SAFETY DATA SHEET

1. Identification

Product identifier **Select Lead-Free Solder**

Other means of identification

SDS number WC005

Recommended use Solder.

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 Not classified.

OSHA defined hazards Not classified.

Label elements

Hazard symbol None.

Signal word None.

Hazard statement None.

Precautionary statement

Prevention Observe good industrial hygiene practices.

Response Wash thoroughly after handling.

Storage Store away from incompatible materials.

Disposal Dispose of waste and residues in accordance with local authority requirements.

Hazard(s) not otherwise classified (HNOC) Molten material will produce thermal burns.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Tin	7440-31-5	> 90
Copper	7440-50-8	4 - 6
Selenium	7782-49-2	<1

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

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

Ingestion
Immediately rinse mouth and drink a cupful of water. Never give anything by mouth to a victim who is unconscious or is having convulsions. Only induce vomiting at the instruction of medical personnel. Get medical attention immediately.

Most important symptoms/effects, acute and delayed
Dust and fumes may irritate eyes, skin and upper respiratory tract. 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
Move containers from fire area if you can do it without risk.

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. Wear protective clothing as described in Section 8 of this SDS. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Methods and materials for containment and cleaning up
Stop leak if you can do so without risk. Local authorities should be advised if significant spillages cannot be contained.

For a dry material spill, use a HEPA (high efficiency particle air) vacuum to collect material and place in a sealable container for disposal. Avoid dust formation. 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.
If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

7. Handling and storage

Precautions for safe handling
Wear appropriate personal protective equipment (See Section 8). 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 skin and eyes. Do not get this material on clothing. Do not eat, drink or smoke when using the product. Wash thoroughly after handling. Avoid release to the environment.

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. Store in a closed container away from incompatible materials. Keep out of reach of children. Keep away from food, drink and animal feedingstuffs.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Copper (CAS 7440-50-8)	PEL	1 mg/m3	Dust and mist.
		0.1 mg/m3	Fume.
Selenium (CAS 7782-49-2)	PEL	0.2 mg/m3	
Tin (CAS 7440-31-5)	PEL	2 mg/m3	

ACGIH

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m3	Dust and mist.
		0.2 mg/m3	Fume.

US. ACGIH Threshold Limit Values

Components	Type	Value
Selenium (CAS 7782-49-2)	TWA	0.2 mg/m3
Tin (CAS 7440-31-5)	TWA	2 mg/m3

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m3	Dust and mist.
Selenium (CAS 7782-49-2)	TWA	0.2 mg/m3	
Tin (CAS 7440-31-5)	TWA	2 mg/m3	

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. Heat resistant/insulated gloves and clothing are recommended when working with molten material.

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 Silver to silver-gray metallic metal. Contains core of white powder.

Physical state Solid.

Form Wire.

Color Silver to gray. Core: white.

Odor Odorless.

Odor threshold Not available.

pH Not available.

Melting point/freezing point 410 - 418 °F (210 - 214.44 °C)

Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	7.38
Solubility(ies)	
Solubility (water)	Not soluble
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.

10. Stability and reactivity

Reactivity	The product is non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Contact with incompatible materials. Avoid molten metal contact with water.
Incompatible materials	Chlorine. Turpentine. Magnesium. Acetylene Gas.
Hazardous decomposition products	Toxic metal oxides are emitted when heated above the melting point.

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.
Skin contact	Dust may irritate skin. Contact with molten material may cause thermal burns.
Eye contact	Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the eyes.
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.
Symptoms related to the physical, chemical and toxicological characteristics	Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the eye, mucous membranes and respiratory tract. Contact with molten material may cause thermal burns.

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.
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	No sensitizing effects known.
Skin sensitization	No sensitizing effects known.
Germ cell mutagenicity	No data available.
Carcinogenicity	Not classifiable as to carcinogenicity to humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

Selenium (CAS 7782-49-2)	3 Not classifiable as to carcinogenicity to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity	No data available.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not relevant, due to the form of the product.
Chronic effects	Prolonged and repeated overexposure to dust and fumes can lead to benign pneumoconiosis (stannosis). Overexposure to Tin can result in benign pneumoconiosis (stannous). This form of pneumoconiosis produces progressive x-ray changes of the lungs as long as exposure exists, but there is no distinctive fibrosis, no evidence of disability and no special complicating factors.
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.
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	Not regulated.
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

DOT

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

US federal regulations Under some use conditions, this material may be considered to be hazardous in accordance with OSHA 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Copper (CAS 7440-50-8)	LISTED
Selenium (CAS 7782-49-2)	LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Copper	7440-50-8	4 - 6

