

SAFETY DATA SHEET

Revision Date: November 1 2015

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

Product Name CBN (Cubic Boron Nitride) Tools and Cemented Carbide Base Insert

Company MITSUBISHI MATERIALS U.S.A. CORPORATION

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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 CBN tools, 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)		
【Prevention】	<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>	【Prevention】 <p>Obtain special instructions before use.</p> <p>Do not handle until all safety precautions have been read and understood.</p>
【Response】	<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>	
【Storage】	<p>Store locked up.</p> <p>Store in a well-ventilated place. Keep container tightly closed.</p>	
【Disposal】	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

Chemical names and Contents of the CBN tool

Ingredient	Chemical Formula	CAS No.	Composition mass%
CBN Layer			
Boron Nitride	BN	10043-11-5	25-95
Cobalt	Co	7440-48-4	5-20
Aluminum Nitride	AlN	24304-00-5	0-20
Aluminum Boride	AlB ₂	12041-50-8	0-20
Aluminum Oxide	Al ₂ O ₃	1344-28-1	0-5
Titanium Boride	TiB ₂	12045-63-5	0-10
Titanium Carbide	TiC	12070-08-5	0-10
Titanium Carbonitride	TiCN	12347-09-0	0-10
Titanium Nitride	TiN	25583-20-4	0-10
Titanium Aluminide	TiAl	12004-78-3	0-2
Tungsten Boride	WB	12007-09-9	0-5
Tungsten Carbide	WC	12070-12-1	0-50
Cemented Carbide Base Insert			
Tungsten Carbide	WC	12070-12-1	75-95
Cobalt	Co	7440-48-4	5-25
Tantalum Carbide	TaC	12070-06-3	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 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).
Suitable Extinguishing Media	
Special hazards arising from	Under certain conditions, dust such as the particle size is

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the substance or mixture	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 CBN tool 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. Since the CBN tool has a high specific gravity, treat as heavy goods if large product or quantity is large. If the scattering of dust containing cobalt 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.

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Occupational Exposure Limits (reference value)

Ingredient	Chemical Formula	OSHA* PEL* mg/m ³ (Metal Dust Concentration)	ACGIH* TLV* mg/m ³ (Metal Dust Concentration)
Boron Nitride	BN	10	10
Cobalt	Co	0.1	0.02
Aluminum Nitride	AlN	N/A	N/A
Aluminum Boride	AlB ₂	N/A	N/A
Aluminum Oxide	Al ₂ O ₃	5	10
Titanium Boride	TiB ₂	N/A	N/A
Titanium Carbide	TiC	5	N/A
Titanium Carbonitride	TiCN	N/A	N/A
Titanium Nitride	TiN	N/A	N/A
Titanium Aluminide	TiAl	N/A	N/A
Tungsten Boride	WB	N/A	5 (as W)
Tungsten Carbide	WC	N/A	5 (as W)
Tantalum Carbide	TaC	N/A	N/A

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 15.0
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

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	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	Aviod 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 classified into Category 1 for respiratory sensitizer by Japan Society For Occupational Health (JSOH). Cobalt classified into Category 1 for skin sensitizer by Japan Society For Occupational Health (JSOH).
Germ cell mutagenicity	No data available
Carcinogenicity	Cobalt 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	No data available
STOT - repeated exposure	No data available
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 the CBN and the Cemented Carbide
Bioaccumulative potential	No information of the CBN and the Cemented Carbide
Environmental effects	No information of the CBN and the Cemented Carbide

13. DISPOSAL CONSIDERATIONS

Disposal methods	Main component (tungsten carbide, cobalt) 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

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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 Ingredients'.)
TSCA SNUR List	All substances are not listed in TSCA SNUR List.
California Proposition 65	Cobalt 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.

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, 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

ACGIH: American Conference of Governmental Industrial Hygienists Inc.

IARC: International Agency for Research on Cancer

Metal component (Environmental effects) has the following findings.

Cobalt 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

The information contained in this Safety Data Sheet is provided in good faith and is believed to be correct at the date of issue. However, it is expected that individuals receiving the information will exercise their independent judgement in determining its appropriateness for a particular purpose. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification.