

# Safety Data Sheet

Material Name: ALL AKUMA CEMENTED CARBIDES AND BRAZED TOOLS

## \*\*\* Section 1 - IDENTIFICATION\*\*\*

### Manufacturer Information

## AKUMA CEMENTED CARBIDES AND BRAZED TOOLS

### Trade Names/Synonyms

CEMENTED CARBIDE PRODUCT WITH COBALT BINDER; CEMENTED CARBIDE PRODUCT WITH NICKEL/CHROMIUM BINDER (CERMET); CEMENTED CARBIDE PRODUCT WITH CHROMIUM/COBALT BINDER; BRAZING TOOLS USING BRAZING FILLER METAL

### Product Use

building/construction product

### Restrictions on Use

None known.

## \*\*\* Section 2 - HAZARDS IDENTIFICATION\*\*\*

### GHS Classification

Acute Toxicity (Inhalation), Category 4 (77% unknown)  
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 2  
Specific Target Organ Toxicity - Single Exposure, Category 1 (kidneys and respiratory system)  
Specific Target Organ Toxicity - Repeated Exposure, Category 1 (respiratory system)  
Specific Target Organ Toxicity - Repeated Exposure, Category 2 (blood and skeletal system)  
Hazardous to the Aquatic Environment - Acute Hazard, Category 2 (82 % unknown)  
Hazardous to the Aquatic Environment - Chronic Hazard, Category 3 (59 % unknown)

### GHS LABEL ELEMENTS

#### Symbol(s)



### Signal Word

DANGER

### Hazard Statement(s)

Harmful if inhaled  
Causes skin irritation

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

## Precautionary Statement(s)

### Prevention

Do not breathe dust. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Do not eat, drink, or smoke when using this product. 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. 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: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell. 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 in a well-ventilated place. Keep container tightly closed. Store locked up.

### Disposal

Dispose in accordance with all applicable regulations.

### Other Hazards which do not Result in Classification

Dust/air mixtures may ignite or explode.

## \*\*\* Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS\*\*\*

CAS #	Component	Percent
Not Available	TITANIUM CARBIDE NITRIDE	51.7-57.2
12070-12-1	TUNGSTEN CARBIDE	6.5 - 94.5
12070-08-5	TITANIUM CARBIDE	37.4-37.9
Not Available	WTIC2-D	0.4 - 68.1
111614-54-1	TANTALUM NIOBIUM CARBIDE	0.6 - 28.0
7440-48-4	COBALT	5.0 - 23.0
12033-62-4	TANTALUM NITRIDE	12.0
7440-02-0	NICKEL	2.0 - 18.0
25583-20-4	TITANIUM NITRIDE	5.7-14.1
12070-06-3	TANTALUM CARBIDE	1.0 - 14.6
12069-89-5	DIMOLYBDENUM CARBIDE	3.0 - 10.6
12069-94-2	NIOBIUM CARBIDE	0.1 - 5.0

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Not Available	TUNGSTEN TITANIUM CARBIDE NITRIDE	1.0 - 4.0
7439-98-7	MOLYBDENUM	1.5 - 2.0
7440-33-7	TUNGSTEN	1.5 - 1.83
12012-35-0	CHROMIUM CARBIDE	0.5 - 2.0
7439-89-6	IRON	0.7
25658-42-8	ZIRCONIUM NITRIDE	0.5
12070-10-9	VANADIUM CARBIDE	0.4
1344-28-1	ALUMINIUM OXIDE	0 - 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., Titanium compounds, Tantalum niobium carbide (111614-54-1), Cobalt compounds, Cobalt, inorganic compounds, Nickel compounds, Molybdenum compounds, n.o.s., Chromium compounds, Chromium, inorganic compounds, Zirconium compounds, n.o.s., Vanadium compounds, Aluminium compounds, Aluminum insoluble compounds, Aluminium oxides, Aluminium Oxide (135152-65-7).

## \* \* \* 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. 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, blood damage, bone disorders, respiratory system damage, reproductive effects, cancer

## \* \* \* Section 5 - FIRE FIGHTING MEASURES \* \* \*

See Section 9 for Flammability Properties

### Flammable Properties

Negligible fire and explosion hazard in bulk form. Dust/air mixtures may ignite or explode.

### Extinguishing Media

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

### 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.

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## 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. Avoid inhalation of material or combustion by-products.

## Hazardous Combustion Products

**Combustion:** oxides of metals

## \* \* \* 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

Collect spilled material in appropriate container for disposal. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

### Cleanup Methods

Clean up residue with a high-efficiency particulate filter vacuum.

## \* \* \* Section 7 - HANDLING AND STORAGE \* \* \*

### Handling Procedures

Do not breathe dust. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Do not eat, drink, or smoke when using this product. 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. 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. Store in a well-ventilated area. Keep container tightly closed. Store locked up. See original container for storage recommendations. Keep separated from incompatible substances.