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Selenium (CAS 7782-49-2)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

US. Massachusetts RTK - Substance List

Copper (CAS 7440-50-8)
Selenium (CAS 7782-49-2)
Tin (CAS 7440-31-5)

US. New Jersey Worker and Community Right-to-Know Act

Copper (CAS 7440-50-8)
Selenium (CAS 7782-49-2)
Tin (CAS 7440-31-5)

US. Pennsylvania Worker and Community Right-to-Know Law

Copper (CAS 7440-50-8)
Selenium (CAS 7782-49-2)
Tin (CAS 7440-31-5)

US. Rhode Island RTK

Copper (CAS 7440-50-8)
Selenium (CAS 7782-49-2)

US. California Proposition 65

Not Listed.

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, including date of preparation or last revision

Issue date 28-May-2015

Revision date -

Version # 01

Further information HMIS® is a registered trade and service mark of the NPCA.

HMIS® ratings
Health: 1
Flammability: 0
Physical hazard: 0

NFPA ratings

References
ACGIH
EPA: AQUIRE database
NLM: Hazardous Substances Data Base
US. IARC Monographs on Occupational Exposures to Chemical Agents
HSDB® - Hazardous Substances Data Bank
IARC Monographs. Overall Evaluation of Carcinogenicity
National Toxicology Program (NTP) Report on Carcinogens
ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices

Disclaimer All information in this Material 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.

SAFETY DATA SHEET

1. Identification

Product identifier	**Worthington Water Soluble Soldering Flux**
Other means of identification	
SDS number	WC015
Recommended use	Soldering flux.
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	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 1
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 2
	Hazardous to the aquatic environment, long-term hazard	Category 2
OSHA defined hazards	Not classified.	

Label elements

Signal word	Danger
Hazard statement	Causes skin irritation. Causes serious eye damage. Toxic to aquatic life with long lasting effects.
Precautionary statement	
Prevention	Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Avoid release to the environment.
Response	If on skin: Wash with plenty of water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Collect spillage.
Storage	Store away from incompatible materials.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Zinc chloride	7646-85-7	1 - 3

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Unlisted percentages are non-hazardous stabilizers and water. None of the products in this material are listed in NTP, IARC, or OSHA as carcinogens.

4. First-aid measures

Inhalation Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Get medical attention if discomfort persists.

Skin contact Remove and isolate contaminated clothing and shoes. Immediately flush with plenty of water for at least 15 minutes. Get medical attention immediately. Wash clothing separately before reuse.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Ingestion If swallowed, rinse mouth with water (only if the person is conscious). Never give anything by mouth to a victim who is unconscious or is having convulsions. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Do not use mouth-to-mouth method if victim ingested the substance. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed Causes eye burns. Causes skin irritation.

Indication of immediate medical attention and special treatment needed Treat symptomatically. Exposure may aggravate pre-existing respiratory, lung or kidney disorders.

General information Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media None.

Specific hazards arising from the chemical Fire may produce irritating, corrosive and/or toxic gases.

Special protective equipment and precautions for firefighters Firefighters should wear full protective clothing including self contained breathing apparatus.

Fire fighting equipment/instructions Move containers from fire area if you can do it without risk.

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

General fire hazards Will release small amounts of HCL upon decomposition.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Use personal protection as recommended in Section 8 of the SDS. Avoid inhalation of dust and contact with skin and eyes.

Methods and materials for containment and cleaning up Neutralize with soda ash or sodium bicarbonate. Dilute with plenty of water. Dispose of in accordance with EPA regulations.

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

7. Handling and storage

Precautions for safe handling Wear appropriate personal protective equipment (See Section 8). Use only with adequate ventilation. Do not breathe fumes and dusts. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities Store in plastic containers in cool area away from heat. Store away from incompatible materials.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Zinc chloride (CAS 7646-85-7)	PEL	1 mg/m3	Fume.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Zinc chloride (CAS 7646-85-7)	STEL	2 mg/m3	Fume.
	TWA	1 mg/m3	Fume.

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Zinc chloride (CAS 7646-85-7)	STEL	2 mg/m3	Fume.
	TWA	1 mg/m3	Fume.

Biological limit values No biological exposure limits noted for the ingredient(s).

Exposure guidelines Use personal protective equipment as required. Keep working clothes separately.

Appropriate engineering controls 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.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear approved safety glasses or goggles.

Skin protection

Hand protection Wear protective gloves.

Other Wear suitable protective clothing.

