

Issuing Date 2014-03-17

Revision Date 2014-03-24

Revision Number 1

1. Identification of the substance/preparation and of the Company/undertaking**Product Identifier**

Product name **S105**
Product code KP1004-1

Other means of identification

Description Tungsten Carbide product with Cobalt binder and lube
Synonyms Hard Metal, Cemented WC, Tungsten Carbide

Recommended use of the chemical and restrictions on use

Recommended Use Inserts. Powder. Mining Tools. Construction Tools. Round Tools. Metalworking Tools. Metallurgical Products. For use in industrial installations only.

Details of the Supplier of the Safety Data Sheet**Emergency Telephone Number**

Prepared by Kennametal Inc. 1600 Technology Way Latrobe, PA 15650, USA
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Emergency Telephone Number CHEMTREC: +1-703-527-3887 (INTERNATIONAL)
1-800-424-9300 (NORTH AMERICA)

2. Hazards Identification**Classification**

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Acute toxicity - Inhalation (Dusts/Mists)

Category 2

Label Elements**Emergency Overview**

- The product contains no substances which at their given concentration, are considered to be hazardous to health

Appearance grey Powder**Physical State** solid**Odor** none**Hazards not otherwise classified (HNOC)****OTHER INFORMATION**

3. Composition/Information on Ingredients**Synonyms**

Hard Metal, Cemented WC, Tungsten Carbide.

Chemical name	Formula	CAS-No	weight-%	GHS Classification
Tungsten carbide	WC	12070-12-1	> 50	
Cobalt	Co	7440-48-4	5 - 10	Acute oral 4 (H302) Acute dust/mist 1 (H330) Eye damage 2 (H319) Resp. Sens. 1B (H334) Skin Sens. 1 (H317) Carc. 1B (H350i) Repro. tox. 2 (H361f) Aquatic Acute 1 M=10 (H400) Aquatic Chronic 1 (H410) M=1
Chromium	Cr	7440-47-3	0.1 - 1	

4. First aid measures**FIRST AID MEASURES****General advice**

If symptoms persist, call a physician. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

Eye Contact

Keep eye wide open while rinsing. If symptoms persist, call a physician. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Skin contact

Consult a physician if necessary. Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Wash off immediately with soap and plenty of water.

Inhalation

Move to fresh air. If breathing is irregular or stopped, administer artificial respiration. Oxygen or artificial respiration if needed. Keep victim warm and quiet. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. Get medical attention.

Ingestion

Drink plenty of water. If symptoms persist, call a physician. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice.

Self-protection of the first aider

Self-protection of the first aider. Wear suitable gloves.

Most important symptoms and effects, both acute and delayed**Most important symptoms and effects, both acute and delayed**

Hives.

Indication of any immediate medical attention and special treatment needed**Notes to Physician**

Treat symptomatically.

5. Fire-fighting measures**Suitable extinguishing media**

Dry chemical, CO₂, sand, earth, water spray or regular foam.

Specific hazards arising from the chemical Vapors or dust may form explosive mixtures with air

Protective equipment and precautions for firefighters Use personal protective equipment as required

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions Ensure adequate ventilation. Use personal protective equipment as required. Avoid contact with eyes, skin and clothing. Avoid dust accumulation in enclosed space.

Environmental precautions Avoid release to the environment.

Methods and material for containment and cleaning up For transportation-related spills in North America call CHEMTREC at 1-800-424-9300 and Internationally +1-703-527-3887. Collect in closed and suitable containers for disposal. Use personal protective equipment as required. High-efficiency particulate filter.

7. Handling and Storage

Precautions for safe handling Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Minimize dust generation and accumulation. Avoid creating dust. Use personal protective equipment as required. Avoid contact with eyes, skin and clothing. Wash contaminated clothing before reuse. Do not breathe dust/fume/gas/mist/vapors/spray.

Conditions for safe storage, including any incompatibilities

Storage Keep container tightly closed in a dry and well-ventilated place. Keep out of the reach of children. Keep containers tightly closed in a cool, well-ventilated place.

Incompatible products

Specific use(s) For use in industrial installations only. Restricted to professional users. Mining Tools. Construction Tools. Round Tools. Metalworking Tools. Wear and Corrosion Resistant Components.