**Incompatibilities** acids, bases, combustible materials, halocarbons, halogens, metals, oxidizing materials, peroxides, reducing agents

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### \*\*\* Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION\*\*\*

#### Component Exposure Limits

##### COBALT (7440-48-4)

**ACGIH:** 0.02 mg/m<sup>3</sup> TWA  
**NIOSH:** 0.05 mg/m<sup>3</sup> TWA (dust and fume)  
**OSHA:** 0.1 mg/m<sup>3</sup> TWA (dust and fume)  
**OSHA (Vacated):** 0.05 mg/m<sup>3</sup> TWA (dust and fume)

##### NICKEL (7440-02-0)

**ACGIH:** 1.5 mg/m<sup>3</sup> TWA (inhalable fraction)  
**NIOSH:** 0.015 mg/m<sup>3</sup> TWA  
**OSHA:** 1 mg/m<sup>3</sup> TWA  
**OSHA (Vacated):** 1 mg/m<sup>3</sup> TWA

##### MOLYBDENUM (7439-98-7)

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

##### TUNGSTEN (7440-33-7)

**ACGIH:** 5 mg/m<sup>3</sup> TWA  
10 mg/m<sup>3</sup> STEL  
**NIOSH:** 5 mg/m<sup>3</sup> TWA  
10 mg/m<sup>3</sup> STEL  
**OSHA (Vacated):** 10 mg/m<sup>3</sup> STEL  
5 mg/m<sup>3</sup> TWA

##### ZIRCONIUM NITRIDE (25658-42-8)

**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.)

##### VANADIUM CARBIDE (12070-10-9)

**NIOSH:** 1 mg/m<sup>3</sup> TWA  
3 mg/m<sup>3</sup> STEL  
0.05 mg/m<sup>3</sup> Ceiling (except Vanadium metal and Vanadium carbide, as V, dust and fume, 15 min, related to Vanadium compounds)

##### 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)

#### 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

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Use engineering controls such as local exhaust ventilation during grinding or machining operations. Ensure compliance with applicable exposure limits.

## PERSONAL PROTECTIVE EQUIPMENT

### Eyes/Face

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

### Protective Clothing

Wear appropriate chemical resistant clothing.

### Glove Recommendations

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>	gray to yellow solid
<b>Color:</b>	gray to yellow	<b>Physical Form:</b>	solid
<b>Odor:</b>	odorless	<b>Odor Threshold:</b>	Not available
<b>pH:</b>	Not available	<b>Melting/Freezing Point:</b>	1200 °C
<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>	5.0 - 16.0
<b>Water Solubility:</b>	insoluble	<b>Log KOW:</b>	Not available
<b>Auto Ignition temp.:</b>	Not available	<b>Viscosity:</b>	Not available
<b>Volatility:</b>	Not available		

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## \*\*\* Section 10 - STABILITY AND REACTIVITY\*\*\*

### Reactivity

No reactivity hazard is expected.

### Chemical Stability

Stable at normal temperatures and pressure.

### Conditions to Avoid

Avoid generating dust.

### Possibility of Hazardous Reactions

Will not polymerize.

### Incompatible Materials

acids, bases, combustible materials, halocarbons, halogens, metals, oxidizing materials, peroxides, reducing agents

### Hazardous Decomposition:

**Combustion:** oxides of metals

## \*\*\* Section 11 - TOXICOLOGICAL INFORMATION\*\*\*

### 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

#### **IRON (7439-89-6)**

Oral LD50 Rat 984 mg/kg

#### **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 the following endpoints:

#### **COBALT (7440-48-4)**

Oral: 6171 mg/kg Oral Rat LD50

#### **IRON (7439-89-6)**

Oral: 750 mg/kg Oral Rat LD50; 30 gm/kg Oral Rat LD50

#### Acute Toxicity Level

#### **COBALT (7440-48-4)**

**Slightly Toxic:** ingestion

#### **IRON (7439-89-6)**

**Non Toxic:** ingestion

#### Immediate Effects

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

#### Delayed Effects

allergic reactions, blood damage, bone disorders, respiratory system damage, reproductive effects, cancer

#### Irritation/Corrosivity Data

See component data.

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## RTECS Irritation

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

### **TUNGSTEN (7440-33-7)**

500 mg/24 hour Eyes Rabbit mild; 500 mg/24 hour Skin Rabbit mild

## 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)

## 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

#### **ZIRCONIUM NITRIDE (25658-42-8)**

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

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

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



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## RTECS Reproductive Effects

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

## 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

kidneys, respiratory system

## Specific Target Organ Toxicity - Repeated Exposure

respiratory system, skeletal system, blood

## Aspiration Hazard

No data available.

## Medical Conditions Aggravated by Exposure

immune system disorders or allergies, liver and/or kidney disorders, respiratory disorders, 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\*\*\*

## Ecotoxicity

Toxic to aquatic life.

Harmful to aquatic life with long lasting effects.

