

# SAFETY DATA SHEET

Revision Date: November 1 2015

## 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product Name                      Cemented carbide, Cemented Carbide Tool, Coated Cemented Carbide, and Coated Cemented Carbide Tool

Company                              MITSUBISHI MATERIALS U.S.A. CORPORATION

Address                                11250 Slater Avenue, Fountain Valley, CA 92708

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    Monday to Friday 8:00am to 5:00pm (PST)  
    except national holidays

Relevant identified uses            Cutting tools mainly for metallic materials, wear-resistant tools for plastic forming process, tools for macadam, civil engineering, and urban development, etc.

Notes for Product                    Solid is chemically stable in the normal tool use.  
    By using a cemented carbide tool, processing such as other metals by the usual method of use is safe when performing (polishing, cutting, including rolling).  
    This SDS is the information about the dust caused by raw materials and processing.


## 2. HAZARDS IDENTIFICATION

### GHS Classification

Physical Hazards	Substances and mixtures which, in contact with water, emit flammable gases	Out of category	
Health Hazards	Acute toxicity	Out of category	
	Respiratory sensitisation	Category 1	
	Skin sensitisation	Category 1	
	Germ cell mutagenicity	Category 2	
	Carcinogenicity	Category 2	
	Reproductive toxicity	Category 2	
	Specific target organ toxicity — single exposure		Category 1 (Respiratory, kidney)
			Category 3 (Respiratory irritation)
Specific target organ toxicity — repeated exposure		Category 1 (Respiratory)	
Environmental Hazards	Long-term aquatic hazard	Category 4	

Note: Those not listed, they can not be classified outside the scope or classification.

GHS Label Element

	Dusts resulting from the raw material and processing	Alloys and Product
Pictogram(s)		Not applicable
Signal Word(s)	Danger	Not applicable
Hazard Statement(s)	<p>May cause allergy or asthma symptoms or breathing difficulties if inhaled.</p> <p>May cause an allergic skin reaction.</p> <p>Suspected of causing genetic defects.</p> <p>Suspected of causing cancer.</p> <p>Suspected of damaging fertility or the unborn child.</p> <p>Causes damage to organs (respiratory, kidney).</p> <p>May cause respiratory irritation</p> <p>Causes damage to organs (respiratory).</p>	Not applicable
Precautionary Statement(s)		
<b>【Prevention】</b>	<p>Obtain special instructions before use.</p> <p>Do not handle until all safety precautions have been read and understood.</p> <p>Do not breathe dust/fume/ gas/mist/vapours/spray.</p> <p>Avoid breathing dust/fume/ gas/mist/vapours/spray.</p> <p>Wash hands thoroughly after handling.</p> <p>Do not eat, drink or smoke when using this product.</p> <p>Use only outdoors or in a well-ventilated area.</p> <p>Contaminated work clothing should not be allowed out of the workplace.</p> <p>Wear protective gloves/ protective clothing/eye protection/face protection.</p> <p>Wear respiratory protection.</p>	<b>【Prevention】</b> Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.
<b>【Response】</b>	<p>Call a POISON CENTER or doctor/physician if you feel unwell.</p> <p>IF ON SKIN: Wash with plenty of soap and water.</p> <p>IF ON SKIN: Gently wash with plenty of soap and water.</p> <p>If skin irritation or rash occurs: Get medical advice/attention.</p> <p>IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.</p> <p>IF exposed or concerned: get medical advice/attention.</p> <p>If exposed or concerned: call Poison Center/ doctor.</p> <p>Take off contaminated clothes and wash it before reuse.</p> <p>If experiencing respiratory symptoms: Call a POISON CENTRE or doctor/ physician.</p>	
<b>【Storage】</b>	<p>Store locked up.</p> <p>Store in a well-ventilated place. Keep container tightly closed.</p>	
<b>【Disposal】</b>	The contents and containers, to entrust the work to a professional waste treatment company that has received the permission of the prefectural governor.	

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### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance or Mixture      Mixture

Cemented carbide in some cases it is coated with the following materials.