8. Exposure Controls/Personal Protection

Control parameters

Chemical name	USA - ACGIH TLV	USA - OSHA PEL	USA - NIOSH IDLH	Argentina	Brazil
Tungsten carbide	-	-	-	TWA: 5 mg/m ³ STEL: 10 mg/m ³	
Cobalt	0.02 mg/m ³ TWA	0.1 mg/m ³ TWA (dust and fume)	20 mg/m ³ IDLH (dust and fume)	TWA: 0.02 mg/m ³	
Chromium	0.5 mg/m ³ TWA	1 mg/m ³ TWA	250 mg/m ³ IDLH	TWA: 0.5 mg/m ³	
Chemical name	Canada - Alberta	Canada - British Columbia	Canada - Ontario	Canada - Quebec	Canada - Manitoba
Tungsten carbide					5 mg/m ³ TWA (as W)
Cobalt	0.02 mg/m ³ TWA	0.02 mg/m ³ TWA	0.02 mg/m ³ TWA	0.02 mg/m ³ TWA EV	0.02 mg/m ³ TWA 0.02 mg/m ³ TWA (as Co)
Chromium	0.5 mg/m ³ TWA	0.5 mg/m ³ TWA	0.5 mg/m ³ TWA	0.5 mg/m ³ TWA EV	0.5 mg/m ³ TWA
Chemical name	Chile	Mexico OEL (TWA)	Peru	Uruguay	Venezuela
Tungsten carbide		-			STEL: 10 mg/m ³ TWA: 5 mg/m ³

Cobalt	TWA: 0.016 mg/m ³	0.1 mg/m ³ TWA LMPE-PPT (dust and fume, as Co)	0.02 mg/m ³ TWA	0.02 mg/m ³ TWA	TWA: 0.02 mg/m ³
Chromium	TWA: 0.4 mg/m ³	0.5 mg/m ³ TWA LMPE-PPT		0.5 mg/m ³ TWA	TWA: 0.5 mg/m ³

NIOSH IDLH: Immediately Dangerous to Life or Health

Appropriate engineering controls

Engineering controls Eyewash stations. Showers. Provide local exhaust ventilation.

Individual protection measures, such as personal protective equipment

Eye Protection Wear safety glasses with side shields (or goggles).

Skin Protection Apron. Wear suitable protective clothing. Wear suitable gloves.

Hand Protection Protective gloves.

Hygiene Measures Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.

Biological standards

Chemical name	USA ACGIH -BEI
Cobalt - 7440-48-4	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)

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical State	solid	Appearance	grey Powder
Odor	none	pH	
Melting point/freezing point	°C	Boiling temperature / boiling range	6000 °C
Flash Point	No information available	Evaporation Rate	
Flammability (solid, gas)		Flammability Limits in Air	
Upper flammability limits		Lower Flammability Limit	
Vapor Pressure		Vapor Density	
Specific gravity		Water solubility	practically insoluble
Solubility in other solvents		Partition coefficient	
Autoignition temperature		Decomposition Temperature	
Kinematic viscosity		Dynamic viscosity	

OTHER INFORMATION

10. Stability and Reactivity

Reactivity No data available

Chemical stability Stable under normal conditions.

Possibility of Hazardous Reactions None under normal processing.

Hazardous polymerization Will not occur.

Conditions to avoid Extremes of temperature and direct sunlight.

incompatible materials

Hazardous decomposition products None known based on information supplied.

11. Toxicological Information

Information on likely routes of exposure

Eye Contact May cause irritation.

Ingestion Ingestion is not a likely route of exposure. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Chemical name	Oral LD50	dermal LD50	Inhalation LC50
Tungsten carbide - 12070-12-1	> 2000 mg/kg bw (OECD 401)	> 2000 mg/kg bw (OECD 402)	> 5.3 mg/L (4h) (OECD 403)
Cobalt - 7440-48-4	550 mg/kg bw	>2000 mg/kg bw	0.05 mg/L
Chromium - 7440-47-3	LD50 >5000 mg/kg bw	Data waiving - Study Scientifically Unjustified	LC50 >5.41 mg/L air (analytical)

Information on toxicological effects

Chemical name	US ACGIH - Critical effects
Cobalt - 7440-48-4	asthma; myocardial effects; pulmonary function
Chromium - 7440-47-3	skin and upper respiratory tract irritation

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation No data were identified for this product or its constituents. Tungsten carbide was not irritating to the skin of rabbits under semi-occlusive conditions. Paraffin wax was not irritating to the skin of rabbits when tested under occlusive conditions for 24 hours and is not irritating to the skin in humans.