## Component Analysis - Aquatic Toxicity

### COBALT (7440-48-4)

**Fish:** 96 Hr LC50 Brachydanio rerio: >100 mg/L [static]

### NICKEL (7440-02-0)

**Fish:** 96 Hr LC50 Brachydanio rerio: >100 mg/L; 96 Hr LC50 Cyprinus carpio: 1.3 mg/L [semi-static]; 96 Hr LC50 Cyprinus carpio: 10.4 mg/L [static]

**Algae:** 72 Hr EC50 Pseudokirchneriella subcapitata: 0.18 mg/L; 96 Hr EC50 Pseudokirchneriella subcapitata: 0.174 - 0.311 mg/L [static]

**Invertebrate:** 48 Hr EC50 Daphnia magna: >100 mg/L; 48 Hr EC50 Daphnia magna: 1 mg/L [Static]

### IRON (7439-89-6)

**Fish:** 96 Hr LC50 Morone saxatilis: 13.6 mg/L [static]; 96 Hr LC50 Cyprinus carpio: 0.56 mg/L [semi-static]

## 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.

### \*\*\* Section 13 - DISPOSAL CONSIDERATIONS\*\*\*

## Disposal Methods

Dispose in accordance with all applicable regulations.

## Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components.

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## \*\*\* Section 14 - TRANSPORT INFORMATION\*\*\*

### US DOT Information

Not regulated.

### IMDG Information

Not regulated.

## \*\*\* Section 15 - REGULATORY INFORMATION\*\*\*

### Component Analysis

#### U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

#### **COBALT (7440-48-4)**

**SARA 313:** 0.1 % de minimis concentration

#### **NICKEL (7440-02-0)**

**SARA 313:** 0.1 % de minimis concentration

**CERCLA:** 100 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 45.4 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm)

#### **VANADIUM CARBIDE (12070-10-9)**

**SARA 313:** 1.0 % de minimis concentration (Chemical Category N770, related to Vanadium compounds)

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

**SARA 313:** 1.0 % de minimis concentration (fibrous forms)

#### **SARA 311/312 Hazardous Categories**

**Acute Health:** Yes **Chronic Health:** Yes **Fire:** No **Pressure:** No **Reactive:** No

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### U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS #	CA	MA	MN	NJ	PA
TUNGSTEN CARBIDE (¹related to: Tungsten compounds, n.o.s.)	12070-12-1	Yes¹	No	Yes¹	Yes	No
COBALT	7440-48-4	Yes	Yes	Yes	Yes	Yes
NICKEL	7440-02-0	Yes	Yes	Yes	Yes	Yes
DIMOLYBDENUM CARBIDE (¹related to: Molybdenum compounds, n.o.s.)	12069-89-5	Yes¹	No	No	No	No
MOLYBDENUM	7439-98-7	Yes	Yes	Yes	Yes	Yes
TUNGSTEN	7440-33-7	Yes	Yes	Yes	Yes	Yes
CHROMIUM CARBIDE (¹related to: Chromium compounds)	12012-35-0	Yes¹	No	No	Yes¹	Yes¹
IRON	7439-89-6	Yes	No	No	No	No
ZIRCONIUM NITRIDE (¹related to: Zirconium compounds, n.o.s.)	25658-42-8	Yes¹	No	Yes¹	No	No
VANADIUM CARBIDE (¹related to: Vanadium compounds)	12070-10-9	No	No	No	Yes¹	No
ALUMINUM OXIDE	1344-28-1	Yes	Yes	Yes	Yes	Yes

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer.

### Component Analysis - Inventory

Component	CAS #	US	MITI	KOREA
TUNGSTEN CARBIDE	12070-12-1	Yes	Yes	Yes
TITANIUM CARBIDE	12070-08-5	Yes	Yes	Yes
COBALT	7440-48-4	Yes	No	Yes
TANTALUM NITRIDE	12033-62-4	Yes	No	Yes
NICKEL	7440-02-0	Yes	No	Yes
TITANIUM NITRIDE	25583-20-4	Yes	Yes	Yes
TANTALUM CARBIDE	12070-06-3	Yes	Yes	Yes
DIMOLYBDENUM CARBIDE	12069-89-5	Yes	Yes	Yes
NIOBIUM CARBIDE	12069-94-2	Yes	Yes	Yes
MOLYBDENUM	7439-98-7	Yes	No	Yes
TUNGSTEN	7440-33-7	Yes	No	Yes
CHROMIUM CARBIDE	12012-35-0	Yes	Yes	Yes
IRON	7439-89-6	Yes	No	Yes
ZIRCONIUM NITRIDE	25658-42-8	Yes	Yes	Yes
VANADIUM CARBIDE	12070-10-9	Yes	Yes	Yes
ALUMINUM OXIDE	1344-28-1	Yes	Yes	Yes

### U.S. Inventory (TSCA)

All components of this product are in compliance.

**\*\*\* Section 16 - OTHER INFORMATION\*\*\***

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**NFPA Ratings: Health: 2 Fire: 0 Reactivity: 0**

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

**New MSDS: 11/1/2011**

## 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

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