

Technical Data Sheet

1. Identification of the article / product and of the company

1.1. Description of product

Hard metal products on the basis of tungsten carbide and cobalt in sintered state.

1.2. Relevant identified uses

Machining of different materials by means of turning, milling, drilling, forming or as a wear part.

1.3. Identification of manufacturer / supplier

Manufacturer / Supplier:	Konrad Friedrichs GmbH & Co. KG
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2. Hazards identification

2.1. Fragmentation and breathing hazard

Sintered hard metal as supplied presents no danger. Wet or dry grinding and cutting of hard metal may produce hazardous dust or fog. Please use appropriate air extraction systems and breathing protection.

2.2. Breakage

Hard metal products, e.g. cutting tools could break during machining. Please use personal protection equipment and do not remove any protections of the machines.

2.3. Uses advised against

Avoid machining of hard metal without ventilation or exposure control.

3. Article composition / information on ingredients ^[1,2,3,4,5]

Identification name	CAS no.	EINECS no.	Weight percentage [%]	Hazard Statements	Precautionary Statements
Cobalt	7440-48-4	231-158-0	1-25	H228, H302, H317, H319, H330, H334, H350i, H361f, H400, H410	P201, P202, P210, P281, P308, P313, P501
Tungsten carbide	12070-12-1	235-123-0	75-99	-	-
Chromium carbide	12012-35-0	234-576-1	≤ 1	-	-
Tantalum carbide	12070-06-3	235-118-3	≤ 1	-	-
Vanadium carbide	12070-10-9	235-122-5	≤ 1	-	-
Niobium carbide	12069-94-2	235-117-8	≤ 1	-	-

4. First aid measures ^[1,3]

4.1. Description of first aid measures

You have to initiate the following first aid measures:

- **Eyes:** In case abrasive dust comes into contact with eyes, rinse them at least for several minutes under running water.
- **Skin:** Remove contaminated clothing and wash the skin with plenty of soap or water. Seek medical assistance if required.
- **Inhalation:** Remove immediately to fresh air. Seek medical assistance if required.

4.2. Most important symptoms and effects

Dust particles may damage the eye or cause skin irritation. Inhalation of dust may cause respiratory tract irritation.

5. Firefighting measures

Hard metal sintered articles do not present a risk of fire.

6. Accidental release measures

Sintered hard metal as supplied presents no danger that requires actions against accidental release. Hazardous dust or fog can be generated during grinding process of hard metal articles. An appropriate cooling lubricant should be used when machining hard metal to avoid exposure of dust and to absorb free Cobalt. Ensure suitable ventilation of the working area and use personal protective equipment (i.e. gloves, safety goggles and breathing

7. Handling and storage ^[1,3]

7.1. Precautions for safe handling

Under normal conditions, the use of hard metal articles does not require special safety precautions. Please use adequate equipment such as safety glasses and gloves and also do not drink, eat or smoke during machining of hard metal products. Wash your hands thoroughly after handling. Do not swirl up the hard metal dust.

Periodic medical check-ups are recommended for workers who are regularly exposed to dust.

7.2. Storage

Under normal conditions, the use of hard metal articles does not require special safety storage precautions. Protect the articles from humidity, acids and bases.

8. Exposure control and personal protection

8.1. Control parameters ^[5]

The exposure control parameters listed below are for operations with hard-metal articles that generate dusts or fumes including grinding, cutting, or re-sharpening.

Regulations and guidelines regarding exposure of cobalt into the air:

ACGIH	Threshold limit value (time-weighted average) / Cobalt, elemental and inorganic compounds (as Co):	0.02 mg / m ³
NIOSH	Recommended exposure limit (time-weighted average) / Cobalt metal, dust and fumes (as Co):	0.05 mg / m ³
	Immediately dangerous to life and health / Cobalt metal, dust and fumes (as Co):	20.0 mg / m ³
OSHA	Permissible exposure limit (8-hour time-weighted average) for general industry / Cobalt metal, dust and fumes (as Co):	0.1 mg / m ³

