Product Safety Information

Print date 2018-02-14 **Revision date** 2018-02-14 **Revision number** 3

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

1.1 Product Identifier

Product Type Hard metal articles, inserts, drills, mills
Product Name **KC510M article**
Product Code KA1005-20

Type article

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended use Service life. hardmetal articles. Industrial use. Professional use. Mining Tools. Construction Tools. Round Tools. Metalworking Tools. Inserts. For use in industrial installations only.

Recommended use	Main user group	Article categories [AC]	Environmental release categories [ERC]	Process categories [PROC]
Service life, hardmetal articles, Industrial use, Mining Tools, Construction Tools, Round Tools, Metalworking Tools, Inserts, For use in industrial installations only	worker	AC2 - Machinery, mechanical appliances, electrical/electronic articles	ERC12a - Industrial processing of articles with abrasive techniques (low release)	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles
Service life, hardmetal articles, Professional use, Mining Tools, Construction Tools, Round Tools, Metalworking Tools, Inserts	worker	AC2 - Machinery, mechanical appliances, electrical/electronic articles	ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release ERC11a - Wide dispersive indoor use of long-life articles and materials with low release	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles

Uses advised against Do no re-sharpen tools without using appropriate safety and extraction systems to avoid dust exposure. Return tools to Kennametal for reconditioning services. Consumer use.

1.3 Details of the supplier of the safety data sheet

Supplier Identification UK, Ireland: Kennametal U.K. Ltd. Trading Estate Kingswinford West Midlands DY6 7NP kingswinford.service@kennametal.com Phone: 0800 032 8339
South Africa: Kennametal South Africa (Pty) Ltd. 15 Reservoir Road Boksburg East, Industrial Sites 1478, Gauteng kempton.service@kennametal.com Phone: +27 11 7489300
Australia: Kennametal Australia Pty Ltd. k-au.service@kennametal.com Phone: 1 800 674 037
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E-mail k-corp-product.safety@kennametal.com
Company Emergency Phone Number Kennametal Security, Latrobe, US, PA +1-724-539-5610 (english)

1.4 Emergency telephone number

Emergency telephone number CHEMTREC: +1-703-527-3887 (INTERNATIONAL)
1-800-424-9300 (NORTH AMERICA)

NRC (National Response Center) UK, National Poisons Information Service +44 844 892 0111
Ireland, Poisons Information Centre of Ireland +353 1 837 9964
Australia, NSW Poisons Information Centre (national calls) 131126
New Zealand, New Zealand National Poisons Centre +64 800 764 766
South Africa, Bloemfontein Poison Control and Medicine Information Centre, +27 824 910 160

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Regulation (EC) No 1272/2008 This product, as an article, is not classified under CLP (1272/2008) This product does not require a hazard communication label as it does not pose a hazard in the form delivered. Hazards can occur while using this product. Please read and follow the instructions of this SDS

2.2 Label Elements

Product Name KC510M article
Product Code KA1005-20

2.3 Other Hazards

Warning Fragmentation hazard. Cutting tools and holders may fragment in use. Always wear safety equipment and keep machine guards in places. Do no re-sharpen tools without using appropriate safety and extraction systems to avoid dust exposure. Return tools to Kennametal for reconditioning services. Use personal protective equipment as required.

Other hazards Breathing hazard. Wet or dry grinding of cutting tools may produce hazardous dust or mist. Use ventilation control and respiratory protection.

2.4 Additional Information

Product information

Potential Health Effects

INHALATION May be harmful if inhaled. Inhalation of dust in high concentration may cause irritation of respiratory system.

INGESTION Ingestion is not a likely route of exposure.

sensitization May cause sensitization of susceptible persons. May cause sensitization by inhalation and skin contact.

Chronic Effects Repeated or prolonged skin contact with the unexposed coating may cause skin irritation and/or dermatitis and sensitization of susceptible persons. May produce an allergic reaction. Symptoms include burning sensation, coughing, wheezing, shortness of breath, headache, nausea, and vomiting. The mixture may be a skin sensitizer. It may also be a skin irritant and repeated contact may increase this effect. Listed as probable human carcinogen by IARC (Group 2A). Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough. Repeated contact may cause allergic reactions in very susceptible persons. Contains a known or suspected reproductive toxin.