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.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

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 White paste.

Physical state Solid.

Form Paste.

Color White.

Odor Odorless.

Odor threshold Not available.

pH 1

Melting point/freezing point 140 °F (60 °C) / 14 °F (-10 °C)

Initial boiling point and boiling range 219.2 °F (104 °C)

Flash point Not applicable.

Evaporation rate 0.6 (Butyl acetate = 1)

Flammability (solid, gas) Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) Not available.

Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not applicable.
Explosive limit - upper (%)	Not applicable.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	0.99
Solubility(ies)	
Solubility (water)	Unlimited.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not applicable.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Percent volatile	Not available.
VOC (Weight %)	0 %

10. Stability and reactivity

Reactivity	The product is non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Contact with metals. Excessive heat or cold.
Incompatible materials	Alkalines. Strong oxidizing agents. Reducing agents. Cyanides. Combustible material.
Hazardous decomposition products	Thermal decomposition or combustion may liberate corrosive gases or fumes. Hydrogen chloride gas. Zinc oxide. Zinc chloride. Ammonium fume.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Irritating to respiratory system.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye damage.
Ingestion	May cause discomfort if swallowed.
Symptoms related to the physical, chemical and toxicological characteristics	Causes serious eye irritation. Causes skin irritation.

Information on toxicological effects

Acute toxicity	Causes skin irritation. Causes serious eye damage.

Components	**Species**	**Test Results**
Zinc chloride (CAS 7646-85-7)		
Acute		
Oral		
LD50	Mouse	350 mg/kg

Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/eye irritation	Causes serious eye damage.
Respiratory or skin sensitization	
Respiratory sensitization	Not classified.
Skin sensitization	Not classified.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity Not classified.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not classified.

Chronic effects Can cause delayed lung injury.

12. Ecological information

Ecotoxicity Toxic to aquatic life with long lasting effects.

Components		Species	Test Results
Zinc chloride (CAS 7646-85-7)			
Aquatic			
Crustacea	EC50	American or virginia oyster (Crassostrea virginica)	0.1511 - 0.2782 mg/l, 48 hours
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	0.101 - 0.197 mg/l, 96 hours

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential Not available.

Mobility in soil Expected to be slightly to moderately mobile in soil.

Other adverse effects An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

13. Disposal considerations

Disposal instructions Dispose waste and residues in accordance with applicable federal, state, and local regulations.

Local disposal regulations Dispose of in accordance with local regulations.

Hazardous waste code Not regulated.

Waste from residues / unused products Dispose in accordance with all applicable regulations.

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

14. Transport information

DOT

UN number UN3077

UN proper shipping name Environmentally hazardous substances, solid, n.o.s. (Zinc chloride RQ = 50000 LBS)

Transport hazard class(es)

Class 9

Subsidiary risk -

Label(s) 9

Packing group III

Environmental hazards

Marine pollutant Yes

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Special provisions 8, 146, 335, A112, B54, IB8, IP3, N20, T1, TP33

Packaging exceptions 155

Packaging non bulk 213

Packaging bulk 240

IATA

UN number UN3077

UN proper shipping name Environmentally hazardous substance, solid, n.o.s. (Zinc chloride)

Transport hazard class(es)

Class 9

Subsidiary risk -

Label(s) 9

Packing group	III
Environmental hazards	Yes
ERG Code	9L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN3077
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc chloride)
Transport hazard class(es)	
Class	9
Subsidiary risk	-
Label(s)	9
Packing group	III
Environmental hazards	
Marine pollutant	Yes
EmS	F-A, S-F
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.

15. Regulatory information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Zinc chloride (CAS 7646-85-7) LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Zinc chloride	7646-85-7	1 - 3

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

US. Massachusetts RTK - Substance List

Zinc chloride (CAS 7646-85-7)

US. New Jersey Worker and Community Right-to-Know Act

Zinc chloride (CAS 7646-85-7)

US. Pennsylvania Worker and Community Right-to-Know Law

Zinc chloride (CAS 7646-85-7)

US. Rhode Island RTK

Zinc chloride (CAS 7646-85-7)

US. California Proposition 65

Not Listed.

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)	Yes
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, including date of preparation or last revision

Issue date 28-May-2015

Revision date -

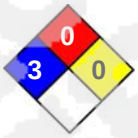
Version # 01

Further information HMIS® is a registered trade and service mark of the NPCA.

HMIS® ratings

Health: 3
Flammability: 0
Physical hazard: 0

NFPA ratings



Disclaimer

All information in this Material 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.