

# SAFETY DATA SHEET

## Section 1: Identification of the Material and Company

**GHS Product Name:** TIN/ZINC PLATED ROUND AND FLAT STEEL WIRE

**Recommended use of the chemical and restrictions on use:** Manufacture of steel products

**Manufacturer/Supplier:** The Mapes Piano String Company  
#1 Wire Mill Road  
P.O. Box 408  
Elizabethton, TN 37643

**Telephone No.:** (423) 543-3195

## Section 2: Hazards Identification

**Classification:** Steel is not classified as hazardous in its solid form according to 29 CFR 1910, 1915 or 1926. However, certain processes such as cutting, milling, grinding, welding, melting or similar processes may result in the emission of fumes and airborne particulate that may be hazardous. This is what hazards are described below.

**Signal word:** Danger

<b>GHS Classification:</b>	Carcinogenicity	category 2	May cause cancer
	Toxic to reproduction	category 2	May affect fertility or fetus
	Repeated exposure (STOT)	category 1	May affect organs through prolonged or repeated exposure to vapors and particulate
	Acute oral toxicity	category 4	Harmful if swallowed
	Skin sensitization	category 1	May cause an allergic skin reaction
	STOT Single exposure	category 3	May cause respiratory system irritation
	Eye	category 2	Dust or fumes may cause irritation or mechanical irritation from scratching

**Pictograms:**



**Precautionary statements:**

Do not handle until all safety precautions have been read and understood  
Do not breathe fumes or dust  
Use proper personal protective equipment as required  
Wash exposed areas thoroughly after use  
Use in a well ventilated area

**First Aid:**

**Inhalation** Remove the person to fresh air  
**Eyes** Flush eyes until irritation subsides  
**Skin** Wash thoroughly with mild soap and rinse with water  
**Ingestion** Dust may cause irritation to the gastric system  
If any symptoms persist or if concerned, consult a physician.

### Section 3: Hazardous Ingredients

Hazardous Ingredients	CAS Number	Maximum Concentration % (weight/weight)	LD50/LC50 (Species and Route)	Exposure Limits TLV ACGIH (mg/M <sup>3</sup> )
Iron (Fe)	7439-89-6	91-99	LD50 rat-oral: 30 g/kg Guinea pig oral 20 g/kg LC50 n/av	TWA: 5 (Iron oxide dust and fume as Fe) STEL: n/av
Manganese (Mn)	7439-96-5	1.0-5.0	LD50 rat-oral: 9 g/kg LC50 n/av	TWA: 5 (dust and compounds) 1 (fume) STEL: n/av (dust and compounds) 3 (fume)
Chromium (Cr)	7440-47-3	1.0-5.0	n/av	TWA: 0.5 (metal and inorganic Compounds, as Cr; metal and Cr III compounds) 0.05 (water soluble Cr VI compounds, NOC 0.01) insoluble Cr VI compounds, NOC STEL: n/av
Tin (Sn)	7440-31-5	0.8-2.5	n/av	TWA: 2 STEL: n/av
Silicon (Si)	7440-21-3	0.5-1.5	LD50 rat-oral 3160 mg/k LC50 n/av	TWA: 10 STEL: n/av
Carbon (C)	7440-44-0	0.1-1.0	LD50 mouse iv:440 mg/kg LC50 n/av	TWA: n/av STEL: n/av
Nickel (Ni)	7440-02-0	0.1-1.0	n/av	TWA: 1 (metal in soluble compounds as Ni) 0.1 (soluble compounds as Ni) STEL: n/av
Molybdenum (Mo)	7439-98-7	0.1-1.0	n/av	TWA: 5 (soluble compounds) 10 (insoluble compounds) STEL: n/av
Sulphur (S)	7704-34-9	0.1-1.0	n/av	TWA: n/av STEL: n/av
Phosphorus (P)	7723-14-0	0.1-1.0	n/av	TWA: 0.1 STEL: n/av
Copper (Cu)	7440-50-8	0.1-1.0	LD50 mouse ip: 3500ug/kg LC50 n/av	TWA: 0.2 (fume) 1 (dust & mists, as Cu) STEL: n/av
Vanadium (V)	7440-62-2	0.1-1.0	LD50 rabbit-subcutaneous 59 mg/kg LC50 n/av	TWA: 0.05 (respirable dust/fume, As V205) STEL: n/av
Zinc	7440-66-6	0.3 – 0.75	N/av	TWA: 5 (fume) 15 (dust) STEL: n/av
Aluminum (Al)	7429-90-5	<0.10	n/av	TWA: 10 (metal dust) 5 (welding fume as Al) STEL: n/av
Titanium (Ti)	7440-32-6	<0.10	n/av	TWA: n/av STEL: n/av
Boron (B)	7440-42-8	<0.10	LD50 rat-oral: 650 mg/kg mouse-oral: 560 mg/kg rabbit & guinea pig oral: 310 mg/kg LC50 n/av	TWA: n/av STEL: n/av