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).

Aggravated Medical Conditions Allergies, Skin disorders, Respiratory disorders, Emphysema

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Formula	EINECS/ELINCS	CAS-No	Weight-%	GHS Classification	REACH Reg. No
Tungsten carbide	WC	235-123-0	12070-12-1	> 50	Not classified	01-2119486687-17
Cobalt	Co	231-158-0	7440-48-4	5 - 10	Acute Oral 4 (H302) Acute dust/mist 1 (H330) Eye damage 2 (H319)	01-2119517392-44

					Resp. Sens. 1B (H334) Skin Sens. 1 (H317) Carc. 1B (H350) Inhalation Repr. tox 2 (H361)Fertility Aquatic Acute 1 M=10(H400) Aquatic Chronic 1 M=1(H410)	
Chromium Carbide	Cr_3C_2	234-576-1	12012-35-0	0.1 - 1	Not classified	no data available

Full text of H-Statements referred to under sections 2 and 3

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

4. 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).

4.1 Description of first aid measures

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. Rinse mouth. Never give anything by mouth to an unconscious person. Do NOT induce vomiting unless directed to do so by a physician.

Self-Protection of the First Aider

Self-Protection of the First Aider. Wear suitable gloves.

4.3 Indication of any immediate medical attention and special treatment needed

None known.

Notes to physician

Treat symptomatically

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable Extinguishing Media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Extinguishing Media Which Must Not Be Used For Safety Reasons

No information available.

5.2 Special hazards arising from the substance or mixture

None.

5.3 Advice for fire- fighters — Use personal protective equipment as required.

Component information

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures — Avoid dust accumulation in enclosed space. Use personal protective equipment as required.

6.2 Environmental precautions — Avoid release to the environment.

6.3 Methods and material for containment and cleaning up — Collect in closed and suitable containers for disposal.

6.4 Reference to other sections — See Section 13: DISPOSAL CONSIDERATIONS

7. HANDLING AND STORAGE

7.1 Precautions for safe handling — Breathing hazard. Wet or dry grinding of cutting tools may produce hazardous dust or mist. Use ventilation control and respiratory protection. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Minimize dust generation and accumulation. Use personal protective equipment as required. Ensure adequate ventilation.

7.2 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.

7.3 Specific end use(s) — For use in industrial installations only.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Chemical Name	Eu	Austria	Belgium	Czech Republic	Denmark
Tungsten carbide	-	-	5 mg/m³ TWA (as W)	-	-
Carbide, containing tungsten carbide and cobalt	-	-	-	Ceiling: 0.1 mg/m³	-
Cobalt	-	2 mg/m³ STEL KZW (hardened metal, magnet manufacturing, manufacture of Cobalt powder and catalysts (powder processing, press and mechanical processing of none-sintered parts), inhalable fraction, as Co, 4 x 15 min); 0.4 mg/m³ STEL KZW (others, inhalable fraction, as Co, 4 x 15 min) 0.5 mg/m³ TWA [TMW] (hardened metal, magnet manufacturing, manufacture of Cobalt powder and catalysts, inhalable fraction); 0.1 mg/m³ TWA [TMW] (all others, inhalable	0.02 mg/m³ TWA (dust and fume)	0.05 mg/m³ TWA Ceiling: 0.1 mg/m³	0.01 mg/m³ TWA (dust, fume and powder)

		fraction)			
Chromium Carbide	-	-	0.5 mg/m³ TWA (except Chromium VI compounds, as Cr)	-	-
Chemical Name	**Finland**	**France**	**Germany OEL (TWA)**	**Hungary**	**Italy**
Tungsten carbide	5 mg/m³ TWA (as W)	-	-	-	-
Cobalt	0.02 mg/m³ TWA	-	-	0.4 mg/m³ STEL [CK] 0.1 mg/m³ TWA [AK]	0.02 mg/m³ TWA
Chemical Name	**Ireland**	**Luxembourg**	**Netherlands**	**Norway**	**Poland**
Tungsten carbide	-	-	-	STEL: 10 mg/m³	-
Cobalt	0.1 mg/m³ TWA 0.3 mg/m³ STEL (calculated)	-	0.02 mg/m³ TWA (dust and smoke, as Co)	0.02 mg/m³ TWA (fume) STEL: 0.06 mg/m³	0.02 mg/m³ TWA [NDS]
Chemical Name	**Portugal**	**Spain**	**Switzerland**	**Sweden**	**United Kingdom**
Tungsten carbide	STEL: 10 mg/m³	-	-	-	TWA: 5 mg/m³
Carbide, containing tungsten carbide and cobalt	-	-	-	-	TWA: 0.1 mg/m³
Cobalt	0.02 mg/m³ TWA [VLE-MP]	0.02 mg/m³ TWA [VLA-ED]	0.05 mg/m³ TWA [MAK] (aerosol and dust, inhalable dust)	0.02 mg/m³ LLV (total inhalable dust) 0.02 mg/m³ LLV (total inhalable dust, as Co)	STEL: 0.3 mg/m³ TWA: 0.1 mg/m³
Chemical Name	**Australia**	**Israel**	**Russia**	**South Africa**	**Turkey**
Tungsten carbide	5 mg/m³ TWA (as W)	5 mg/m³ TWA (as W) 0.005 mg/m³ TWA (thoracic fraction, as Co)	TWA: 6 mg/m³	-	-
Carbide, containing tungsten carbide and cobalt	-	0.005 mg/m³ TWA (thoracic fraction, as Co)	-	-	-
Cobalt	0.05 mg/m³ TWA (dust and fume)	0.02 mg/m³ TWA 0.02 mg/m³ TWA (as Co) 0.005 mg/m³ TWA (thoracic fraction, as Co) 0.010 mg/m³ AL (as Co)	TWA: 0.01 mg/m³ STEL: 0.05 mg/m³	0.05 mg/m³ TWA 0.1 mg/m³ TWA (dust and fume)	-
Chemical Name	**Egypt OEL**	**Gulf Coop. OEL**	**...**	**...**	**...**
Tungsten carbide	-	5 mg/m³ TWA (as W) 10 mg/m³ STEL (as W)	-	-	-
Cobalt	0.02 mg/m³ TWA 0.1 mg/m³ TWA (as Co)	0.02 mg/m³ TWA (dust and fume) 0.02 mg/m³ TWA (dust and fume, as Co)	-	-	-
Chromium Carbide	-	0.05 mg/m³ TWA	-	-	-

Chemical Name	Derived No Effect Level (DNEL)	Predicted No Effect Concentration (PNEC)
Tungsten carbide	6.2 mg/m³ systemic inhalation	Tungsten 0.338 mg/l freshwater; 0.0338 mg/l marine water; 2.17 mg/kg soil; 11 mg/kg food
Cobalt	0.04 mg/m³ long term local inhalation	2.36 µg Co/l (AF 3) marine water; 0.74 µg/l (AF 3) fresh water

8.2 Exposure controls

Personal Precautions Use personal protective equipment as required. Avoid contact with eyes, skin and clothing. Wash hands before eating, drinking or smoking. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product.

Engineering Controls Ensure adequate ventilation, especially in confined areas.

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

Skin protection Long sleeved clothing.

Hand protection Protective gloves.

Respiratory Protection If exposure limits are likely to be exceeded or if irritation or other symptoms are experienced, NIOSH/MSHA or EN 136 approved respiratory protection should be worn.

Hygiene Measures

Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Keep away from food, drink and animal feeding stuffs. Avoid contact with skin, eyes and clothing. Wash hands before breaks and at the end of workday.

