Safety Data Sheet（SDS）

Date of Issue: 1st May, 2005
Date Revised: 1st April, 2021

1. Identification of the Substance/Preparation and of the Company

Product

Chemical Name: Cemented Carbide, Cemented Carbide Tool, Coated Cemented Carbide, and Coated Cemented Carbide Tool

Supplier Information

Company Name:	NGK SPARK PLUG CO., LTD.
Contact Department:	Machining Technology Company
Address:	2808 Iwasaki, Komaki-shi, Aichi, Japan <485-8510>
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Emergency Telephone：	+81-568-76-1270

Recommended Use and Restrictions on Use

Cutting tools mainly for metallic materials

2. Hazard Identification

Important Hazards and Effects

Danger:	• Cemented Carbide is nonflammable in solid form and there is no risk of fire. However, dusts resulting from cutting and grinding may be pyrophoric or explosive. • Not reported on flash point, ignition point, explosive limits, etc.
Hazard:	• If dusts resulting from cutting and grinding are on skin or in eyes, irritation may occur.
Environmental Effects:	• Not reported

GHS Classification

Not applicable

GHS Label Elements

Not applicable

3. Composition/Information on Ingredients

- Cemented Carbide may be coated with the following substances.
  (Al,Ti)N、CrN、Ti(B,C,N)、(Ti,Zr)N、AlON、TiSiN
- Distinction between Substance and Mixture： Mixture (alloy)
- Ingredients and Concentration or Concentration Range (Composition)

Ingredient	Chemical Formula	CAS No	Composition mass%
Tungsten carbide	WC	12070-12-1	55-100
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
Cobalt	Co	7440-48-4	0-30
Chromium	Cr	7440-47-3	0-5

4. First-Aid Measures

If Inhaled

- If the high concentration of dust from grinding scraps is inhaled or respiratory symptoms (coughs, gasping, shortness of breath, etc.) are experienced, evacuate and isolate the workplace. If breathing difficulties occur, administer oxygen inhalation. If breathing has stopped, immediately administer artificial respiration and get medical advice/attention.
- If irritation or rash persists, get medical advice and attention.

If on Skin

- If dust from grinding scraps is contacted with skin, take off contaminated clothing and rinse the affected area with soapy water thoroughly. If irritation or rash persists, get medical advice/attention.

If in Eyes

- If dust from grinding scraps is in eyes, immediately wash away with clean water. If irritation persists, get medical advice/attention.

If Swallowed

- If a large amount of dust is swallowed, get medical advice/attention after ingesting plenty of water to dilute.

5. Fire-Fighting Measures

Extinguishing Media

- To extinguish the fire of dusts resulting from grinding, use dry sand, dry dolomite, ABC type (general, oil, electric fire) powder extinguishers or water (no water allowed for the dust containing cut powders of light metal such as magnesium and aluminum).

Unusual Fire and Explosion

- Dusts resulting from grinding are very fine and under the specific conditions in which the dusts are mixed with grinding oil with low flash point, it is possible to become pyrophoric. If dusts under very flammable conditions are dispersed in the air, it is possible to explode. In such cases, look to your own safety first and then take necessary fire-fighting measures.

Special Protective Actions for Fire-Fighters

- In fighting a fire, wear a dust-proof respirator or respiratory protective equipment.

6. Accidental Release Measures

Personal Precautions

- It is recommended that someone who cleans grinding scraps or dusts should wear clothing and respiratory protective equipment to minimize exposure.

Environmental Precautions

- Dispose of dusts as industrial wastes and prevent release in water systems.

Cleaning Up Methods

- If there are dusts from resulting from grinding and mechanical processing, isolate the area and remove with a cleaner equipped with a filter which can take up fine particles very efficiently. If appropriate removing methods are not available, sweep with water sprayers or wet mops.

7. Handling and Storage

Handling

- Cemented Carbide are stable and has little effect on health. However prolonged or repeated exposure to the dust or grinding liquid containing cobalt may cause rough skin.
- In grinding or mechanical processes, provide local exhaust ventilation and use personal protective equipment to minimize exposure to human body, due to the possibilities of the disperse of dust containing cobalt. Do the same way for grinding sludge.
- Wash hands thoroughly before eating, drinking, and smoking. Do not eat, drink, and smoke in the handling area.
- Regular physical checkups are recommended.

Storage

- Avoid sudden changes of temperature and high humidity for storage.

8. Exposure Controls/Personal Protection

Provide local exhaust ventilation so that dusts in the air may not exceed the exposure limits in the following table. If it is possible that a concentration may exceed the permissible level, use a dust-proof respirator or respiratory protection.

□Permissible Concentration in Working Environment

Ingredient	Chemical Formula	OSHA* PEL* mg/m^3 (Metal Dust Concentration)	ACGIH* TLV* mg/m^3 (Metal Dust Concentration)	Japan Society for Occupational Health Exposure Limit mg/m^3
Tungsten carbide	WC	N/A	5 (as W)	N/A
Tantalum carbide	TaC	N/A	N/A	N/A
Niobium carbide	NbC	N/A	N/A	N/A
Titanium carbide	TiC	N/A	N/A	N/A
Titanium nitride	TiN	N/A	N/A	N/A
Vanadium carbide	VC	N/A	N/A	N/A
Cobalt	Co	0.1	0.02	0.05
Chromium	Cr	1.0	0.5	0.5

*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

Protective Equipment

- Respiratory Protection: Dust-proof respirators and respiratory protective equipment are recommended.
- Hand Protection: Protective gloves for dusts are recommended.
- Eye Protection: Protective glasses for dusts are recommended.
- Skin/Body Protection: Avoid direct skin contact.
  Clean up deposited dust on clothing, rags, etc. by washing or absorbing with suitable filters but not by whisking off.
  Change the contaminated clothing into clean one.
  Local exhaust ventilation is recommended.

