

SAFETY DATA SHEET

1. Identification

Product identifier **Worthington Petroleum Based Tinning Soldering Flux**

Other means of identification

Product code WC017

Recommended use Soldering flux.

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer/Supplier Worthington Industries Incorporated

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 1B

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

Label elements



Signal word Danger

Hazard statement Causes severe skin burns and eye damage. Toxic to aquatic life with long lasting effects.

Precautionary statement

Prevention Wash thoroughly after handling. Do not breathe dust/fume. Wear protective gloves/protective clothing/eye protection/face protection. Avoid release to the environment.

Response IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse. IF INHALED: Remove person to fresh air and keep comfortable for breathing. 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 locked up.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Other hazards None known.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

| Chemical name | CAS number | % |
|----------------|------------|------|
| Petrolatum | 8009-03-8 | ≤ 79 |
| TIN, ELEMENTAL | 7440-31-5 | ≤ 5 |
| ZINC CHLORIDE | 7646-85-7 | ≤ 16 |

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

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| Inhalation | Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a physician if symptoms develop or persist. |
| 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. 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 immediately. |
| Most important symptoms/effects, acute and delayed | Causes permanent skin damage (scarring). Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract. |
| Indication of immediate medical attention and special treatment needed | Treat symptomatically. Exposure may aggravate pre-existing respiratory, lung or kidney disorders. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. |
| General information | Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. |

5. Fire-fighting measures

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| Suitable extinguishing media | Use fire-extinguishing media appropriate for surrounding materials. |
| Unsuitable extinguishing media | Do not use water jet as an extinguisher, as this will spread the fire. |
| 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 | Material will burn in a fire. Will release small amounts of HCL upon decomposition. |

6. Accidental release measures

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| Personal precautions, protective equipment and emergency procedures | Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS. |
| Methods and materials for containment and cleaning up | Prevent product from entering drains. Stop the flow of material, if this is without risk. Neutralize with Sodium Bicarbonate or Soda Ash. Dilute with plenty of water. Clean surface thoroughly to remove residual contamination. Do not flush to sewer. |
| Environmental precautions | Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS. Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground. |

7. Handling and storage

Precautions for safe handling

Do not get in eyes, on skin, or on clothing. Do not breathe fumes and dusts. Provide adequate ventilation. Wear appropriate personal protective equipment. Avoid release to the environment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store locked up. Store in original tightly closed container. Store below melting temperature. Keep away from heat. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

| Components | Type | Value | Form |
|--------------------------------|------|---------------------|-------|
| TIN, ELEMENTAL (CAS 7440-31-5) | TWA | 2 mg/m ³ | |
| ZINC CHLORIDE (CAS 7646-85-7) | STEL | 2 mg/m ³ | Fume. |
| | TWA | 1 mg/m ³ | Fume. |

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

| Components | Type | Value | Form |
|--------------------------------|------|---------------------|-------|
| TIN, ELEMENTAL (CAS 7440-31-5) | TWA | 2 mg/m ³ | |
| ZINC CHLORIDE (CAS 7646-85-7) | STEL | 2 mg/m ³ | Fume. |
| | TWA | 1 mg/m ³ | Fume. |

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

| Components | Type | Value | Form |
|--------------------------------|------|---------------------|-------|
| TIN, ELEMENTAL (CAS 7440-31-5) | TWA | 2 mg/m ³ | |
| ZINC CHLORIDE (CAS 7646-85-7) | STEL | 2 mg/m ³ | Fume. |
| | TWA | 1 mg/m ³ | Fume. |

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

| Components | Type | Value | Form |
|--------------------------------|------|---------------------|-------|
| TIN, ELEMENTAL (CAS 7440-31-5) | TWA | 2 mg/m ³ | |
| ZINC CHLORIDE (CAS 7646-85-7) | STEL | 2 mg/m ³ | Fume. |
| | TWA | 1 mg/m ³ | Fume. |

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

| Components | Type | Value | Form |
|--------------------------------|------|---------------------|-------|
| TIN, ELEMENTAL (CAS 7440-31-5) | TWA | 2 mg/m ³ | |
| ZINC CHLORIDE (CAS 7646-85-7) | STEL | 2 mg/m ³ | Fume. |
| | TWA | 1 mg/m ³ | Fume. |

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

| Components | Type | Value | Form |
|--------------------------------|------|---------------------|-------|
| TIN, ELEMENTAL (CAS 7440-31-5) | TWA | 2 mg/m ³ | |
| ZINC CHLORIDE (CAS 7646-85-7) | TWA | 1 mg/m ³ | Fume. |