Biological standards

Chemical Name	EU - Binding Biological Limit Values and Health Surveillance Measures	Austria	Czech Republic
Tungsten carbide	-	lung function based on determining, forced vital capacity (FVC), 1 sec - capacitor (FEV1), FEV1%FVC, MEF50, dust	-
Carbide, containing tungsten carbide and cobalt	-	10 µg/L Medium: urine Time: after end of work day, at the end of a work week/end of the shift Parameter: spontaneous urine (only appropriate for urine samples with specific weight >=1010 mg/mL); lung function based on determining, forced vital capacity (FVC), 1 sec - capacitor (FEV1), FEV1%FVC, MEF50 lung function based on determining, forced vital capacity (FVC), 1 sec - capacitor (FEV1), FEV1%FVC, MEF50, dust	-
Cobalt	-	10 µg/L Medium: urine Time: after end of work day, at the end of a work week/end of the shift Parameter: spontaneous urine (only appropriate for urine samples with specific weight >=1010 mg/mL); lung function based on determining, forced vital capacity (FVC), 1 sec - capacitor (FEV1), FEV1%FVC, MEF50	-
Chromium Carbide	-	lung function based on determining, forced vital capacity (FVC), 1 sec - capacitor (FEV1), FEV1%FVC, MEF50, dust	-
Chemical Name	**Denmark - Biological Exposure Limits**	**Finland - Biological Limit Values**	**France - Biological Exposure Indices**
Cobalt	-	-	0.001 mg/L Medium: blood Time: end of shift at end of workweek Parameter: Cobalt (Background noise on non-exposed subjects, Semi-quantitative (ambiguous interpretation)); 0.015 mg/L Medium: urine Time: end of shift at end of workweek Parameter: Cobalt (Background noise on non-exposed subjects)
Chemical Name	**Germany - Biological Threshold Limits**	**Hungary**	**Ireland - Biological Monitoring**
Cobalt	-	0.03 mg/g Creatinine Medium: urine Time: end of shift Parameter: Cobalt; 0.058 µmol/mmol Creatinine Medium: urine Time: end of shift Parameter: Cobalt	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 (semi-quantitative)
Chemical Name	**Italy - Recommended Biological Exposure Indices (BEI)**	**Luxembourg - Biological Limit Values and Health Surveillance Measures**	**Spain - Biological Limit Values**
Cobalt	15 µg/L Medium: urine Sampling Time: end of shift at end of workweek Parameter: Cobalt (Background); 1 µg/L Medium: blood Sampling Time: end of shift at end of workweek Parameter: Cobalt (Background, semi-quantitative)	-	15 µg/L urine end of workweek Cobalt [1; F]; 1 µg/L blood end of workweek Cobalt [1; F; S]
Chemical Name	**Switzerland - Biological Limit Values**	**United Kingdom - Biological Monitoring**	**Turkey - Biological Threshold Values**
Cobalt	30 µg/L Medium: urine Time: end of	-	-

	shift Parameter: Cobalt		
Chemical Name	**South Africa - Biological Exposure Indices**	**Israel - Biological Markers**	**USA ACGIH -BEI**
Carbide, containing tungsten carbide and cobalt	-	Medium: urine Time: end of shift at end of workweek Parameter: Cobalt (nonspecific, nonquantitative)	Medium: urine Time: end of shift at end of workweek Parameter: Cobalt (nonquantitative, nonspecific)
Cobalt	-	15 µg/L Medium: urine Time: end of shift at end of workweek Parameter: Cobalt (nonspecific); 1 µg/L Medium: blood Time: end of shift at end of workweek Parameter: Cobalt (nonspecific, nonquantitative)	15 µg/L Medium: urine Time: end of shift at end of workweek Parameter: Cobalt (nonspecific)

Environmental Exposure Controls Do not allow to enter into soil/subsoil. Do not allow material to contaminate ground water system. Local authorities should be advised if significant spillages cannot be contained.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical State @20°C	Solid	**appearance**	grey, Solid
Odor	None	**odor threshold**	None
Boiling temperature / boiling range	No Data Available	**Flash Point**	Not applicable
Water Solubility	Practically insoluble	**Decomposition temperature**	UNKNOWN
Explosive Properties	Not applicable Hardmetal WC-Co (50µm); Lower explosion limit 750 g/cm³, max explosion pressure 4.3 bar, Kst value 16 bar*m/s St1, ignition temperature 500°C, minimum ignition energy < 10 000 mJ		

9.2. Other information

VOC content (%) Not applicable

Component information

Chemical Name	**Mol. Weight**	**Water Solub.**	**Vap. Press.**	**Vap. Dens.**	**pH Val.**	**Autoign. Temp.**	**Evap. Rate**	**Boil. Temp.**
Cobalt	58.93 g/mol	-	0.00007 hPa at 1050 °C	-	-	-	-	2870 °C
Chemical Name	**Density VALUE**	**Melt. Temp.**	**flash point**	**Water Sol.**	**Bulk Dens.**	**Odor**	**State**	**Color**
Tungsten carbide	15.63 g/cm3 at 18 °C	-	-	-	<9.2 kg/m³ (ASTM B329)	-	-	-
Cobalt	8.85 - 8.9 g/cm3 at 20 °C	<1495 °C	-	insoluble	-	-	-	-