Serious eye damage/eye irritation No data were identified for this product or its constituents. Tungsten carbide is a mild eye irritant. Paraffin wax is a mild eye irritant.

Sensitization Cobalt. Respiratory or skin sensitization. Repeated or prolonged contact may cause allergic reactions in very susceptible persons.

Carcinogenicity This product contains one or more substances which are classified by IARC as carcinogenic to humans (Group I), probably carcinogenic to humans (Group 2A) or possibly carcinogenic to humans (Group 2B).

Chemical name	ACGIH	IARC	NTP	OSHA
Cobalt - 7440-48-4	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans	Group 2B - Possible Human Carcinogen	Not Listed	Not Listed
Chromium - 7440-47-3	A4 - Not Classifiable as a Human Carcinogen	Group 3 - Not Classified as a Human Carcinogen	Not Listed	Not Listed
Chemical name	Chile	Argentina	Venezuela	Peru

Cobalt - 7440-48-4	A3 - Animal Carcinogen	A3 - Confirmed animal carcinogen with unknown relevance to humans	A3 - Animal Carcinogen	
Chromium - 7440-47-3	A4 - Not Classifiable as a Human Carcinogen	A4 - Not classifiable as a human carcinogen	A4 - Not Classified as a Carcinogen in Humans	

Reproductive toxicity	This product does not contain any known or suspected reproductive hazards. Contains a known or suspected reproductive toxin.
Developmental toxicity	None known
STOT - single exposure	No data were identified for this product or its constituents.
STOT - repeated exposure	Long-term exposure to WC-Co is reported to be associated with occupational asthma and a fibrotic lung condition referred to as hardmetal disease. Intratracheal instillation of tungsten metal and tungsten carbide dust in guinea pigs at 50 mg/week for 3 weeks and repeated intratracheal instillation of tungsten carbide in rats at 10 mg/kg bw found the dusts to be relatively inert. Slightly higher intratracheal doses in guinea pigs (83 mg/kg bw/week) lead to transient reactions with almost complete recovery within one year. Additionally, dust-chamber exposures of animals to tungsten, tungsten oxide, and tungsten carbide at 600 mg/m ³ , 1 hour/day for 5 months produced only minor changes. In subchronic inhalation studies in miniature swine exposed to cobalt metal powder at concentrations of 0.1 or 1.0 mg/m ³ 6 hours/day, 5 days/week for 3 months, pulmonary changes (e.g., wheezing; decrease in total lung compliance; and thickening of the pulmonary septa caused by masses of collagen, elastic tissue, and fibroblasts) occurred at exposure levels of 0.1 mg cobalt metal/m ³ .
Chronic toxicity	Repeated contact may cause allergic reactions in very susceptible persons. Avoid repeated exposure. Listed as probable human carcinogen by IARC (Group 2A).
Target organ effects	respiratory system, Skin.
Neurological effects	None known.
Aspiration hazard	not applicable. None known.

Numerical measures of toxicity - Product Information

12. Ecological Information

12.1. Ecotoxicity

Chemical name	Algae toxicity	Acute Fish toxicity	Toxicity to Microorganisms	Daphnia magna
Tungsten carbide 12070-12-1	Desmodesmus subspicatus (algae) 72-h EC50 > 1 mg/L (OECD 201)	96-h LC50 > 1000 mg/L (OECD 203) Zebrafish		48-h EC50 > 1000 mg/L (OECD 202)
Cobalt 7440-48-4	EC50 - 270ug/L	NOEC - 100 mg/L - Cobalt Powder	Not available	LOEC - 5.6 mg/L, LC50 > 100 mg/L
Chromium 7440-47-3	Data Waiving - Study Scientifically Unjustified	Data Waiving - Study Scientifically Unjustified	Not available	Data Waiving - Study Scientifically Unjustified

12.2 Persistence and degradability Product/Substance is inorganic. not applicable.

Bioaccumulation/Accumulation No information available.

13. Disposal Considerations

Waste treatment methods

Responsibility for proper waste disposal is with the owner of the waste. Customers are encouraged to take advantage of the Kennametal Carbide Recycling Program, for information regarding this program the visit <http://www.kennametal.com/carbiderecycling/index.jhtml> or call 1-Ton-Carbide (+1-866-227-2433). This is a valuable material that should be sent to an appropriate reclamation facility, if available. If material cannot be sent to a reclamation facility, dispose of all waste product and containers in accordance with local, state/provincial, federal, and national regulations.

