

CEMENTED CARBIDE PRODUCT WITH COBALT/NICKEL**SECTION 1 PRODUCT AND COMPANY IDENTIFICATION****Product Identifier:** CEMENTED CARBIDE PRODUCT WITH COBALT/NICKEL BINDER**Trade Names/Synonyms**

CEMENTED TUNGSTEN CARBIDE; CEMENTED CARBIDE PRODUCT WITH COBALT/NICKEL BINDER

Recommended Use

Cutting tools for machining of various work materials, Fixtures and wear resistance parts for various material

Restrictions on Use

None known.

Manufacturer Information

TaeguTec

1040, GACHANG-RO GACHANG-MYEON DALSEONG-GUN DAEGU KOREA

Tel : +82-53-760-7451, Fax : +82-53-760-7446

SECTION 2 HAZARDS IDENTIFICATION**GHS Classification**

Skin Corrosion / Irritation, Category 2

Eye Damage / Irritation, Category 2A

Respiratory sensitizer, Category 1

Skin sensitizer, Category 1

Carcinogenicity, Category 1A

Toxic to Reproduction, Category 1B

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

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

Hazardous to the Aquatic Environment - Chronic Hazard, Category 3 (50 % unknown)

GHS LABEL ELEMENTS**Symbol(s)****Signal Word**

DANGER

Hazard Statement(s)

Causes skin irritation
 Causes serious eye irritation
 May cause allergy or asthma symptoms or breathing difficulties if inhaled
 May cause an allergic skin reaction
 May cause cancer
 May damage fertility or the unborn child
 Causes damage to kidneys and respiratory system.
 Causes damage to respiratory system through prolonged or repeated exposure.
 Harmful to aquatic life with long lasting effects

Precautionary Statement(s)
Prevention

Do not breathe dust. Wash thoroughly after handling. Wear protective gloves and eye/face protection. In case of inadequate ventilation wear respiratory protection. Contaminated work clothing should not be allowed out of the workplace. 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 release to the environment.

Response

IF exposed: Call a POISON CENTER or doctor/physician. IF INHALED: If breathing is difficult, oxygen should be administered by qualified personnel. If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician. IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash before re-use. 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
12070-12-1	TUNGSTEN CARBIDE	60 - 96
7440-48-4	COBALT	0 - 30
7440-02-0	NICKEL	0 - 20
12070-08-5	TITANIUM CARBIDE	0 - 15

12070-06-3	TANTALUM CARBIDE	0 - 15
12710-36-0	NICKEL CARBIDE	0 - 10
12627-33-7	TITANIUM CARBO-NITRIDE	0 - 10
12070-10-9	VANADIUM CARBIDE	0 - 5
12012-35-0	CHROMIUM CARBIDE	0 - 5

Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Tungsten compounds, n.o.s., Cobalt compounds, Cobalt, inorganic compounds, Nickel compounds, Titanium compounds, Vanadium compounds, Chromium compounds, Chromium, inorganic compounds.

SECTION 4 FIRST AID MEASURES
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.

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.

Note to Physicians

For inhalation, consider oxygen.

Symptoms: Immediate

respiratory tract irritation, skin irritation, eye irritation, allergic reactions, kidney damage, respiratory system damage

Symptoms: Delayed

allergic reactions, cancer, reproductive effects, respiratory system damage

SECTION 5 FIRE FIGHTING MEASURES

See Section 9 for Flammability Properties

Flammable Properties

Negligible fire and explosion hazard in bulk form. 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

dolomite, dry powder for metal fires, dry sand, graphite, soda ash, sodium chloride

Do not get water directly on material.

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. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products.

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

Avoid heat, flames, sparks and other sources of ignition. Do not touch spilled material. 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. **Small spills:** Collect spilled material in appropriate container for disposal. Move containers away from spill to a safe area. **Large spills:** Wet down area with water. Dike for later disposal. Remove sources of ignition. Keep unnecessary people away, isolate hazard area and deny entry..

SECTION 7 HANDLING AND STORAGE**Handling Procedures**

Do not breathe dust. Wash thoroughly after handling. Wear protective gloves and eye/face protection. In case of inadequate ventilation wear respiratory protection. Contaminated work clothing should not be allowed out of the workplace. 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.

