

Product name: ToughMet® Alloys

Issue date: 08-04-2015

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Version #: 06

SDS No: L19

## SECTION 1 Chemical product and company identification

Chinese name of chemical	NEEDED - CHINESE NAME OR TRADE NAME WITH CHINESE USER DESCRIPTOR.
English name of chemical	ToughMet® Alloys
Synonyms	ToughMet® 2, ToughMet® 3, BrushForm® 158, BrushForm® 96, BF 158, BF 96, Copper Alloy, Copper Nickel Alloy, Copper Nickel Tin Alloy, Spinodal Alloy, T2, T3, ArmaMet™, C72700, C72900, C96900, C96950, C96970, EquiMet® 2, EquiMet® 3
Manufacturer/Supplier	Materion Brush Inc.
Address	6070 Parkland Boulevard Mayfield Heights, OH 44124 United States
Contact person	Product Stewardship Director
Telephone	+1.216.383.4019
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Emergency telephone number	+1.216.383.4019
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## SECTION 2 Hazards identification

Emergency overview	Causes damage to organs through prolonged or repeated exposure. Suspected of causing cancer. May cause an allergic skin reaction. Prolonged exposure may cause chronic effects. Dangerous for the environment if discharged into watercourses.	
GHS hazard categories		
Physical hazards	Not classified.	
Health hazards	Sensitization, skin	Category 1
	Carcinogenicity	Category 2
	Specific target organ toxicity, repeated exposure	Category 1 (Lung, respiratory system)
Environmental hazards	Not classified.	
Label elements		
Pictograms		
Signal word	Danger	
Hazard statement		
H317	May cause an allergic skin reaction.	
H351	Suspected of causing cancer.	
H372	Causes damage to organs (Lung, respiratory system) through prolonged or repeated exposure.	
Precautionary statement		
Prevention		
P201	Obtain special instructions before use.	

P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P272	Contaminated work clothing should not be allowed out of the workplace.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P284	Wear respiratory protection.

**Response**

P302 + P350	If on skin: Wash with plenty of water.
P342 + P311	If experiencing respiratory symptoms: Call a poison center/doctor.
P308 + P313	If exposed or concerned: Get medical advice/attention.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
P362 + P364	Take off contaminated clothing and wash it before reuse.

**Safety storage**

P405	Store locked up.
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**Disposal**

P501	Dispose of contents/container in accordance with local/regional/national/international regulations.
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**Physical and chemical hazards**

The product is stable and non-reactive under normal conditions of use, storage and transport. No unusual fire or explosion hazards noted.

**Health hazards**

Prolonged inhalation may be harmful. May cause an allergic skin reaction. Expected to be a low ingestion hazard. Direct contact with eyes may cause temporary irritation.

**Environmental hazards**

Harmful to aquatic life with long lasting effects.

**Supplemental information**

For further information, please contact the Product Stewardship Department at +1.216.383.4019.

**SECTION 3 Composition/information on ingredients**

Substance/mixture	Mixture	
Chemical name	Concentration (%)	CAS Number
铜 Copper	75 - 85	7440-50-8
镍 Nickel	8.5 - 15.5	7440-02-0
锡 Tin	5.5 - 8.5	7440-31-5
铁 Iron	0 - 0.5	7439-89-6
锌 Zinc	0 - 0.5	7440-66-6

**SECTION 4 First aid measures****Inhalation**

Call a physician if symptoms develop or persist. Breathing difficulty caused by inhalation of particulate requires immediate removal to fresh air. If breathing has stopped, perform artificial respiration and obtain medical help. If breathing has stopped, perform artificial respiration and obtain medical help.

**Skin contact**

Thoroughly wash skin cuts or wounds to remove all particulate debris from the wound. Seek medical attention for wounds that cannot be thoroughly cleansed. Treat skin cuts and wounds with standard first aid practices such as cleansing, disinfecting and covering to prevent wound infection and contamination before continuing work. Obtain medical help for persistent irritation. Material accidentally implanted or lodged under the skin must be removed.

**Eye contact**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally.

<b>Ingestion</b>	Rinse mouth. Get medical attention if symptoms occur. Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.
<b>Most important symptoms and health effects</b>	May cause an allergic skin reaction. Dermatitis. Rash.
<b>Personal protection for first-aid responders</b>	Not available.

## SECTION 5 Fire-fighting measures

<b>Extinguishing media</b>	Use fire-extinguishing media appropriate for surrounding materials. The product is non-combustible.
<b>Extinguishing media to avoid</b>	Not applicable, non-combustible.
<b>Specific hazards</b>	During fire, gases hazardous to health may be formed.
<b>Special fire fighting procedures</b>	Move containers from fire area if you can do so without risk.
<b>Protection of fire-fighters</b>	Wear suitable protective equipment.
<b>Specific methods</b>	Use standard firefighting procedures and consider the hazards of other involved materials.