#### Section 4: First Aid Measures

<b>Inhalation</b>	It is unlikely that this product can be inhaled in the supplied form. If dust is inhaled remove the person to fresh air.
<b>Eyes</b>	It is unlikely that this product will enter the eye (s) in the supplied form. If splinters enter the eye, seek immediate medical attention.
<b>Skin</b>	It is unlikely that this product will cause irritation to the skin in the supplied form. wash thoroughly with mild soap and rinse with water.
<b>Ingestion</b>	It is unlikely that this product will be ingested in the supplied form. Dust may cause irritation to the gastric system. In which case, seek medical attention.
<b>Note to physician:</b>	This product may cause sensitization by skin contact or inhalation. Treatment is symptomatic.

#### Section 5: Fire or Explosion Hazard

<b>Suitable extinguishing media:</b>	Not applicable for wire in supplied state. Use appropriate fire extinguisher for surrounding environment.
<b>Hazards from combustion of product:</b>	Do not use water on molten steel. At temperatures above melting point, toxic fumes may be emitted.
<b>Special personal protective equipment:</b>	Firefighters should wear self-contained NIOSH/MSHA approved breathing apparatus (SCBA) and full protective clothing
<b>Explosion Data:</b>	Steel wire does not present an explosion hazard under normal conditions.

#### Section 6: Accidental Release Measures

<b>Emergency procedures and special protective equipment:</b>	Not applicable for steel in its solid state. If the material has been cut, burned, ground or machined, the shavings and/or chips should be swept or vacuumed. Avoid breathing the dust
<b>Environmental considerations:</b>	Not applicable to steel wire in its solid form.

#### Section 7: Handling and Storage

**Precautions in handling and storing:** Not applicable in a solid state. Store away from acid and strong oxidizers. Further processing of the steel wire generating a high concentration of dust should be tested to determine if there is potential for fire or explosion and controlled as necessary. Do not handle unless all safety precautions have been read and understood.

### Section 8: Exposure Controls / Personal Protection

- Exposure standards:** Refer to section 3 for TLV ACGIH, TWA and STEL of the components that might be released by further processing steel wire from its solid state.
- Engineering controls:** Provide good general ventilation. No special ventilation is required if the product is in its supplied solid state. If further processing is required provide suitable controls to ensure concentrations of generated dust or fumes remain below current exposure limits for the elements that might be liberated.
- Individual Protective Measures:**
- Eyes:** Use safety glasses with side shields or goggles to protect against dust that might be generated by grinding, sanding or cutting steel wire. A face shield is recommended when welding or cutting.
- Respiratory Protection:** If dust levels exceed the established limits seek professional advice for proper respiratory protection. Consult section 3 for allowable limits.
- Skin:** Limit skin contact. Wear appropriate protective gloves. Maintain good personal hygiene.

### Section 9: Physical and Chemical Properties

<b>Physical state</b>	Solid	<b>Evaporation Rate</b>	n/ap
<b>Odor and Appearance</b>	No odor, metallic luster	<b>Boiling Point</b>	n/ap
<b>Odor Threshold</b>	N/AP	<b>Freezing Point</b>	1530°C (approx.)
<b>Specific Gravity</b>	7.86	<b>pH</b>	n/ap
<b>Vapor Pressure</b>	n/ap	<b>Flammability</b>	n/ap
<b>Vapor Density</b>	n/ap	<b>Solubility</b>	n/ap

### Section 10: Stability and Reactivity

- Conditions under which the product is chemically stable:** Stable
- Name of substance or class of substances with which the product is incompatible:** Strong acids or Calcium Hypochlorite
- Conditions of reactivity:** When in molten state, contact with water or ice can result in violent splashes (release of flammable hydrogen gas).
- Hazardous decomposition products:** Metal oxides of hazardous ingredients listed in Section 3, carbon monoxide

## Section 11: Toxicological Information

<b><u>Routes of Entry:</u></b>	None in its supplied form.
<b>Skin Contact:</b>	Yes    May cause skin irritation
<b>Skin absorption:</b>	No     Not in the supplied form
<b>Eye Contact:</b>	Yes    May cause eye irritation if there is a high dust concentration
<b>Inhalation:</b>	Yes    Fumes and/or dusts may be generated from further processing of the product the user, such as welding, cutting, burning, grinding, machining, melting, crushing, screening or handling activities. The residues of this processing may cause chronic health effects.
<b>Ingestion:</b>	No     unlikely in the supplied form

**Effects of acute exposure to product:**

Overexposure to dust or fume formed when further processing the product may be an irritant to eyes, skin and respiratory tract. An overexposure by inhalation to decomposition products may cause metal fume fever characterized by fever and chills.