10. STABILITY AND REACTIVITY

10.1 Reactivity Stable under normal conditions.

10.2 Chemical stability Stable under normal conditions

10.3 Possibility of hazardous reactions Stable under normal conditions.

10.4 Conditions to avoid None known based on information supplied.

10.5 Incompatible materials No information available.

10.6 Hazardous decomposition products None under normal use conditions.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Product information

Acute Toxicity

INHALATION Long-term exposure to WC-Co is reported to be associated with occupational asthma and a fibrotic lung condition referred to as hardmetal disease. Breathing hazard. Wet or dry grinding of cutting tools may produce hazardous dust or mist. Use ventilation control and respiratory protection.

Skin Contact Avoid contact with skin.

Reproductive, developmental and teratogenic effects Contains a known or suspected reproductive toxin.

INGESTION Ingestion is not a likely route of exposure

sensitization May cause sensitization of susceptible persons May cause sensitization by inhalation and skin contact

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Tungsten carbide	> 2000 mg/kg bw (OECD 401)	> 2000 mg/kg bw (OECD 402)	> 5.3 mg/L (4h) (OECD 403)
Carbide, containing tungsten carbide and cobalt	-	-	Lowest reported LC50(4h) for waxed 10% Co 0.4 mg/l Lowest reported LC50(4h) for non-lubricated 10% Co 0.24 mg/l
Cobalt	550 mg/kg bw	>2000 mg/kg bw	0.05 mg/L

Chronic Toxicity Repeated or prolonged skin contact with the unexposed coating may cause skin irritation and/or dermatitis and sensitization of susceptible persons. May produce an allergic reaction. Symptoms include burning sensation, coughing, wheezing, shortness of breath, headache, nausea, and vomiting. The mixture may be a skin sensitizer. It may also be a skin irritant and repeated contact may increase this effect. Listed as probable human carcinogen by IARC (Group 2A). Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough. Repeated contact may cause allergic reactions in very susceptible persons. Contains a known or suspected reproductive toxin.

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	IARC	EU Annex I Carcinogen Information	Austria - Carcinogens	Belgium - Suspected Carcinogens and Mutagens
Carbide, containing tungsten carbide and cobalt	Group 2A - Probably carcinogenic to humans	-	-	-
Cobalt	Group 2B - Possible Human Carcinogen	-	Group A2 Carcinogen	Present
Chemical Name	**France - Carcinogens**	**Germany - Carcinogens**	**Hungary - Carcinogens**	**Ireland - Carcinogens**
Carbide, containing tungsten carbide and cobalt	-	Category 1 (causes cancer in man)	-	-
Cobalt	-	Category 2 (considered to be carcinogenic for man) Category 1B (bioavailable, as inhalable dust/aerosol, except hard metals, cobalt containing spinels and organic cobalt desiccants)	-	-
Chemical Name	**Italy - Carcinogens**	**Netherlands - Carcinogens**	**Norway - Carcinogens**	**Portugal - Carcinogens**
Cobalt	A3 - Confirmed Animal	-	-	A3 - Confirmed Animal

	Carcinogen with Unknown Relevance to Humans			Carcinogen with Unknown Relevance to Humans
Chemical Name	**Spain - Carcinogens**	**Sweden - Carcinogens**	**Switzerland - Carcinogens**	**UK**
Cobalt	-	Carcinogen	Category C1B carcinogen	Capable of causing cancer and/or heritable genetic damage
Chemical Name	**New Zealand**	**Russia - Carcinogens**	**...**	**...**
Tungsten carbide	-	Present (with Cobalt metallic; Route of exposure: inhalation)	-	-
Cobalt	Suspected carcinogen	Present (with Tungsten carbide; Route of exposure: inhalation)	-	-
Chemical Name	**Gulf Coop. Carcinogens**	**Egypt Carcinogens**	**South Africa - Carcinogenic Compounds**	**...**
Cobalt	Category 2 Carcinogen Category 2 Carcinogen	Confirmed Human Carcinogen Confirmed Human Carcinogen	Animal Carcinogen (dusts and fumes; as Co)	-
Chromium Carbide	Category 1 Carcinogen	Present	-	-

Target Organ Effects Respiratory system, skin

Substance related information

12. ECOLOGICAL INFORMATION

12.1. Ecotoxicity

ecotoxicity May cause long-term adverse effects in the aquatic environment.