Storage Procedures

Store and handle in accordance with all current regulations and standards. Avoid generating dust. 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

COBALT (7440-48-4)

ACGIH: 0.02 mg/m³ TWA

NIOSH: 0.05 mg/m³ TWA (dust and fume)

OSHA: 0.1 mg/m³ TWA (dust and fume)

OSHA (Vacated): 0.05 mg/m³ TWA (dust and fume)

Korea: 0.02 mg/m³ TWA (metal dust and fume, Serial No. 519)

2 - Limited evidence of human or animal carcinogenicity (metal dust and fume, Serial No. 519)

NICKEL (7440-02-0)

ACGIH: 1.5 mg/m³ TWA (inhalable fraction)

NIOSH: 0.015 mg/m³ TWA

OSHA: 1 mg/m³ TWA

OSHA (Vacated): 1 mg/m³ TWA

Korea: 1 mg/m³ TWA (metal, Serial No. 045)

2 - Limited evidence of human or animal carcinogenicity (metal, Serial No. 045)

NICKEL CARBIDE (12710-36-0)

NIOSH: 0.015 mg/m³ TWA (except Nickel carbonyl, as Ni, related to Nickel compounds)

VANADIUM CARBIDE (12070-10-9)

NIOSH: 1 mg/m³ TWA

3 mg/m³ STEL

0.05 mg/m³ Ceiling (except Vanadium metal and Vanadium carbide, as V, dust and fume, 15 min, related to Vanadium compounds)

Component Biological Limit Values

COBALT (7440-48-4)

ACGIH: 15 µg/L Medium: urine Time: end of shift at end of workweek Parameter: Cobalt (background); 1 µg/L Medium: blood Time: end of shift at end of workweek Parameter: Cobalt (background, semi-quantitative)

Engineering Controls

Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Provide local exhaust or process enclosure 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 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

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

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:

COBALT (7440-48-4)

Inhalation LC50 Rat >10 mg/L 1 h; Oral LD50 Rat 6170 mg/kg

NICKEL (7440-02-0)

Oral LD50 Rat >9000 mg/kg

RTECS Acute Toxicity (selected)

The components of this material have been reviewed, and RTECS publishes the following endpoints:

COBALT (7440-48-4)

Oral: 6171 mg/kg Oral Rat LD50

Acute Toxicity Level**COBALT (7440-48-4)**

Slightly Toxic: ingestion

Immediate Effects

respiratory tract irritation, skin irritation, eye irritation, allergic reactions, kidney damage, respiratory system damage

Delayed Effects

allergic reactions, cancer, reproductive effects, respiratory system damage

Irritation/Corrosivity Data

respiratory tract irritation, skin 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**COBALT (7440-48-4)**

Irritant: inhalation, skin, eye

NICKEL (7440-02-0)

Irritant: inhalation, skin

VANADIUM CARBIDE (12070-10-9)

Irritant: inhalation, skin, eye

Target Organs**COBALT (7440-48-4)**

immune system (sensitizer)

NICKEL (7440-02-0)

immune system (sensitizer)

NICKEL CARBIDE (12710-36-0)

immune system (sensitizer)

Serious Eye Damage/Eye Irritation

eye irritation

Respiratory Sensitizer

Component data indicate the substance is sensitizing.

Dermal Sensitizer

Component data indicate the substance is sensitizing.

Carcinogenicity**Component Carcinogenicity****COBALT (7440-48-4)**

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

IARC: Monograph 86 [2006] (without tungsten carbide); Monograph 52 [1991] (Group 2B (possibly carcinogenic to humans))

OSHA: Present

NICKEL (7440-02-0)

ACGIH: A5 - Not Suspected as a Human Carcinogen

IARC: Monograph 100C [2012]; Monograph 49 [1990] (evaluated as a group) (Group 1 (carcinogenic to humans), related to Nickel compounds)

OSHA: Present

NTP: Known Human Carcinogen (related to Nickel compounds)
Reasonably Anticipated To Be A Human Carcinogen

NIOSH: potential occupational carcinogen

NICKEL CARBIDE (12710-36-0)

IARC: Monograph 100C [2012]; Monograph 49 [1990] (evaluated as a group) (Group 1 (carcinogenic to humans), related to Nickel compounds)

OSHA: Present (related to Nickel compounds)

NTP: Known Human Carcinogen (related to Nickel compounds)

NIOSH: potential occupational carcinogen (related to Nickel compounds)

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

Available data characterizes this substance as a reproductive hazard.

RTECS Reproductive Effects

The components of this material have been reviewed, and RTECS publishes the following endpoints:

NICKEL (7440-02-0)

158 mg/kg Oral Rat TDLo (Multigeneration)

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, kidneys

Specific Target Organ Toxicity - Repeated Exposure

respiratory system

Aspiration Hazard

No data available.

Medical Conditions Aggravated by Exposure

respiratory disorders, immune system disorders or allergies, skin disorders and allergies

Additional Data

May cross the placenta. Alcohol may enhance the toxic effects. May be excreted in breast milk.

