


SAFETY DATA SHEET

1. Identification

Product identifier	SilTron 15 Brazing Rod
Other means of identification	
SDS number	WC050
Recommended use	Welding/ Brazing/ Soldering.
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
Manufacturer/Supplier	Worthington Cylinder Corporation
Address	200 Old Wilson Bridge Road Columbus, OH 43085 United States
Email:	cylinders@worthingtonindustries.com
Telephone Number:	866-928-2657
CHEMTREC - 24 HOURS:	
Within US and Canada	800-424-9300
Outside US and Canada	+1 703-741-5970 (collect calls accepted)

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Sensitization, skin	Category 1
	Carcinogenicity (inhalation)	Category 2
	Specific target organ toxicity, repeated exposure (inhalation)	Category 1 (lungs)
Environmental hazards	Not classified.	
Label elements		

Signal word	Danger
Hazard statement	May cause an allergic skin reaction. Suspected of causing cancer. Causes damage to organs (lungs) through prolonged or repeated exposure by inhalation.
Precautionary statement	
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe fumes and dusts. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection.
Response	IF ON SKIN: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. IF exposed or concerned: Get medical advice/attention.
Storage	Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Other hazards	Molten material will produce thermal burns.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Copper	7440-50-8	1 - 95
Zinc	7440-66-6	0 - 30
Silver	7440-22-4	5 - 20
Phosphorus	7723-14-0	0.1 - 10
Tin	7440-31-5	0 - 10
Nickel	7440-02-0	0 - 5
Silicon	7440-21-3	0 - 5

Composition comments All concentrations are in percent by weight.

4. First-aid measures

Inhalation

In case of inhalation of dust or fumes: Immediately remove from further exposure. Get immediate medical assistance. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. Give supplemental oxygen, if available. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

Skin contact

Contact with dust: Remove contaminated clothes and rinse skin thoroughly with water for at least 15 minutes. If skin rash or an allergic skin reaction develops, get medical attention.

Eye contact

Contact with dust: Rinse immediately with plenty of water for at least 15 minutes. Remove any contact lenses. Get medical attention if irritation develops or persists.

Ingestion

Rinse mouth thoroughly if dust is ingested. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed

May cause an allergic skin reaction. Dermatitis. Rash. Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the eye, mucous membranes and respiratory tract. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Symptoms may include coughing, difficulty breathing and shortness of breath. Overexposure to copper fumes may cause fever, chills, congestion and headaches. Prolonged exposure may cause chronic effects. Contact with molten material may cause thermal burns.

Indication of immediate medical attention and special treatment needed

Treat symptomatically. Exposure may aggravate pre-existing respiratory disorders. Symptoms may be delayed.

General information

Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media

Extinguish with foam, carbon dioxide or dry powder.

Unsuitable extinguishing media

Do not use water or halogenated extinguishing media.

Specific hazards arising from the chemical

Fire or high temperatures create: Metal oxides.

Special protective equipment and precautions for firefighters

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions

Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards

Solid metal is not flammable; however, finely divided metallic dust or powder may form an explosive mixture with air.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Keep unnecessary personnel away. Avoid inhalation of dust from the spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Wear protective clothing as described in Section 8 of this SDS.

Methods and materials for containment and cleaning up

Massive, solid metal: Pick up and arrange disposal without creating dust.
Dust: Collect dust or particulates using a vacuum cleaner with a HEPA filter. Use approved industrial vacuum cleaner for removal. Avoid generation and spreading of dust. Recover and recycle, if practical. Keep out of water supplies and sewers.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not contaminate water.

7. Handling and storage

Precautions for safe handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear appropriate personal protective equipment (See Section 8). Persons susceptible for allergic reactions should not handle this product. Keep formation of airborne dusts to a minimum. Provide appropriate exhaust ventilation at places where dust is formed. Avoid inhalation of dust and fumes. Avoid contact with eyes, skin, and clothing. Do not eat, drink or smoke when using the product. Wash thoroughly after handling.