AlN, Al<sub>2</sub>O<sub>3</sub>, (Al,Ti)N, B<sub>4</sub>C, Cr<sub>3</sub>C<sub>2</sub>, CrN, MoS<sub>2</sub>, Ti(B,C,N), TiC, (Ti,Zr)N, WC, C(Diamond, DLC)

Chemical names and Contents of cemented carbide

Chemical Name	Chemical formula	CAS No.	Content(%)
Tungsten Carbide	WC	12070-12-1	55-95
Tantalum Carbide	TaC	12070-06-3	0-20
Niobium Carbide	NbC	12069-94-2	0-20
Titanium Carbide	TiC	12070-08-5	0-20
Titanium nitride	TiN	25583-20-4	0-5
Vanadium Carbide	VC	12070-10-9	0-5
Zirconium Carbide	ZrC	12070-14-3	0-5
Cobalt	Co	7440-48-4	0-30
Nickel	Ni	7440-02-0	0-30
Chromium	Cr	7440-47-3	0-5

### 4. FIRST AID MEASURES

Inhalation	If symptoms of pulmonary involvement develop (coughing, wheezing, shortness of breath, etc.), remove from exposure and move from workplace to isolate. If breathing difficulties occur, making the oxygen inhalation. If breathing has stopped, immediately perform artificial respiration and seek medical advice/attention.
Skin contact	If when the dust adheres to the skin, remove clothing dust adhered and thoroughly wash the attached area with soap and water. If irritation or rash persists, seek medical advice/attention.
Eye contact	If dust gets into eyes, flush with copious amounts of water. If irritation persists, seek medical advice/attention.
Ingestion	If substantial quantities of dust are swallowed, dilute with a large amount of water and seek medical advice/attention.

### 5. FIRE-FIGHTING MEASURES

Extinguishing media	In the case of dust fire, dry sand, extinguish with expanded
Suitable Extinguishing Media	vermiculite, expanded perlite, ABC type (general, oil, electric fire) powder extinguishers, or water (the dust containing chips of light metal such as magnesium or aluminum etc. is banned to extinguish with water).
Special hazards arising from the substance or mixture	Under certain conditions, dust such as the particle size is extremely fine and mixed with the grinding oil with low flash point, there is a possibility of spontaneous combustion. In the case where dusts under very flammable conditions are dispersed into the atmosphere, which may fall within the explosive limits. In such cases, first after secure the safety of themselves, take necessary fire-fighting measures.
Advice for fire-fighters	Fire fighters should use a suitable mask with filter or respiratory protection.

## 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	Person cleaning the dust wears equipment with respirator etc. and clothes to minimize the exposure to the human body.
Environmental precautions	Treat dust as industrial waste and avoid release to the water environment.
Methods and material for containment and cleaning up	For dusts, isolate the location and remove using a vacuum cleaner with filters that can be recovered fine particles with high efficiency. If there is no suitable removal method, remove the dust with water sprayers or wet mops.

## 7. HANDLING AND STORAGE

Precautions for safe handling	Although cemented carbide is stable substance and has little effect on health, may cause rough skin for a long time or repeated contact to the dust or grinding liquid containing cobalt or nickel. Since the cemented carbide has a high specific gravity, treat as heavy goods if large product or quantity is large. If the scattering of dust containing cobalt or nickel is conceivable, use installation such as local exhaust ventilation and protective equipment to minimize the exposure of the human body. Wash hands thoroughly before eat and drink. Do not eat, drink or smoke when using this product. Periodic medical examinations are recommended for individuals regularly exposed to dust or mist.
Condition of safe storage	Stored to avoid sudden changes of temperature and high humidity.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Appropriate engineering controls

The installation of local exhaust ventilation, airborne dust will not exceed the reference value of the allowable concentrations listed in the following table.

Placing the cleansing device or safety shower in workplace storage or handling this material.

Furthermore, also be placed dressing equipment and facilities for washing.