Regulations and guidelines regarding exposure of tungsten and tungsten compounds into the air:

NIOSH	Recommended exposure limit (10-hour time weighted average) / Tungsten and insoluble tungsten compounds:	5.0 mg / m ³
	Short term exposure limit (15-minute time weighted average) / Tungsten and insoluble tungsten compounds:	10.0 mg / m ³
OSHA	Permissible exposure limit (8-hour time-weighted average) for construction industries / Tungsten and insoluble tungsten compounds:	5.0 mg / m ³
	Permissible exposure limit (8-hour time-weighted average) for construction industries / Tungsten and soluble tungsten compounds:	1.0 mg / m ³

National exposure limits must be observed.

8.2. Protection against high exposure

In the case of dust or fog generation during grinding or cutting of hard metal articles, engineering controls may include local ventilation systems with dust filters. Dust or breathing masks and appropriate protective equipment, i.e. gloves and goggles, must to be used.

9. Stability and reactivity

Hard metal products are chemically stable and not reactive under standard pressure and standard temperature conditions.

10. Toxicological information

10.1. General information

Hard metal articles as provided do not present a human hazard. However during the cutting or grinding of hard metal products hazardous dust or fog are produced.

10.2. Repeated Exposure

Chronic inhalation of hard metal dust has the potential for causing transient or permanent respiratory disease, including occupational asthma and interstitial fibrosis.

11. Environmental information

Sintered hard metal products are free from halogenated hydrocarbon, aromatic compounds, polychlorinated biphenyls (PCBs) and polychlorinated terphenyls (PCTs).

12. Disposal consideration

Owners of hard metal waste are responsible for proper disposal. The metals contained in the hard metal products and tools are valuable and can be recycled.

Else, waste product and waste containers should be disposed in accordance with local, state, federal and national regulations.

13. Transport information

No hazardous materials in the meaning of transport regulations.

14. Regulatory information

14.1. General details

This Technical Data Sheet has been drawn up according to the REACH Regulation (EC) no. 1907 / 2006 (as amended). The data provided is based on the current state of knowledge and experience. The statement in the Technical Data Sheet are not meant to guarantee specific characteristics or properties and do not establish a contractual, legal relationship.

14.2. Statement for Substances of Very High Concern (SVHC)

We hereby certify that there are no inclusions of Substances of Very High Concern (SVHC), as defined under REACH Regulation (EC) 1907 / 2006, in the manufacturing process of our products in a concentration above 0.1 wt%.

The Candidate List of Substances of Very High Concern (SVHC) for authorization is available on ECHA's website; please use the following link:

<http://echa.europa.eu/web/guest/candidate-list-table>

14.3. Hazard and Precautionary statements

H228	Flammable solid.
H302	Harmful if swallowed.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.

H330	Fatal if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H350i	May cause cancer by inhalation.
H361f	Suspected of damaging fertility.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat/sparks/open flames/hot surfaces – No smoking.
P281	Use personal protective equipment as required.
P308	If exposed or concerned: Get medical advice/attention.
P313	
P501	Dispose of contents/container to an approved waste disposal plant.

15. Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service
EC	Effect concentration
IC	Inhibitory concentration
LC	Lethal concentration
LD	Lethal dose
NIOSH	National Institute for Occupational Safety and Health
NOEC	No Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development
OSHA	Occupational Safety and Health Administration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemical substances
SVHC	Substances of Very High Concern
Xn	Harmful

16. References

- [1] Centers for Disease Control and Prevention (CDC): In the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994.
- [2] European Commission • Joint Research Centre - Institute for Health and Consumer Protection (JRC - IHCP)
- [3] Deutsche Gesetzliche Unfallversicherung e.V. (DGUV): Gefahrstoffinformationssystem (GESTIS) database.
- [4] Material Safety Data Sheet from Freeport Cobalt, revision date 2014-02-01, S120 Cobalt powder, version 11.0 EN.
- [5] Agency for Toxic Substances and Disease Registry (ATSDR): Toxicological profile information.