Any surface that comes in contact with molten metal must be preheated or specially coated and rust free. Inadvertent contaminants to product such as moisture, ice, snow, grease, or oil can cause an explosion when charged to a molten metal bath or metal furnace (preheating metal will remove moisture from product).

Conditions for safe storage, including any incompatibilities

Store in tightly closed original container in a dry, cool and well-ventilated place. Keep away from food, drink and animal feedingstuffs. Keep out of reach of children. Store away from incompatible materials (See Section 10).

8. Exposure controls/personal protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m ³ 0.2 mg/m ³	Dust and mist. Fume.
Nickel (CAS 7440-02-0)	TWA	1.5 mg/m ³	Inhalable fraction.
Silver (CAS 7440-22-4)	TWA	0.1 mg/m ³	Dust and fume.
Tin (CAS 7440-31-5)	TWA	2 mg/m ³	

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m ³ 0.2 mg/m ³	Dust and mist. Fume.
Nickel (CAS 7440-02-0)	TWA	1.5 mg/m ³	
Phosphorus (CAS 7723-14-0)	TWA	0.1 mg/m ³	
Silver (CAS 7440-22-4)	TWA	0.1 mg/m ³	
Tin (CAS 7440-31-5)	TWA	2 mg/m ³	

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m ³ 0.2 mg/m ³	Dust and mist. Fume.
Nickel (CAS 7440-02-0)	TWA	0.05 mg/m ³	
Phosphorus (CAS 7723-14-0)	TWA	0.1 mg/m ³	
Silver (CAS 7440-22-4)	STEL	0.03 mg/m ³	
	TWA	0.01 mg/m ³	
Tin (CAS 7440-31-5)	TWA	2 mg/m ³	

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m ³ 0.2 mg/m ³	Dust and mist. Fume.
Nickel (CAS 7440-02-0)	TWA	1.5 mg/m ³	Inhalable fraction.
Phosphorus (CAS 7723-14-0)	TWA	0.1 mg/m ³	
Silver (CAS 7440-22-4)	TWA	0.1 mg/m ³	Dust and fume.
Tin (CAS 7440-31-5)	TWA	2 mg/m ³	

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	0.2 mg/m ³	Fume.
Nickel (CAS 7440-02-0)	TWA	1 mg/m ³	Inhalable fraction.
Phosphorus (CAS 7723-14-0)	TWA	0.1 mg/m ³	
Silver (CAS 7440-22-4)	TWA	0.1 mg/m ³	Dust and fume.
Tin (CAS 7440-31-5)	TWA	2 mg/m ³	

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m ³	Dust and mist.
		0.2 mg/m ³	Fume.
Nickel (CAS 7440-02-0)	TWA	1 mg/m ³	
Phosphorus (CAS 7723-14-0)	TWA	0.1 mg/m ³	
Silicon (CAS 7440-21-3)	TWA	10 mg/m ³	Total dust.
Silver (CAS 7440-22-4)	TWA	0.1 mg/m ³	
Tin (CAS 7440-31-5)	TWA	2 mg/m ³	

Biological limit values	No biological exposure limits noted for the ingredient(s).
Exposure guidelines	No exposure standards allocated.
Appropriate engineering controls	Provide adequate ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of dust. Keep melting/soldering temperatures as low as possible to minimize the generation of fume. Shower, hand and eye washing facilities near the workplace are recommended.
Individual protection measures, such as personal protective equipment	
Eye/face protection	Wear safety glasses with side shields (or goggles). Wear a face shield when working with molten material.
Skin protection	
Hand protection	Wear protective gloves (i.e. latex, nitrile, neoprene).
Other	Chemical resistant clothing is recommended.
Respiratory protection	Use a respirator when local exhaust or ventilation is not adequate to keep exposures below the OEL. In a confined space a supplied respirator may be required. Selection and use of respiratory protective equipment should be in accordance with OSHA General Industry Standard 29 CFR 1910.134; or in Canada with CSA Standard Z94.4. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits.
Thermal hazards	Heat resistant/insulated gloves and clothing are recommended when working with molten material.
General hygiene considerations	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.