Chemical Name	Algae Toxicity	Acute Fish Toxicity	Toxicity to microorganisms	Toxicity to daphnia and other aquatic invertebrates
Tungsten carbide	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	LC50-144 ug/L (fresh water); LC50-24.1 µg/l (sea water); NOEC-4.9 µg/l (fresh water); NOEC-1.23 µg/l (sea water)	LC50-1.5 mg/l (fresh water); NOEC-351.4 mg/L	Not available	LC50-0.61 mg/l (fresh water); LC50-2.32 mg/l (sea water); NOEC-5.47 µg/L (fresh water); NOEC-206 µg/L (sea water)

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

12.3 Bioaccumulative potential This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).

12.4 Mobility in soil Due to the consistency along with the low water solubility of the product a bioavailability is unlikely

12.5 Results of PBT and vPvB assessment The components in this formulation do not meet the criteria for classification as PBT or vPvB

12.6 Other adverse effects None known

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

disposal considerations It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Improper disposal or reuse of this container may be dangerous and illegal. Refer to applicable local, state and federal regulations as well as industry standards.

Waste from Residues/Unused Products	Reuse or recycle.
Contaminated Packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal.
other information	Waste codes should be assigned by the user based on the application for which the product was used.

14. TRANSPORT INFORMATION

IMO / IMDG NOT REGULATED

ADR / RID NOT REGULATED

ICAO / IATA-DGR NOT REGULATED

Australia Dangerous Goods NOT REGULATED

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Other Regulations None

Legend

The preparation is classified as dangerous in accordance with Directive 1999/45/EC.

Chemical Name	Germany - Water Classification (VwVwS)
Tungsten carbide	ID Number 5860, not considered hazardous to water
Cobalt	ID Number 8026, hazard class 3 - severe hazard to waters (particle size <1 mm); ID Number 7955, hazard class 1 - low hazard to waters (particle size >=1 mm)

International Inventories

Chemical Name	EINECS/ELINCS	AICS	NZIoC	TESI	RCSI
Tungsten carbide	235-123-0	Present	May be used as a component in a product covered by a group standard but it is not approved for use as a chemical in its own right	-	-
Cobalt	231-158-0	Present	HSNO Approval: HSR003639	Present; EC No. 231-158-0	Present
Chromium Carbide	234-576-1	Present	-	-	-

Legend:
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
AICS - Australian Inventory of Chemical Substances
NZIoC - New Zealand Inventory of Chemicals
TESI - Turkey Inventory of existing Chemicals
RCSI - Russia Substances that Passed State Registration Before July 2010

Chemical Name	EU REACH Pre-registered Substances	EU REACH Registered Substances	EU RoHS Substances Restricted or Prohibited in Electrical Equipment	EU - REACH (1907/2006) - Article 59(1) - Candidate List of Substances for Eventual Inclusion in Annex XIV	EU REACH Restrictions on Certain Dangerous Substances
Tungsten carbide	November 30, 2010	2011-03-17	-	-	-

Cobalt	November 30, 2010	2011-02-17	-	-	-
Chromium Carbide	November 30, 2010	2013-04-03	-	-	-

Chemical Name	Russia Dangerous Substances
Tungsten carbide	Present
Cobalt	Present Present

16. OTHER INFORMATION

Global Automotive Declarable Substance List Classifications

Chemical Name	Global Automotive Declarable Substance List Classifications	Global Automotive Declarable Substance List Thresholds
Cobalt	Declarable Substance (FI)	0.1 %

Prepared By Kennametal Inc. 1600 Technology Way Latrobe, PA 15650, USA

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Revision note This SDS has been revised in the following section(s)
Section 8: Exposure controls and personal protection
Section 11: TOXICOLOGICAL INFORMATION
Section 15: REGULATORY INFORMATION

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