

COATING MATERIAL ON CEMENTED TUNGSTEN CARBIDE, CERMET, CERMIC COATED BY CVD AND/OR PVD METHOD

SECTION 1 Identification of the substance/mixture and of the company/undertaking

Product Identifier

Material Name

COATING MATERIAL ON CEMENTED TUNGSTEN CARBIDE, CERMET, CERAMIC COATED BY CVD AND/OR PVD METHOD

Product Description

Concerning MSDS for substrate, please refer to CTC-MSDS, Cermet-MSDS and Ceramic-MSDS supplied by TaeguTec.

Product Use

Cutting tools for (Non)metal material

Restrictions on Use

None known.

Details of the supplier of the safety data sheet

TaeguTec

Gachangro 1040(304 Yonggye-ri), Gachang,

Dalsong, Daegu 42936

Korea

Phone: 82-53-760-7451

Emergency phone number

82-53-760-7283

SECTION 2 HAZARDS IDENTIFICATION

Hazard/Risk Classification

Respiratory Sensitization - Category 1

Skin Sensitization - Category 1

Specific target organ toxicity - Single exposure - Category 3 (respiratory system)

Specific target organ toxicity - Repeated exposure - Category 1 (lungs , respiratory system)

Label elements

Hazard symbols



Signal word

Danger

Hazard/Risk Statement

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H317 May cause an allergic skin reaction.

H335 May cause respiratory irritation.

H372 Causes damage to organs through prolonged or repeated exposure.

Precautionary statements

Prevention

P260 Do not breathe dust/fume/gas/mist/vapors/spray.

P264 Wash thoroughly after handling.

P285 In case of inadequate ventilation wear respiratory protection.

P272 Contaminated work clothing should not be allowed out of the workplace.

P280.5 Wear protective gloves.

P271 Use only outdoors or in a well-ventilated area.

P270 Do not eat, drink or smoke when using this product.

Response

P314 Get medical advice/attention if you feel unwell.

P304 IF INHALED.

P340 Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P312 Call a POISON CENTER or doctor/physician if you feel unwell.

P342 If experiencing respiratory symptoms.

P311 Call a POISON CENTER or doctor/physician.

P302 IF ON SKIN.

P352 Wash with plenty of water.

P333 If skin irritation or rash occurs.

P313 Get medical advice/attention.

P363 Wash contaminated clothing before reuse.

Storage

P403 Store in a well-ventilated place.

P233 Keep container tightly closed.

P405 Store locked up.

Disposal

P501 Dispose of contents/container in accordance with local/regional/national/international 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	Chemical name	Other Names	Percent
25658-42-8	ZIRCONIUM NITRIDE	--	0 - 15
24094-93-7	CHROMIUM NITRIDE	--	0 - 15
7782-40-3	DIAMOND-LIKE CARBON	--	0-14
25583-20-4	TITANIUM NITRIDE	--	0 - 12
Not Available	TITANIUM ALUMINUM CHROME NITRIDE	--	0 - 12
Not Available	TITANIUM ALUMINUM CHROME SILICON NITRIDE	--	0 - 12
Not Available	ALUMINUM CHROME NITRIDE	--	0 - 12
108398-79-4	TITANIUM ALUMINUM NITRIDE	--	0 - 12
12627-33-7	TITANIUM CARBO-NITRIDE	--	0 - 12
1344-28-1	ALUMINUM OXIDE	--	0 - 10
12070-08-5	TITANIUM CARBIDE	--	0 - 10
Not Available	TITANIUM CARBO-OXIDE	--	0 - 1
Not Available	TITANIUM CARBIDE NITRIDE OXIDE	--	0 - 1

Impurities and stabilizing additives contributing to the GHS Classification

None

SECTION 4 FIRST AID MEASURES

Eye contact

Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Skin contact

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.

Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

Ingestion

If swallowed, get medical attention.

Most Important Symptoms/Effects

Symptoms: Immediate

allergic reactions, respiratory tract irritation

Symptoms: Delayed

allergic reactions, lung damage, respiratory system damage

Indication of any immediate medical attention and special treatment needed

Inhalation: Consider oxygen.

SECTION 5 FIRE FIGHTING MEASURES**Suitable extinguishing media**

Use extinguishing agents appropriate for surrounding fire.

Unsuitable Extinguishing Media

None known.

Specific hazards arising from the chemical

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.

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, protective equipment and emergency procedures

Wear personal protective clothing and equipment, see Section 8.

Environmental precautions

Avoid release to the environment.

Methods for Containment

Avoid generating dust. If sweeping of a contaminated area is necessary, use a dust suppressant agent. Keep unnecessary people away, isolate hazard area and deny entry.

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

Precautions for safe handling

Do not breathe dust. Wash thoroughly after handling. In case of inadequate ventilation wear respiratory protection.

Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves. Use only outdoors or

in a well-ventilated area. Do not eat, drink, or smoke when using this product. Avoid significant deposits of material, especially on horizontal surfaces, which may become airborne and form combustible dust clouds and may contribute to secondary explosions.

Conditions for safe storage, including any incompatibilities

Store in a well-ventilated place.