9. Physical and chemical properties

Appearance

Physical state	Solid.
Form	Metallic wire, rod or strip.
Color	Not available.
Odor	Odorless.
Odor threshold	Not applicable.
pH	Not applicable.
Melting point/freezing point	1100 - 1500 °F (593.33 - 815.56 °C)
Initial boiling point and boiling range	Not determined.
Flash point	Not applicable.
Evaporation rate	Not applicable.
Flammability (solid, gas)	Solid: Non flammable. Fine particles may form explosive mixtures with air.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)	Not applicable.
Flammability limit - upper (%)	Not applicable.
Explosive limit - lower (%)	Not applicable.
Explosive limit - upper (%)	Not applicable.

Vapor pressure	Not applicable.
Vapor density	Not applicable.
Relative density	7.4 - 8.54 (H2O=1)

Solubility(ies)

Solubility (water)	Insoluble in water.
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Partition coefficient (n-octanol/water)	Not available.
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Auto-ignition temperature	Not available.
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Decomposition temperature	Not available.
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Viscosity	Not applicable.
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Other information

Explosive properties	Not explosive.
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Oxidizing properties	Not oxidizing.
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10. Stability and reactivity

Reactivity	The product is non-reactive under normal conditions of use, storage and transport.
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Chemical stability	Material is stable under normal conditions.
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Possibility of hazardous reactions	Hazardous polymerization does not occur.
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Conditions to avoid	Contact with incompatible materials. Avoid molten metal contact with water.
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Incompatible materials	Strong acids. Strong bases. Oxidizing agents. Acetylene. Ammonia. Magnesium. Ammonium nitrate. Hydrogen sulfide. Chlorinated rubber.
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Hazardous decomposition products	Toxic metal oxides are emitted when heated above the melting point.
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11. Toxicological information

Information on likely routes of exposure

Inhalation	Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the mucous membranes and respiratory tract. Lung damage and possible pulmonary edema can result from dust exposure. Inhalation of fumes may cause a flu-like illness called metal fume fever.
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Skin contact	Dust may irritate skin. May cause an allergic skin reaction. Contact with molten material may cause thermal burns.
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Eye contact	Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the eye.
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Ingestion	Ingestion of dusts generated during working operations may cause nausea and vomiting. Copper poisoning can result in hemolytic anemia and kidney, liver and spleen damage.
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Symptoms related to the physical, chemical and toxicological characteristics	May cause an allergic skin reaction. Dermatitis. Rash. Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the eye, mucous membranes and respiratory tract. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Symptoms may include coughing, difficulty breathing and shortness of breath. Overexposure to copper fumes may cause fever, chills, congestion and headaches. Prolonged exposure may cause chronic effects. Contact with molten material may cause thermal burns.
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Information on toxicological effects

Acute toxicity High concentrations of freshly formed fumes/dusts of metal oxides can produce symptoms of metal fume fever. When heated, the vapors/fumes given off may cause respiratory tract irritation. Overexposure of Tin can cause irritation of the eyes, skin, mucous membranes, and respiratory system. Acute overexposure to Copper dust/fume can cause irritation of the eyes, nose, throat, and skin and under severe fume overexposure can cause metal fume fever with flu-like symptoms such as sweet metal taste, dry throat, coughing, fever and chills, tight chest, dyspnea, headache, blurred vision, back pain, nausea, vomiting, fatigue. Symptoms usually disappear within 24 hours. Copper may cause skin and hair discoloration. Inhalation of copper dusts may change the gums and mucous lining of the mouth which is generally attributable to localized tissue effect rather than general toxicity.