Waste from residues/unused products

Reuse or recycle

California Waste Status

This product contains one or more substances that are listed with the State of California as a hazardous waste.

Chemical name	California Hazardous Waste Status
Cobalt - 7440-48-4	Toxic Ignitable
Chromium - 7440-47-3	Toxic Corrosive Ignitable

14. Transport Information

DOT

UN3077, Environmentally hazardous substance, solid, n.o.s (Tungsten carbide, Cobalt), 9, III
Proper shipping name 3077 - Environmentally hazardous substances, solid, n.o.s
Hazard Class 9
Packing group III
Emergency Response Guide Number 171

TDG

UN3077, Environmentally hazardous substance, solid, n.o.s (Tungsten carbide, Cobalt), 9, III
UN-No UN3077
Proper shipping name Environmentally hazardous substance, solid, n.o.s.
Hazard Class 9
Packing group III

MEX

Not regulated UN3077, Environmentally hazardous substance, solid, n.o.s (Tungsten carbide, Cobalt), 9, III
UN-No UN3077
Proper shipping name Environmentally hazardous substance, solid, n.o.s.
Hazard Class 9
Packing group III

ICAO / IATA-DGR

UN3077, Environmentally hazardous substance, solid, n.o.s (Tungsten carbide, Cobalt), 9, III
14.1 UN number UN3077
14.2. UN proper shipping name Environmentally hazardous substance, solid, n.o.s.
14.3. Transport hazard class(es) 9
14.4 Packing group III

IMO / IMDG

14.1 UN number

UN3077, Environmentally hazardous substance, solid, n.o.s (Tungsten carbide, Cobalt), 9, III

14.2. UN proper shipping name

UN3077

14.3. Transport hazard class(es)

Environmentally hazardous substance, solid, n.o.s.

14.4 Packing group

9

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III

F-A, S-F

15. Regulatory Information

Chemical name	Bolivia - hazardous substances regulated under Bolivia's Environmental Regulations for the Industrial Manufacturing Sector
Cobalt - 7440-48-4	Present

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical name	CAS-No	weight-%	SARA 313 - Threshold Values %
Cobalt - 7440-48-4	7440-48-4	5 - 10	Present
Chromium - 7440-47-3	7440-47-3	0.1 - 1	Present

SARA 311/312 Hazard Categories

Acute health hazard	yes
Chronic Health Hazard	yes
Fire Hazard	no
Sudden release of pressure hazard	no
Reactive Hazard	no

Clean Water Act

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Chromium - 7440-47-3	Not Applicable	Present	Present	Not Applicable

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

Chemical name	Hazardous Substances RQs	Extremely Hazardous Substances RQs	RQ
Chromium - 7440-47-3	5000 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); 2270 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)		5000 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); 2270 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)

U.S. State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals

Chemical name	California - Proposition 65 - Carcinogens List	California - Proposition 65 - Developmental Toxicity	California - Proposition 65 - Reproductive Toxicity	California - 22 CCR - Toxic and Extremely Hazardous Carcinogenic Wastes
Cobalt - 7440-48-4	carcinogen, initial date 7/1/92 (powder)			

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Tungsten carbide - 12070-12-1	sn 1960		
Cobalt - 7440-48-4	sn 0520	Present	Environmental hazard (fume) Present
Chromium - 7440-47-3	sn 0432	Carcinogen; Extraordinarily hazardous	Environmental hazard; Special hazardous substance Present

U.S. EPA Label information

CANADA

Chemical name	WHMIS Classifications of Components
Cobalt - 7440-48-4	D2A, D2B
Chromium - 7440-47-3	Uncontrolled product according to WHMIS classification criteria

16. Other Information

NFPA	Health hazard 2	Flammability 0	Instability 0	Physical and Chemical Hazards -
HMIS	Health hazard 2	Flammability 0	Physical hazards 0	Personal precautions X

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Revision Note No information available

Disclaimer

Kennametal urges each customer or recipient of this SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific SDSs, we are not and cannot be responsible for SDS's obtained from any source other than ourselves. If you have obtained an SDS from another source or if you are not sure that the SDS you have is current, please contact us for the most current version.

End of Safety Data Sheet