Keep container tightly closed.

Store locked up.

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

Incompatible Materials

Acids, bases, halocarbons, oxidizing materials.

SECTION 8 EXPOSURE CONTROLS, PERSONAL PROTECTION

Exposure Guidelines

Component Exposure Limits

ZIRCONIUM NITRIDE	25658-42-8
Korea:	10 mg/m ³ STEL as Zr (related to Zirconium compounds)
	5 mg/m ³ TWA as Zr (related to Zirconium compounds)
ACGIH:	5 mg/m ³ TWA as Zr (related to Zirconium compounds)
	10 mg/m ³ STEL as Zr (related to Zirconium compounds)
ALUMINUM OXIDE	1344-28-1
Korea:	10 mg/m ³ TWA
ACGIH:	1 mg/m ³ TWA respirable particulate matter (related to Aluminum insoluble compounds)

ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)

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

Appropriate engineering controls

Provide local exhaust ventilation system. 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). Ensure compliance with applicable exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Eye/face protection

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

Skin and Body Protection

Wear appropriate chemical resistant clothing.

Hand protection

Wear appropriate chemical resistant gloves.

Protective Materials

No data available.

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 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.

Further information

No data available.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance	solid	Upper Explosive Limit	Not available
Physical State	solid	Lower Explosive Limit	Not available
Physical Form	solid (the coated layer by physically and chemically)	Vapor Pressure	Not available
Color	Not available	Solubility (Other)	Not available
Odor	Not available	Water Solubility	Not available
Odor Threshold	Not available	Vapor Density (air=1)	Not available
pH	Not available	Specific Gravity (water=1)	Not available
Melting Point	Not available	Partition coefficient: n-octanol/water	Not available
Freezing point	Not available	Autoignition Temperature	Not available
Boiling Point	Not available	Decomposition temperature	Not available

Boiling Point Range	Not available	Viscosity	Not available
Flash Point	(Not flammable)	Molecular Weight	Not available
Evaporation Rate	Not available	Density	Not available
Flammability (solid, gas)	Not available		

SECTION 10 STABILITY AND REACTIVITY

Reactivity

No reactivity hazard is expected.

Chemical stability

Stable at normal temperatures and pressure.

Possibility of Hazardous Reactions

Will not polymerize.

Conditions to avoid

Avoid accumulation of airborne dusts. Avoid contact with incompatible materials.

Materials to Avoid (Incompatibilities)

Acids, bases, halocarbons, oxidizing materials.

Hazardous Decomposition Products

miscellaneous decomposition products.

SECTION 11 TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Inhalation

Skin

Eye

No data available for the mixture.

Ingestion

Health Hazards

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

Acute Toxicity Estimate

Oral	> 2000 mg/kg
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Immediate Effects

allergic reactions, respiratory tract irritation

Delayed Effects

allergic reactions, lung damage, respiratory system damage

Skin corrosive/irritant

No data available for the mixture.

Serious eye damage/irritation

No data available for the mixture.

Respiratory Sensitization

Component data indicate the substance is sensitizing.

Dermal Sensitization

Component data indicate the substance is sensitizing.

Component Carcinogenicity

ZIRCONIUM NITRIDE	25658-42-8
ACGIH:	A4 - Not Classifiable as a Human Carcinogen (related to Zirconium compounds)
ALUMINUM OXIDE	1344-28-1
ACGIH:	A4 - Not Classifiable as a Human Carcinogen (related to Aluminum insoluble compounds)
DFG:	Category 2 (considered to be carcinogenic for man ;fibre dust)

Mutagenic Data

No data available for the mixture.

Reproductive Effects Data

No data available for the mixture.

Tumorigenic Data

No data available for the mixture.

Specific Target Organ Toxicity - Single Exposure

respiratory system

Specific Target Organ Toxicity - Repeated Exposure

lungs, respiratory system

Aspiration hazard

no data available.

Medical Conditions Aggravated by Exposure

respiratory disorders, skin disorders and allergies

Additional Data

May cross the placenta.

SECTION 12 ECOLOGICAL INFORMATION

Ecotoxicity

Component Analysis - Aquatic Toxicity

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

Persistence and degradability

No data available for the mixture.

Bioaccumulative Potential

No data available for the mixture.

Mobility in soil

No data available for the mixture.

Other adverse effects

No additional information is available.

SECTION 13 DISPOSAL CONSIDERATIONS

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:

Shipping Name: True

No Classification assigned.

ICAO Information:

Shipping Name: True

No Classification assigned.

IMDG Information:

Shipping Name: True

No Classification assigned.

International Bulk Chemical Code

This material does not contain any chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

Special precautions

None known.