Components	Species	Test Results
Nickel (CAS 7440-02-0)		
Acute		
<i>Oral</i>		
LD50	Rat	> 9000 mg/kg
Silicon (CAS 7440-21-3)		
Acute		
<i>Oral</i>		
LD50	Rat	3160 mg/kg
Silver (CAS 7440-22-4)		
Acute		
<i>Dermal</i>		
LD50	Rat	> 2000
<i>Oral</i>		
LD50	Rat	> 5000
Zinc (CAS 7440-66-6)		
Acute		
<i>Inhalation</i>		
LC50	Rat	> 5410 mg/m3
Skin corrosion/irritation	Dust may irritate skin.	
Serious eye damage/eye irritation	Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the eye.	
Respiratory or skin sensitization		
Respiratory sensitization	Not classified.	
Skin sensitization	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	May cause cancer by inhalation.	
ACGIH Carcinogens		
Nickel (CAS 7440-02-0)	A5 Not suspected as a human carcinogen.	
Canada - Manitoba OELs: carcinogenicity		
Nickel (CAS 7440-02-0)	Not suspected as a human carcinogen.	
IARC Monographs. Overall Evaluation of Carcinogenicity		
Nickel (CAS 7440-02-0)	2B Possibly carcinogenic to humans.	
US. National Toxicology Program (NTP) Report on Carcinogens		
Nickel (CAS 7440-02-0)	Reasonably Anticipated to be a Human Carcinogen.	
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.	
Specific target organ toxicity - single exposure	Not classified.	
Specific target organ toxicity - repeated exposure	Causes damage to organs (lungs) through prolonged or repeated exposure by inhalation.	
Aspiration hazard	Not relevant, due to the form of the product.	
Chronic effects	Workers allergic to nickel may develop eczema or rashes. Prolonged and repeated overexposure to dust and fumes can lead to benign pneumoconiosis (stannosis).	
Further information	No other specific acute or chronic health impact noted.	

12. Ecological information

Ecotoxicity Alloys in massive forms present a limited hazard for the environment.

Components		Species	Test Results
Copper (CAS 7440-50-8)			
Aquatic			
<i>Chronic</i>			
Other	NOEC	Juga plicifera	6 µg/l
Phosphorus (CAS 7723-14-0)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	0.025 - 0.037 mg/l, 48 hours
Fish	LC50	Bluegill (Lepomis macrochirus)	0.002 - 0.006 mg/l, 96 hours
			0.001 - 0.004 mg/l, 96 hours
Zinc (CAS 7440-66-6)			
Aquatic			
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	0.24 mg/l, 96 hours

Persistence and degradability The product is not biodegradable.

Bioaccumulative potential No data available.

Mobility in soil Alloys in massive forms are not mobile in the environment.

Other adverse effects None expected.

13. Disposal considerations

Disposal instructions Dispose in accordance with all applicable regulations.

Local disposal regulations Dispose of in accordance with local regulations.

Hazardous waste code Waste codes should be assigned by the user based on the application for which the product was used.

Waste from residues / unused products Dispose of in accordance with local regulations. Scrapped material should be sent for refining to recover precious metal content. Solid metal and alloys in the form of particles may be reactive. Its hazardous characteristics, including fire and explosion, should be determined prior to disposal.

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

TDG

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.

15. Regulatory information

Canadian regulations This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

Controlled Drugs and Substances Act

Not regulated.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Precursor Control Regulations

Phosphorus (CAS 7723-14-0)

Class A

International regulations

SilTron 15 Brazing Rod

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SDS Canada

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Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Zinc (CAS 7440-66-6)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies 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).

16. Other information

Issue date	19-October-2016
Revision date	-
Version #	01
Further information	The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available.
Disclaimer	All information in this Safety Data Sheet is believed to be accurate and reliable. However, no guarantee or warranty of any kind is made with regard to the accuracy of information or the suitability of the recommendations contained herein. It is the user's responsibility to assess the safety and toxicity of this product under their own conditions of use and to comply with all applicable laws and regulations.