**Effects of chronic exposure to product:**

<b>Iron:</b>	Siderosis
<b>Manganese:</b>	May adversely affect central nervous system (CNS) and respiratory system (e.g., asthma)
<b>Chromium:</b>	Dermatitis, skin ulcerations, allergic reactions, respiratory symptoms (e.g., asthma), lung cancer
<b>Silicon:</b>	Considered a nuisance particulate
<b>Carbon:</b>	Eye and respiratory tract irritant
<b>Nickel:</b>	Allergic dermatitis ("nickel itch"), lung inflammation, asthma, cancer of the respiratory system
<b>Molybdenum:</b>	Weight loss, diarrhea, loss of coordination, pneumoconiosis, breathing difficulties
<b>Sulphur:</b>	Mucous membranes irritation
<b>Tin:</b>	Stannosis
<b>Phosphorus:</b>	Cough, bronchitis, pneumonia
<b>Copper:</b>	Skin and hair discoloration, metallic or sweet taste
<b>Vanadium:</b>	Inflammation of respiratory passages, asthma, cardiac palpitations, gastrointestinal discomfort, renal damage, nervous depression
<b>Zinc:</b>	Relatively non toxic and has no history of causing chronic effects
<b>Aluminum:</b>	Shavers disease (fibrotic lung)
<b>Titanium:</b>	Mucous membranes irritation
<b>Boron:</b>	Conjunctivitis

**Exposure Limits:** Refer to Section 3,

**Irritancy of Product:** n/ap

**Sensitization to Product:** n/ap

**Carcinogenicity:** The National Toxicology Program (NTP) and the International Agency of Research on Cancer (IARC) list certain chromium and nickel compounds under the category "confirmed human carcinogen".

**Section 11: Toxicological Information (cont'd)**

**Reproductive Toxicity:** n/av  
**Teratogenicity:** n/av  
**Mutagenicity:** n/av  
**Name of toxicologically synergistic products:** n/av

**Section 12: Ecological Information**

**Ecotoxicity:** No ecological data available for steel in its solid state although some of its components, when processed, have been found to have a toxic effect on the environment.

<b>Iron</b>	LC50 Common Carp 96 hr.	0.56mg/l
<b>Hexavalent Chromium</b>	EU RAR Category 1	
	EC50 and LD50 to algae and invertebrates	<1 mg
	LC50 Fathead minnow 96 hr.	10-100 mg/l
<b>Nickel</b>	LC50 Common Carp 96 hr.	1.3 mg/l
	LC50 Freshwater algae 72 hr.	0.18 mg/l
<b>Lead</b>	LC50 Common Carp 96 hr.	0.44 mg/l

**Section 13: Disposal Information**

**Disposal:** Recover and reuse the material whenever possible.  
**Container Cleaning and Disposal:** Follow applicable State, Federal and local regulations.

**Section 14: Transportation Information**

Steel wire is not regulated as a hazardous material under the U.S. DOT nor Canada TDG for shipping.

<b>Section 15: Regulatory Information</b>
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Regulatory Information: Steel is not hazardous under OSHA Hazard Communication Standard 29 CFR 1910.1200. However, some of its individual component materials require protection to comply with applicable State, Federal and Local regulations

**Additional U.S. Regulations:**

**SARA (Superfund Amendments and Reauthorization Act of 2006, Title III:  
Section 313 Emergency Planning and Community Right to Know Act of 1986 (40 CFR 372)**

<b>Component</b>	<b>% by Weight</b>
Chrome	1
Copper	1
Manganese	2.5
Nickel	1

**Canada WHMIS lists components of the material:**

<b>Component</b>	<b>Classification</b>
Copper	D2B, B4
Manganese	B4, D2A
Molybdenum	B4, D2B
Nickel	D2B
Silicon	B4

*This is a list of some of the regulations to be followed and may not be complete. Ensure you verify compliance with all Local, State or Federal Laws and Regulations.*



**Section 16: Other Information**

**Prepared by:** The Mapes Piano String Company

**Date:** December 14, 2015

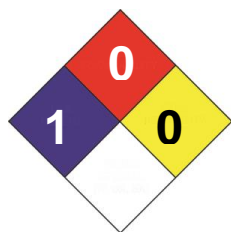
**Revision No.:** 0

**Hazardous Material Identification System (HMIS):**

<b>Health</b>	<b>1</b>
<b>Flammability</b>	<b>0</b>
<b>Physical Hazard</b>	<b>0</b>

H=1 denotes possible hazard if airborne dust or fumes are generated.

**National Fire Protection Association (NFPA):**



H=1 denotes exposure to airborne dust or fumes could cause irritation but only minor injury even if not treated.

**Disclaimer:**

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