hands Protection**

Wear appropriate chemical resistant gloves.

**Respiratory Protection**

Under conditions of frequent use or heavy exposure, respiratory protection may be needed.

Respiratory protection is ranked in order from minimum to maximum.

Consider warning properties before use.

Any particulate respirator equipped with an N95, R95, or P95 filter (including N95, R95, and P95 filtering facepieces) except quarter-mask respirators. The following filters may also be used: N99, R99, P99, N100, R100 or P100.

Any air-purifying full-facepiece respirator equipped with an N95, R95, or P95 filter. The following filters may also be used: N99, R99, P99, N100, R100 or P100.

Any powered, air-purifying respirator with a high-efficiency particulate filter.

Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter.

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode.

**For Unknown Concentrations or Immediately Dangerous to Life or Health -**

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

**SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES**

<b>Physical State:</b> Solid	<b>Appearance:</b> solid
<b>Physical Form:</b> solid	<b>Odor:</b> Not Available
<b>Odor Threshold:</b> Not available	<b>pH:</b> Not available
<b>Melting/Freezing Point:</b> Not available	<b>Boiling Point:</b> Not available
<b>Flash Point:</b> Not flammable	<b>Decomposition temp.:</b> Not available
<b>Evaporation Rate:</b> Not available	<b>LEL:</b> Not available
<b>UEL:</b> Not available	<b>Vapor Pressure:</b> Not available
<b>Vapor Density (air = 1):</b> Not available	<b>Density:</b> Not available
<b>Spec. Gravity (water = 1):</b> Not available	<b>Water Solubility:</b> Not available
<b>Log KOW:</b> Not available	<b>Auto Ignition temp.:</b> Not available
<b>Viscosity:</b> Not available	<b>Volatility:</b> Not available
<b>Flammability (solid, gas):</b> Not flammable	

**SECTION 10 STABILITY AND REACTIVITY**
**Reactivity**

No reactivity hazard is expected.

**Chemical Stability**

Stable at normal temperatures and pressure.

**Conditions to Avoid**

Avoid accumulation of airborne dusts.

**Possibility of Hazardous Reactions**

Will not polymerize.

**Incompatible Materials**

No data available.

**Decomposition Products**

miscellaneous decomposition products

**SECTION 11 TOXICOLOGICAL INFORMATION**
**Likely Routes of Exposure**

inhalation, skin, eyes

**Acute and Chronic Toxicity**
**Component Analysis - LD50/LC50**

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

**ALUMINUM OXIDE (1344-28-1)**

Oral LD50 Rat >5000 mg/kg

**RTECS Acute Toxicity (selected)**

The components of this material have been reviewed and RTECS publishes no data as of the date on this document.

**Immediate Effects**

respiratory tract irritation, eye irritation, respiratory system damage

**Delayed Effects**

cancer, lung damage

**Irritation/Corrosivity Data**

respiratory tract irritation, eye irritation

**RTECS Irritation**

The components of this material have been reviewed and RTECS publishes no data as of the date on this document.

**Local Effects****ALUMINUM NITRIDE (24304-00-5)**

**Irritant:** inhalation, skin, eye

**Serious Eye Damage/Eye Irritation**

eye irritation

**Respiratory Sensitizer**

No data available.

**Dermal Sensitizer**

No data available.

**Carcinogenicity****Component Carcinogenicity****ALUMINUM OXIDE (1344-28-1)**

**ACGIH:** A4 - Not Classifiable as a Human Carcinogen (related to Aluminum insoluble compounds)

**SILICON CARBIDE (409-21-2)**

**ACGIH:** A2 - Suspected Human Carcinogen (fibrous, including whiskers)

**ZIRCONIUM OXIDE (1314-23-4)**

**ACGIH:** A4 - Not Classifiable as a Human Carcinogen (related to Zirconium compounds, n.o.s.)

**MAGNESIUM OXIDE (1309-48-4)**

**ACGIH:** A4 - Not Classifiable as a Human Carcinogen

**Mutagenic Data**

No data available for the mixture.

**RTECS Mutagenic**

The components of this material have been reviewed, and RTECS publishes data for one or more components.



**Reproductive Effects Data**

No data available for the mixture.

**Tumorigenic Data**

No data available for the mixture.