### Occupational Exposure Limits (reference value)

Chemical Name	Chemical formula	OSHA PEL (mg/m <sup>3</sup> ) (Concentration of Metal Dust)	ACGIH TLV (mg/m <sup>3</sup> ) (Concentration of Metal Dust)
Tungsten Carbide	WC	N/A	5 (as W)
Tantalum Carbide	TaC	N/A	N/A
Niobium Carbide	NbC	N/A	N/A
Titanium Carbide	TiC	N/A	N/A
Titanium Nitrate	TiN	N/A	N/A
Vanadium Carbide	VC	N/A	N/A
Zirconium Carbide	ZrC	5	5
Cobalt	Co	0.1	0.02
Nickel	Ni	1.0	1.5
Chromium	Cr	1.0	0.5

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Note: OSHA: Occupational Safety & Health Administration U.S. Department  
 PEL: Permissible Exposure Limit  
 ACGIH: American Conference of Governmental Industrial Hygienists Inc.  
 TLV: Threshold Limit Value  
 N/A: Not Applicable

**Personal protection equipment**

Respiratory protection	Wear a dust mask and respiratory protection against dust.
Hand protection	Wear protective gloves against dust.
Eye/face protection	Wear protective glasses against dust.
Skin protection (Body / Other)	Direct contact should be avoided with the skin. Clothes, rags or other items, to remove attached dust, be sure to remove by washing or vacuuming using the appropriate filter without shaking off. Contaminated work clothing should be changed by new one.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance	Dark Grey Metal
Odor	Odorless
pH (Value)	No data available
Melting point	No data available
Boiling point	No data available
Flash point	No data available
Specific Gravity (H2O=1)	11.0 to 15.5
Solubility in Water:	Insoluble

**10. STABILITY AND REACTIVITY**

Reactivity	Contact of dust with chemicals such as acid may cause harmful gas generation□.
Chemical stability	The product is a solid state and is not explosive, flammable, combustible, pyrophoric and oxidizing. Under normal circumstances the product is chemically stable.
Possibility of hazardous reactions	In powder or granular form, there is a possibility of dust explosion mixed with air.
Conditions to avoid	Avoid to contact with [Incompatible materials]
Incompatible materials	Oxidizing substance (such as hydrogen peroxide, nitric acid, ammonium nitrate, nitrogen dioxide etc.) Other substances (Hydrazine nitrate, acetylene, etc.)
Hazardous decomposition product(s)□	None

**11. TOXICOLOGICAL INFORMATION**

Acute toxicity	No data available
Skin corrosion / irritation	No data available
Serious eye damage/irritation	No data available
Respiratory or skin sensitization	Cobalt and Nickel classified into Category 1 for respiratory sensitizer by Japan Society For Occupational Health (JSOH). Cobalt and Nickel classified into Category 1 for skin sensitizer by Japan Society For Occupational Health (JSOH).
Germ cell mutagenicity	Chromium was classified as Category 2 based on the positive result of the in vivo mutagenicity test using somatic cells (the

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	chromosome aberration test using rat peripheral blood lymphocytes) (IARC 49 (1999)).
Carcinogenicity	Cobalt and Nickel are carcinogen classified IARC 2B. IARC 2B: Probably carcinogenic to humans
Reproductive toxicity	There is a report of Cobalt that when rats were exposed to the substance in drinking water for 7 months before pregnancy and during pregnancy, a slight increase in pre-implantation mortality was found and some cases of malformed fetuses were noted (Teratogenic (12th, 2007)).
STOT - single exposure	Based on the data, Nickel was classified into Category 1 (respiratory system, kidney). Chromium was classified as Category 2 (systemic toxicity). Chromium was classified as Category 3 (airway irritant).
STOT - repeated exposure	Based on the data, Nickel was classified into Category 1 (respiratory system).
Aspiration hazard	No data available
Other information	No data available
Note: STOT: Specific target organ toxicity	

## 12. ECOLOGICAL INFORMATION

Mobility	Although there is mobility in the floating dust, it is easy to deposition for specific gravity is large.
Persistence and degradability	No information of cemented carbide.
Bioaccumulative potential	No information of cemented carbide.
Environmental effects	Nickel was classified into Category 4 since it is a metal and its behavior in water is unknown though the data (L(E)C50 <=100 mg/L) are available.