SECTION 15 REGULATORY INFORMATION

Korea Regulations

Industrial Safety and Health Act

ZIRCONIUM NITRIDE	25658-42-8
Hazardous Substances Subject to Control:	
Metals:	1 % cut-off value allowed in mixture (related to Zirconium compounds)
Harmful Agents Subject to Work Environment Monitoring (Measurement Cycle: 6 months):	
Metals:	1 % cut-off value allowed in mixture (related to Zirconium compounds)
Harmful Agents Subject to Workers Requiring Health Examination (Diagnostic cycle : 12 Months):	
Metals:	1 % maximum cut-off value allowed in mixture (as Zr) (related to Zirconium compounds)
Occupational exposure limit values:	
TWA.	5 mg/m ³ TWA as Zr Serial No. 489 (related to Zirconium compounds)
STEL	10 mg/m ³ STEL as Zr Serial No. 489 (related to Zirconium compounds)
CHROMIUM NITRIDE	24094-93-7
Hazardous Substances Subject to Control:	
Metals:	1 % cut-off value allowed in mixture (related to Chromium compounds)
Harmful Agents Subject to Work Environment Monitoring (Measurement Cycle: 6 months):	
Metals:	1 % cut-off value allowed in mixture (related to Chromium compounds)
Harmful Agents Subject to Workers Requiring Health	

Examination (Diagnostic cycle : 12 Months):	
Metals:	1 % maximum cut-off value allowed in mixture (as Cr) (related to Chromium compounds)
ALUMINUM OXIDE	1344-28-1
Hazardous Substances Subject to Control:	
Metals:	1 % cut-off value allowed in mixture (related to Aluminum compounds)
Harmful Agents Subject to Work Environment Monitoring (Measurement Cycle: 6 months):	
Metals:	1 % cut-off value allowed in mixture (related to Aluminum compounds)
Harmful Agents Subject to Workers Requiring Health Examination (Diagnostic cycle : 12 Months):	
Metals:	1 % maximum cut-off value allowed in mixture (as Al) (related to Aluminum compounds)
Occupational exposure limit values:	
TWA.	10 mg/m3 TWA Serial No. 379

Chemicals Control Act (CCA)

None of the substances are regulated under the Chemicals Control Act.

Dangerous Materials Safety Control Act

This product is not regulated under the Dangerous Materials Safety Control Act.

Waste Management Act

Not applicable

Other requirements in domestic and other countries

No data available.

Component Analysis - Inventory

ZIRCONIUM NITRIDE (25658-42-8)

US	CA	EU	AU	PH	JP ENCs	-	JP ISHL	-	KR KECI - Annex 1	KR KECI - Annex 2	KR REACH CCA	-	CN	NZ	MX	TW	VN (Draft)
Yes	NSL	EIN	No	No	Yes		Yes		Yes	No	No		No	No	No	Yes	No

CHROMIUM NITRIDE (24094-93-7)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR REACH - CCA	CN	NZ	MX	TW	VN (Draft)
Yes	NSL	EIN	No	No	No	No	No	No	No	No	No	No	Yes	No

DIAMOND-LIKE CARBON (7782-40-3)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR REACH - CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	No	Yes	No	No	Yes	No	No	Yes	No	Yes	Yes	Yes

TITANIUM NITRIDE (25583-20-4)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR REACH - CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes	Yes

TITANIUM ALUMINUM NITRIDE (108398-79-4)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR REACH - CCA	CN	NZ	MX	TW	VN (Draft)
No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

TITANIUM CARBO-NITRIDE (12627-33-7)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR REACH - CCA	CN	NZ	MX	TW	VN (Draft)
No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

ALUMINUM OXIDE (1344-28-1)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR REACH CCA	-	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No		Yes	Yes	Yes	Yes	Yes

TITANIUM CARBIDE (12070-08-5)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR REACH CCA	-	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	No	No	Yes	Yes	Yes	No	No		Yes	Yes	No	Yes	Yes

SECTION 16 OTHER INFORMATION

NFPA Ratings

Health: 1 Fire: 0 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Information sources and references

No data available.

Preparation Date

06/15/15

Revision date

01/18/2019

Issue Date

04/24/2013

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CA/MA/MN/NJ/PA - California/Massachusetts/Minnesota/New Jersey/Pennsylvania*; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CFR - Code of Federal Regulations (US); CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EC – European Commission; EEC - European Economic Community; EIN - European Inventory of (Existing Commercial Chemical Substances); EINECS - European Inventory of Existing Commercial Chemical Substances; ENCS - Japan Existing and New Chemical Substance Inventory; 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; ISHL - Japan Industrial Safety and Health Law; IUCLID - International Uniform Chemical Information Database; JP - Japan; Kow - Octanol/water partition coefficient; KR KECI Annex 1 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL); KR KECI Annex 2 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL) , KR - Korea; LD50/LC50 - Lethal Dose/ Lethal Concentration; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; MX – Mexico; NDSL – Non-Domestic Substance List (Canada); 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; PEL- Permissible Exposure Limit; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH- Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TCCA – Korea Toxic Chemicals Control Act; TDG - Transportation of Dangerous Goods; TLV - Threshold Limit Value; TSCA - Toxic Substances Control Act; TW – Taiwan; TWA - Time Weighted Average; UEL - Upper Explosive Limit; UN/NA - United Nations /North American; US - United States; VLE - Exposure Limit Value (Mexico); VN NCI (Draft) - Vietnam National Chemicals Inventory (NCI) (Draft); WHMIS - Workplace Hazardous Materials Information System (Canada) .

Other Information

Disclaimer:

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