9. Physical and Chemical Properties

Appearance:	Black, Gray, Silver or Gold solid
Odor:	Odorless
pH:	No data available
Melting Point:	
Boiling Point:	No data available
Flash Point:	No data available
Vapor Pressure:	No data available
Specific Gravity:	11.0 – 15.5
Solubility:	Insoluble

10. Stability and Reactivity

Reactivity

- Can be a possible cause to produce harmful gases in contact with chemical such as acid.

Chemical Stability

- This product is in solid form and therefore chemically stable as it is and not explosive, flammable, combustible, pyrophoric, water-reactive, and oxidizing in normal environment.

Possibility of Hazardous Reactions

- Not applicable

Conditions to Avoid

- Contact with the following 'Incompatible Materials'

Incompatible Materials

- Oxidizing substances (Hydrogen peroxide, Nitric acid, Ammonium nitrate, Sodium chlorate, Nitrogen dioxide, etc.)
- Other substances (Hydrazine nitrate, Acetylene, Performic acid, Bromine pentafluoride, 1,4-Dioxane, etc.)

Hazardous Decomposition Products

- None

11. Toxicological Information

Acute Toxicity

Data on this product: Dusts resulting from cutting and grinding irritate the mucous membranes of the nose, mouth, throat, and eyes; they also irritate the respiratory organs and lungs. Symptoms include allergic skin rash, and coughs, asthma, shortness of breath, chest pressure and tightness in the chest.
If a large amount of dust containing cobalt is inhaled, blood, heart, thyroid gland, and spleen disorders may result. (References 1)

Skin Corrosion/Irritation

Data on this product: No data available

Serious Eye Damage/Eye Irritation

Data on this product: Dusts resulting from cutting and grinding irritate the mucous membranes of the eyes.

Respiratory or Skin Sensitization

Data on this product: It is reported that repeated or prolonged contact with cobalt or chromium may affect skin, respiratory organs. (References 2)

Germ Cell Mutagenicity

Data on this product: No data available

Carcinogenicity

Data on this product:

Metallic cobalt powders with tungsten carbide	IARC	2A: Probably carcinogenic to humans. (References 6)
Cobalt metal	ACGIH	A3: Confirmed animal carcinogen with unknown relevance to humans.
	IARC	2B: Possibly carcinogenic to humans.
	Japan Society for Occupational Health	2B: The substance has been determined to be possibly carcinogenic to humans (with relatively insufficient evidence).
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

Reproductive Toxicity

Data on this product: No data available

Specific Target Organ Toxicity/Systemic Toxicity (Single Exposure)

Data on this product: If a large amount of dust containing cobalt is inhaled, blood, heart, thyroid gland, and spleen disorders may result. (References 1)

Specific Target Organ Toxicity/Systemic Toxicity (Repeated Exposure)

Data on this product: It is reported that repeated or prolonged contact with cobalt or chromium may affect skin, respiratory organs, heart, etc. (References 2 – 5)

Aspiration Hazard

Data on this product: It is reported that repeated or prolonged contact with cobalt or chromium may cause asthma. (References 2 – 4)
It is reported that repeated or prolonged contact with cobalt or chromium may affect lungs. (References 2)

12. Ecological Information

Mobility

- Although dusts in the air are mobile, they are likely to be deposited.

Persistence

- Not reported on Cemented Carbide

Bioaccumulative Potential

- Not reported on Cemented Carbide

Environmental Effects

- Not reported on Cemented Carbide
- Cobalt and chromium may be harmful to the environment. Special attention should be paid for the effect on aquatic life. (References 2)

13. Disposal Considerations

Disposal Method

- Tungsten carbide and Cobalt are rare metal. It is desirable to collect and recycle them.
- For disposal, conform to the applicable laws regarding industrial wastes such as 'Waste Disposal and Public Cleansing Law' and relevant local by laws.

14. Transport Information

UN Number:	Not applicable
UN Hazard Class:	Not applicable
Marine Pollutant:	Not applicable

15. Regulatory Information

As this product is an article, laws and regulations prescribed for chemical substances are not applied.

16. Other Information

Disclaimer

The contents of this SDS are based on material and information available as of today and may be revised due to knowledge newly obtained. The values of concentration, physical/chemical properties are not guaranteed. In addition, the precautions described herein apply only to normal uses, and thus safety cannot be guaranteed.

References

(1) Food & Drug Research Laboratories, study No.8005B (4.11.84).
(2) T. Shirakawa et al., Chest. 95, 29 (1989).
(3) International Chemical Safety Cards (cobalt, chromium).
(4) The Guide to Chemical Hazards (edited by 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).

Revision record

	Date	Contents
Rev.7	1st April, 2021	The change of Contact Department Name.