## SECTION 6 Accidental release measures

### Personal precautions, protective equipment and emergency procedures

<b>For non-emergency personnel</b>	Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. As supplied, this product poses no special release issues.
<b>For emergency responders</b>	Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS. As supplied, this product poses no special release issues.

**Environmental precautions** Not relevant, due to the form of the product.

**Clean-up methods and materials and containment measures** Not relevant, due to the form of the product.

**Prevention of secondary hazards** Not available.

## SECTION 7 Handling and storage

**Handling** Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not taste or swallow. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid contact with eyes, skin, and clothing. When using, do not eat, drink or smoke. Should be handled in closed systems, if possible. Provide adequate ventilation. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Do not empty into drains. Use appropriate container to avoid environmental contamination. Observe good industrial hygiene practices. Wear suitable gloves.

**Storage** Store locked up. Store in a cool, dry place out of direct sunlight. Use appropriate container to avoid environmental contamination. Keep container tightly closed. Store in tightly closed container. Store in a dry place. Store away from incompatible materials (see Section 10 of the SDS).

## SECTION 8 Exposure controls/personal protection

### Exposure limits

#### Occupational Exposure Limits for Hazardous Agents in the Workplace, Chemical Hazardous Agents (GBZ 2.1-2019)

Components	Type	Value	Form
Copper (CAS 7440-50-8)	PC-TWA	1 mg/m3 0.2 mg/m3	Dust. Fume.
Nickel (CAS 7440-02-0)	PC-TWA	1 mg/m3	

### Biological limit values

#### ACGIH Biological Exposure Indices (BEI)

Components	Value	Determinant	Specimen	Sampling Time
Nickel (CAS 7440-02-0)	5 µg/l	Nickel	Urine	*

\* - For sampling details, please see the source document.

**Monitoring methods** Follow standard monitoring procedures.

**Engineering measures**

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

**Personal protective equipment****Respiratory protection**

When airborne exposures exceed or have the potential to exceed the occupational exposure limits, approved respirators must be used as specified by an Industrial Hygienist or other qualified professional. Respirator users must be medically evaluated to determine if they are physically capable of wearing a respirator. Quantitative and/or qualitative fit testing and respirator training must be satisfactorily completed by all personnel prior to respirator use. Users of tight fitting respirators must be clean shaven on those areas of the face where the respirator seal contacts the face. Use pressure-demand airline respirators when performing jobs with high potential exposures such as changing filters in a baghouse air cleaning device.

**Hand protection**

Wear gloves to prevent contact with particulate or solutions. Wear gloves to prevent metal cuts and skin abrasions during handling.

**Eye protection**

Wear approved safety glasses, goggles, face shield and/or welder's helmet when risk of eye injury is present, particularly during operations that generate dust, mist or fume.

**Skin and body protection**

Protective overgarments or work clothing must be worn by persons who may become contaminated with particulate during activities.

**Hygiene measures**

Observe any medical surveillance requirements. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

**SECTION 9 Physical and chemical properties****Appearance****Physical state**

Solid.

**Form**

Solid. Various shapes.

**Color**

Bronze.

**Odor**

Not applicable.

**Odor threshold**

Not applicable.

**pH**

Not applicable.

**Melting point/freezing point**

1742 °F (950 °C) estimated / Not applicable.

**Boiling point, initial boiling point, and boiling range**

Not applicable.

**Flash point**

Not applicable.

**Explosive limit - lower (%)**

Not applicable.

**Explosive limit - upper (%)**

Not applicable.

**Vapor pressure**

0.61 hPa estimated

**Vapor density**

Not applicable.

**Relative density**

Not applicable.

**Density**

8.80 g/cm<sup>3</sup> estimated

**Solubility(ies)****Solubility (water)**

Not applicable.

**Partition coefficient (n-octanol/water)**

Not available.

**Auto-ignition temperature**

Not applicable.

**Decomposition temperature**

Not applicable.

Evaporation rate	Not applicable.
Flammability (solid, gas)	Not applicable.
Other data	
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Specific gravity	8.8 estimated
Viscosity	Not applicable.

## SECTION 10 Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Strong acids. Chlorine.
Hazardous decomposition products	No hazardous decomposition products are known.