Biological limit values

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

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| 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. Eye wash facilities and emergency shower must be available when handling this product. |
| Individual protection measures, such as personal protective equipment | |
| Eye/face protection | Wear safety glasses with side shields (or goggles) and a face shield. |
| Skin protection | |
| Hand protection | Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier. |
| Other | Wear appropriate chemical resistant 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

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|---|----------------------------------|
| Appearance | Medium brownish yellow paste. |
| Physical state | Semi-solid. |
| Form | Paste. |
| Color | Brownish. Yellow. |
| Odor | Slight petroleum odor. |
| Odor threshold | Not available. |
| pH | Not available. |
| Melting point/freezing point | 140 °F (60 °C) |
| Initial boiling point and boiling range | Not available. |
| Flash point | 400.0 °F (204.4 °C) |
| Evaporation rate | Not available. |
| Flammability (solid, gas) | Will burn if involved in a fire. |
| 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 | 0.87 (H2O=1) |
| Solubility(ies) | |
| Solubility (water) | Not available. |
| Partition coefficient (n-octanol/water) | Not available. |
| Auto-ignition temperature | Not available. |
| Decomposition temperature | Not available. |
| Viscosity | Not available. |
| Other information | |
| Explosive properties | Not explosive. |
| Oxidizing properties | Not oxidizing. |

Specific gravity 0.87

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 Avoid heat. Temperatures above melting point. Contact with incompatible materials.

Incompatible materials Strong oxidizing agents. Chlorine. Turpentine. Potassium. Cyanides.

Hazardous decomposition products Chlorine. Hydrogen chloride. Carbon monoxide.

11. Toxicological information

Information on likely routes of exposure

Inhalation High concentrations of dust and fumes may irritate the throat and respiratory system and cause coughing.

Skin contact Causes skin burns.

Eye contact Causes eye burns.

Ingestion Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract.

Symptoms related to the physical, chemical and toxicological characteristics Causes permanent skin damage (scarring). Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract.

Information on toxicological effects

Acute toxicity Not expected to be acutely toxic.

| Components | Species | Test Results |
|------------|---------|--------------|
|------------|---------|--------------|

ZINC CHLORIDE (CAS 7646-85-7)

Acute

Oral

LD50

Mouse

350 mg/kg

Skin corrosion/irritation Causes skin burns.

Serious eye damage/eye irritation Causes serious eye damage.

Respiratory or skin sensitization

Canada - Alberta OELs: Irritant

ZINC CHLORIDE (CAS 7646-85-7)

Irritant

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization Not a skin sensitizer.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity Not classifiable as to carcinogenicity to humans.

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 Not classified.

Aspiration hazard Not an aspiration hazard.

Chronic effects Can cause delayed lung injury.

Further information Exposure may aggravate pre-existing respiratory, lung or kidney disorders.

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 | No data available on bioaccumulation. |
| 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

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| Disposal instructions | 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. |
| Local disposal regulations | Dispose in accordance with all applicable regulations. |
| Hazardous waste code | The waste code should be assigned in discussion between the user, the producer and the waste disposal company. |
| Waste from residues / unused products | 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). |
| Contaminated packaging | 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. |

14. Transport information

TDG

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|-------------------------------------|---|
| UN number | UN1840 |
| UN proper shipping name | ZINC CHLORIDE SOLUTION |
| Transport hazard class(es) | |
| Class | 8 |
| Subsidiary risk | - |
| Packing group | III |
| Environmental hazards | Yes |
| Special precautions for user | Read safety instructions, SDS and emergency procedures before handling. |

IATA

| | |
|-------------------------------------|---|
| UN number | UN1840 |
| UN proper shipping name | Zinc chloride solution |
| Transport hazard class(es) | |
| Class | 8 |
| Subsidiary risk | - |
| Label(s) | 8 |
| Packing group | III |
| Environmental hazards | Yes |
| ERG Code | 8L |
| Special precautions for user | Read safety instructions, SDS and emergency procedures before handling. |

IMDG

| | |
|-----------------------------------|------------------------|
| UN number | UN1840 |
| UN proper shipping name | ZINC CHLORIDE SOLUTION |
| Transport hazard class(es) | |
| Class | 8 |
| Subsidiary risk | - |
| Label(s) | 8 |
| Packing group | III |
| Environmental hazards | |
| Marine pollutant | Yes |
| EmS | F-A, S-B |

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

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

Not regulated.

International regulations

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Not applicable.

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 17-July-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.

References

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 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.