**RTECS Tumorigenic**

The components of this material have been reviewed, and RTECS publishes data for one or more components.

**Specific Target Organ Toxicity - Single Exposure**

respiratory system

**Specific Target Organ Toxicity - Repeated Exposure**

lungs

**Aspiration Hazard**

No data available.

**Medical Conditions Aggravated by Exposure**

respiratory disorders, skin disorders and allergies, eye disorders

**Additional Data**

Interactions with drugs may occur. May cross the placenta.

**SECTION 12 ECOLOGICAL INFORMATION****Persistence and Degradability**

No data available for the mixture.

**Bioaccumulative Potential**

No data available for the mixture.

**Mobility in Environmental Media**

No data available for the mixture.

**Other Ecological Information**

No additional information is available.

**SECTION 13 DISPOSAL CONSIDERATIONS****Disposal Methods**

If regulated under Waste Management Act, dispose the contaminated container and packaging in accordance with the regulations.

**Disposal Precaution**

Dispose in accordance with all applicable regulations including the disposal methods of contaminated container and packaging.

**SECTION 14 TRANSPORT INFORMATION**

**IATA Information**

No Classification assigned.

**ICAO Information**

No Classification assigned.

**IMDG Information**

No Classification assigned.

**Special precautions**

None known.

**SECTION 15 REGULATORY INFORMATION**

**Component Analysis - Inventory**

Component	CAS No.	KOREA
ALUMINUM OXIDE	1344-28-1	Yes
SILICON CARBIDE	409-21-2	Yes
SILICON NITRIDE	12033-89-5	Yes
BORON CARBIDE	12069-32-8	Yes
BORON NITRIDE	10043-11-5	Yes
TITANIUM CARBIDE	12070-08-5	Yes
TITANIUM CARBO-NITRIDE	12627-33-7	No
ALUMINUM NITRIDE	24304-00-5	Yes
ZIRCONIUM OXIDE	1314-23-4	Yes
YTTRIUM OXIDE	1314-36-9	Yes
MAGNESIUM OXIDE	1309-48-4	Yes

**Other Regulations**

**Toxic Release Inventory**

The following component(s) are listed on the Toxic Release Inventory (TRI):

**ALUMINUM OXIDE (1344-28-1)**

TRI Groups I & II:  $\geq 1.0\%$  (by weight)

**ALUMINUM NITRIDE (24304-00-5)**

TRI Groups I & II:  $\geq 1.0\%$  (by weight, related to Aluminium compounds)

**Industrial Safety and Health Act**

The following substances are recognized as harmful according to the Korean Industrial Safety and Health Act:

**ALUMINUM OXIDE (1344-28-1)**

**Metals:** 1 % (related to Aluminium compounds)

**Metals:** 1 % (as Al, related to Aluminium compounds)

**Metals:** 1 % (as Al, related to Aluminium compounds)

**SILICON CARBIDE (409-21-2)**

**Carcinogens:** 1B - Presumed Human Carcinogen based on demonstrated animal carcinogenicity (limited to fibrous materials, Serial No. 344)

**ALUMINUM NITRIDE (24304-00-5)**

**Metals:** 1 % (related to Aluminium compounds)

**Metals:** 1 % (as Al, related to Aluminium compounds)

**Metals:** 1 % (as Al, related to Aluminium compounds)

**ZIRCONIUM OXIDE (1314-23-4)**

**Metals:** 1 % (related to Zirconium compounds, n.o.s.)

**Metals:** 1 % (as Zr, related to Zirconium compounds, n.o.s.)

**Metals:** 1 % (as Zr, related to Zirconium compounds, n.o.s.)

**MAGNESIUM OXIDE (1309-48-4)**

**Metals:** 1 % (fume)

**Metals:** 1 %

**Toxic Chemicals Control Act (TCCA)**

No component(s) of this product are identified in the Toxic Chemicals Control Act.

**Dangerous Materials Safety Control Act**

No component(s) of this product are identified in the Dangerous Materials Safety Control Act.

**Wastes Management Act**

No component(s) of this product are identified in the Waste Management Act.

**Other requirements in domestic and other countries**

No data available.

**SECTION 16 OTHER INFORMATION****Key / Legend**

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

**Other Information**

None known.

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