## 13. DISPOSAL CONSIDERATIONS

Disposal methods	Main component (tungsten carbide, cobalt or nickel) is a rare metal, harvested, it is desirable to recover and recycle. Dispose of waste in accordance with appropriate Federal, State, and Local government environmental regulations.
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## 14. TRANSPORT INFORMATION

UN number	Not applicable
UN proper shipping name	Not applicable
Transport hazard class(es)	Not applicable
Marine pollutant	Not applicable

## 15. REGULATORY INFORMATION

Laws (Acts) and Regulations on chemical substances in U.S.A.

Note: This product is regarded as the article and this product is physically and chemically stable under normal conditions of tool use. Regulatory information described here is the information about the dust caused by raw materials and processing.

TSCA Inventory	All substances are listed in TSCA Inventory. (All substances are listed in the table of '3. Composition/Information on
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	Ingredients'.)
TSCA SNUR List	All substances are not listed in TSCA SNUR List.
EPCRA/SARA	Nickel is listed in EPCRA/SARA Section 302 Extremely Hazardous Substances.
NTP Roc List	Nickel is listed in NTP Report of Carcinogens (RoC) List.
California Proposition 65	Cobalt and Nickel are listed in California State Proposition 65 List. Cobalt has been found to cause cancer, which would require a warning under the statute by the State of California. Nickel has been found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute by the State of California.

Note TSCA: Toxic Substances Control Act  
 SNUR: Significant New Use Rule under TSCA  
 EPCRA: Emergency Planning and Community Right-to-Know Act  
 SARA: Superfund Amendments and Reauthorization Act  
 NTP: National Toxicology Program

## 16. OTHER INFORMATION

Other hazardous information

See "Safety brochure" in the handling.

Note the following about the dust.

Dusts irritate to nose, mouth, throat, mucosa of eyes and also irritate the respiratory organs and lungs. The symptoms are allergic skin rash, in the respiratory system a cough, asthma, shortness of breath, chest pressure and tightness in the chest.

If you swallowed a large amount of dust containing cobalt, , there is a possibility that cause blood, heart, thyroid gland and spleen disorders.

It has been reported that repeated or prolonged contact with cobalt, nickel or chromium, may affect skin, respiratory organs and heart etc.

Metal component (Carcinogenicity) has the following findings.

Cobalt metal: ACGIH A3: Confirmed animal carcinogen with unknown relevance to humans  
 IARC 2B: Probably carcinogenic to humans

Nickel metal: ACGIH A5: Not suspected as a human carcinogen  
 IARC 2B: Probably carcinogenic to humans

Chromium metal: IARC 3: Not classifiable as to its carcinogenicity to humans.

ACGIH: American Conference of Governmental Industrial Hygienists Inc.

IARC: International Agency for Research on Cancer

Metal component (Environmental effects) has the following findings.

Cobalt and chromium may be harmful to the environment. Particular attention to the impact on aquatic organisms it is necessary.

Reference URL

Ministry of Economy, Trade and Industry: <http://www.meti.go.jp/>

Ministry of the Environment(PRTR): <http://www.env.go.jp/>

Ministry of Health, Labour and Welfare(ISHL): <http://www.mhlw.go.jp/>

IARC(The International Agency for Research on Cancer ): <http://monographs.iarc.fr/>

ICSC card: <http://www.nihs.go.jp/ICSC/>

The National Institute of Technology and Evaluation: <http://www.safe.nite.go.jp/ghs/list.html>

Reference

(1)Food & Drug Research Laboratories, study No.8005B (4.11.84).

(2)T. Shirakawa et al., Chest. 95, 29 (1989).

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(3) International Chemical Safety Cards (cobalt, chromium, nickel).

(4) Hazardous and toxicity Handbook of chemical substances (Japan Industrial Safety & Health Association)

(5) A. O. Bech et al., Brit. J. Ind., 19, 239 (1962).

(6) IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, vol.86 (2006).

(7) NITE (National Institute of Technology and Evaluation, Japan), GHS classification results  
[http://www.safe.nite.go.jp/english/ghs/ghs\\_index.html](http://www.safe.nite.go.jp/english/ghs/ghs_index.html)

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