## SECTION 11 Toxicological information

Acute toxicity	May cause an allergic skin reaction.
Routes of exposure	Inhalation. Skin contact.
Symptoms	Coughing. Discomfort in the chest. Shortness of breath. May cause an allergic skin reaction. Dermatitis. Rash.
Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Harmful in contact with eyes.
Respiratory or skin sensitization	
Respiratory sensitization	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Skin sensitizer	May cause an allergic skin reaction.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Suspected of causing cancer.
China OELs for hazardous agents in the workplace: Carcinogen Category	
Nickel metal (CAS 7440-02-0)	Possible human carcinogen.
IARC Monographs. Overall Evaluation of Carcinogenicity	
Nickel (CAS 7440-02-0)	2B Possibly carcinogenic to humans.
Toxic to reproduction	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity following single exposure	Not applicable.
Specific target organ toxicity following repeated exposure	Causes damage to organs (respiratory system) through prolonged or repeated exposure by inhalation.
Aspiration hazard	Not an aspiration hazard.
Chronic effects	Prolonged inhalation may be harmful. Causes damage to organs through prolonged or repeated exposure. Prolonged exposure may cause chronic effects.

## SECTION 12 Ecological information

### Ecotoxicological data

Product			Species	Test Results
ToughMet® Alloys				
Aquatic				
Acute				
Crustacea	EC50	Daphnia	280 mg/l, 48 hours estimated	
Fish	LC50	Fish	0.0381 mg/l, 96 hours estimated	
Components			Species	Test Results
Copper (CAS 7440-50-8)				
Aquatic				
Acute				
Crustacea	EC50	Blue crab (Callinectes sapidus)	0.0031 mg/l	
Fish	LC50	Chinook salmon (Oncorhynchus tshawytscha)	0.02 mg/l, 96 hours	
Nickel (CAS 7440-02-0)				
Aquatic				
Acute				
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	0.06 mg/l, 4 days	
Zinc (CAS 7440-66-6)				
Aquatic				
Acute				
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	0.41 mg/l, 96 hours	

\* Estimates for product may be based on additional component data not shown.

<b>Ecotoxicity</b>	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
<b>Persistence and degradability</b>	No data is available on the degradability of this product.
<b>Bioaccumulation</b>	No data available.
<b>Mobility in soil</b>	No data available for this product.
<b>Other hazardous effects</b>	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

## SECTION 13 Disposal considerations

<b>Residual waste</b>	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
<b>Contaminated packaging</b>	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.
<b>Local disposal regulations</b>	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

## SECTION 14 Transport information

### CNDG

Not regulated as dangerous goods.

### IATA

Not regulated as dangerous goods.

**IMDG**

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

**SECTION 15 Regulatory information****Law of the People's Republic of China on Prevention and Control of Occupational Diseases****Classification of occupational disease hazards**

Copper and its compounds (CAS 7440-50-8)  
Dust from iron and its compounds (CAS 7439-89-6)  
Dust from tin and its compounds (CAS 7440-31-5)

**Regulations on the Control over Safety of Dangerous Chemicals****Catalog of Hazardous Chemicals**

Zinc powder (CAS 7440-66-6)

**Regulations on Labor Protection in Workplaces Where Toxic Substances Are Used****Directory of Highly Toxic Substances**

Nickel (CAS 7440-02-0)

**Provision on the Environmental Administration of New Chemical Substances****China Inventory of Existing Chemical Substances**

Country(s) or region	Inventory name	On inventory (yes/no)*
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes

\*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)  
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

**Other regulations**

This safety data sheet conforms to the following laws, regulations and standards:  
Measures for the Safe Use of Chemicals in Workplaces  
General Rules for Preparation of Precautionary Labels for Chemicals (GB15258-2009 )  
Regulations on Labor Protection in Workplaces Where Toxic Products Are Used  
Packing Symbol of Dangerous Goods(GB190-2009)  
Regulations on the Control over Safety of Dangerous Chemicals  
Safety Data Sheet for Chemical Products - Content and Order of Sections (GB/T 16483-2008)  
Packing - Pictorial Marking for Handling of Goods (GB/T191-2008)

**International regulations****Stockholm Convention**

Not applicable.

**Rotterdam Convention**

Not applicable.

**Montreal Protocol**

Not applicable.

**Kyoto protocol**

Not applicable.

**Basel Convention**

Zinc (CAS 7440-66-6)

**SECTION 16 Other information****References**

EPA: AQUIRE database  
GB6944-2012: Classification and Code of Dangerous Goods.  
GB12268-2012: List of Dangerous Goods.  
NLM: Hazardous Substances Data Base  
US. IARC Monographs on Occupational Exposures to Chemical Agents

**Further information**

Transportation Emergency  
Call Chemtrec at:  
US: 800.424.9300  
International: 703.741.5970  
Spain: 900.868.538  
Switzerland: 0800.564.402  
Chemtrec's toll free, mobile-enabled number in Germany – 0800 1817059  
South Korea Toll-free Number – 080-880-0468

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**Revision information**

This document has undergone significant changes and should be reviewed in its entirety.