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
TUNGSTEN CARBIDE	12070-12-1	Yes
COBALT	7440-48-4	Yes
NICKEL	7440-02-0	Yes
TITANIUM CARBIDE	12070-08-5	Yes
TANTALUM CARBIDE	12070-06-3	Yes
TITANIUM CARBO-NITRIDE	12627-33-7	No
NICKEL CARBIDE	12710-36-0	No
VANADIUM CARBIDE	12070-10-9	Yes
CHROMIUM CARBIDE	12012-35-0	Yes

Other Regulations

Toxic Release Inventory

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

COBALT (7440-48-4)

TRI Groups I & II: ≥ 0.1 % (by weight)

NICKEL (7440-02-0)

TRI Groups I & II: ≥ 0.1 % (by weight)

NICKEL CARBIDE (12710-36-0)

TRI Groups I & II: ≥ 0.1 % (by weight, related to Nickel compounds)

VANADIUM CARBIDE (12070-10-9)

TRI Groups I & II: ≥ 1.0 % (by weight, related to Vanadium compounds)

CHROMIUM CARBIDE (12012-35-0)

TRI Groups I & II: ≥ 0.1 % (by weight, related to Chromium compounds)

Industrial Safety and Health Act

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

TUNGSTEN CARBIDE (12070-12-1)

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

Metals: 1 % (as W, related to Tungsten compounds, n.o.s.)

COBALT (7440-48-4)

Carcinogens: 2 - Limited evidence of human or animal carcinogenicity (metal dust and fume, Serial No. 519)

Metals: 1 %

Metals: 1 %

Metals: 1 % (dust, fume)

NICKEL (7440-02-0)

Carcinogens: 2 - Limited evidence of human or animal carcinogenicity (metal, Serial No. 045)

Metals: 1 %

Metals: 1 % (element)

Metals: 1 %

NICKEL CARBIDE (12710-36-0)

Metals: 1 % (related to Nickel compounds)

CHROMIUM CARBIDE (12012-35-0)

Metals: 1 % (related to Chromium compounds)

Metals: 1 % (as Cr, related to Chromium, inorganic compounds)

Metals: 1 % (as Cr, related to Chromium compounds)

Toxic Chemicals Control Act (TCCA)

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

Dangerous Materials Safety Control Act

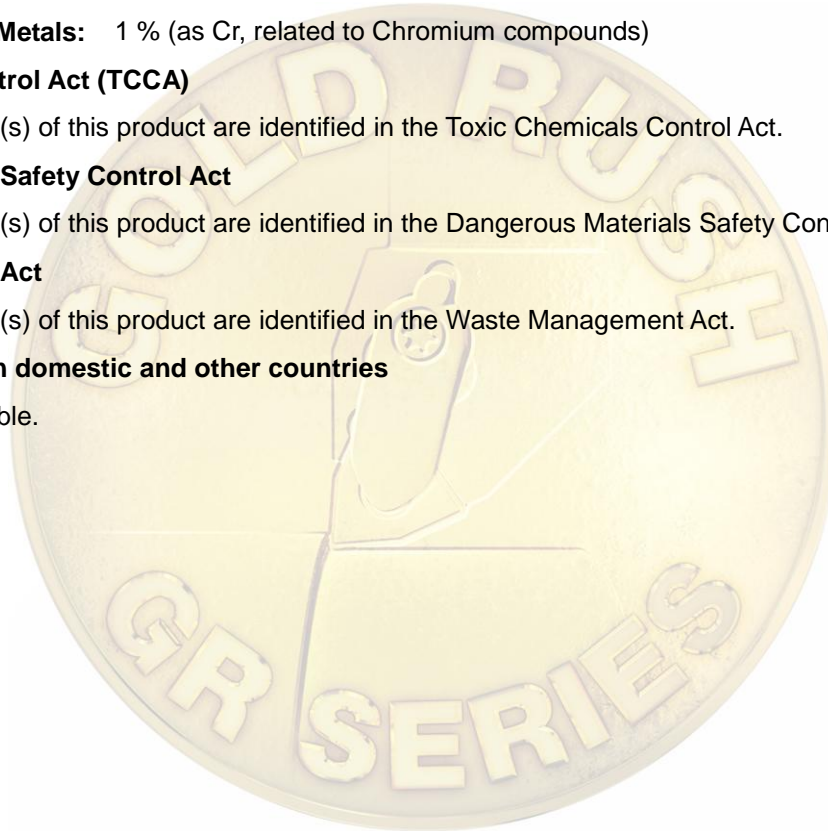
No component(s) of this product are identified in the Dangerous Materials Safety Control Act.

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

"RTECS®" is a United States trademark owned and licensed under authority of the U.S. Government, by and through Accelrys, Inc. Portions ©Copyright 2014, U.S. Government. All rights reserved.

Other Information

None known

End of Sheet 00224277