

MATERIAL SAFETY DATA SHEET

DATED 11/25/85

I. MATERIAL IDENTIFICATION

Manufacturer's Name: Thermacote Welco
 Address: Hwy 161, York Road, Kings Mtn.N.C. 28086
 Telephone Number: 704-739-6421
 (Welco 55)
 Material Name: Copper Base Alloy Covered Welding Electrodes

II. HAZARDOUS INGREDIENTS -- Welding Rods**

	<u>CAS Number</u>	<u>%</u>	<u>OSHA 8-hr TWA</u>	<u>ACGIH 8-hr TWA</u>
Aluminum	7429-90-5	0 - 20	None	10 mg/m ³
Chromium	7440-47-3	See Below	1 mg/m ³	0.5 mg/m ³
Cobalt	7440-48-4	See Below	0.1 mg/m ³	0.1 mg/m ³
Copper	7440-50-8	50-100	Dust=1 mg/m ³ Fume=0.1 mg/m ³	1 mg/m ³ 0.2 mg/m ³
Iron	7439-37-1	0 - 6	10 mg/m ³ as oxide fume	5 mg/m ³ as oxide fume
Manganese	7439-96-5	See Below	Dust- 5 mg/m ³ Fume-None	Dust - 5 mg/m ³ Fume -1 mg/m ³
Lead	7439-92-1	See Below	50 ug/m ³	150 ug/m ³
Nickel	7440-02-0	0 - 32	1 mg/m ³	1 mg/m ³
Silicon	7440-21-3	See Below	None	Total--10 mg/m ³
Tin	7440-31-5	See Below	2 mg/m ³ Inorganics except as oxides for PEL and TLV	2 mg/m ³
Zinc	7440-66-6	See Below	5 mg/m ³	5 mg/m ³ Fume

NOTE: Zinc, Manganese, Tin, Lead, Silicon, Cobalt, and Chromium may be present in excess of 1%.

**For further data on the content of the coating material, see the Special Annex to this data sheet under section X on Page 5.

MATERIAL SAFETY DATA SHEET 379-196 CONT'D

III. PHYSICAL DATA

Melting Point (F): Not Applicable Specific Gravity: Not Applicable
 Vapor Pressure: NA Vapor Density: NA
 % Volatile by Volume: NA Evaporation Rate: NA
 Solubility in Water: Insoluble
 Appearance and Odor: Silver/grey, yellow or reddish color with no odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point: NA Method Used: NA
 Flammable Limits: LEL = NA UEL = NA
 Extinguishing Media: See Below

Special Fire Fighting Procedures: Solid, massive form is not combustible under normal conditions. Use fire fighting methods that are appropriate for surrounding fire.

Small chips, fine turnings, and dust may ignite readily. Use coarse water spray on chips, turnings, etc. Use class D extinguishing agents or dry sand on fines. DO NOT use halogenated agents on small chips or fines. Dust clouds may be explosive. PREVENT FORMATION OF A DUST CLOUD.

Molten metal alloys may explode on contact with water. They may also react violently with water, rust, and certain metal oxides (e.g. oxides of copper, iron and lead).

Firefighters should wear self contained breathing apparatus and protective clothing.

V. HEALTH HAZARD DATA

Permissible Exposure Limits and Threshold Limit Values: See Section II

Route(s) of Entry:

Inhalation: Yes
 Skin: Yes
 Ingestion: Yes

Effects of Overexposure:

Aluminum

Aluminum dust/fines and fumes are a low health risk by inhalation and are normally treated as a nuisance dust in normal operations (e.g. milling, cutting, grinding.) The AIHA Hygiene Guide lists toxicity by ingestion as "none expected."

Cobalt

Cobalt has been reported as causing hypersensitization type dermatitis in individuals who are susceptible. Animal studies have shown that particulate cobalt is an acutely irritating substance and industrial exposure, possible combined with small amounts of silica, are reported capable of producing serious pneumoconiosis which is initially of an insidious nature.

Lead

Short Term Exposure-- Lead is an accumulative poison. Inhalation effects of exposure to fumes or dust of inorganic lead may not develop quickly. Symptoms include decreased physical fitness, fatigue, sleep disturbance, headache, aching bones and muscles, constipation, abdominal pains, and decreasing appetite. The effects are reversible and complete recovery is possible. Inhalation of large amounts of lead may lead to seizures, coma, and death.

MATERIAL SAFETY DATA SHEET J79-198 CONT'D

VI. REACTIVITY DATA

Stability: Stable under normal conditions of use, storage, and transportation.

Conditions to Avoid: Molten metal may react violently with water. Avoid contact of finely divided material with heat, oxidizers, acids, alkalis, molten lithium and halogenated compounds.

Incompatibility (Materials to avoid): Acids, bases, and oxidizers.

Hazardous Decomposition or Byproducts: Metal fume.

Hazardous Polymerization: Will Not Occur

VII. PRECAUTIONS FOR SAFE HANDLING OR USE

Steps to Be Taken in Case Material is Released or Spilled: No special precautions are necessary for spills of bulk material. If large quantities of dust are spilled, remove by vacuuming or wet sweeping to prevent heavy concentrations of airborne dust. Follow federal, state, and local regulations concerning the disposal of waste.

Waste Disposal Method: Dispose of in accordance with federal, state, and local regulations. Cleanup personnel should wear respirators and protective clothing.

Precautions to be Taken in Handling and Storing: Store material away from incompatible materials and keep dust from sources of ignition.

Other Precautions: See all other sections of this MSDS.

VIII. CONTROL MEASURES

Respiratory Protection: If exposure above the PEL or TLV, NIOSH approved respirator for fume or dust, dependent upon the source of airborne contaminant.

Ventilation: Required if dust or fume created in handling or working on this material.

Local Exhaust: Required if dust or fume created in handling or working on this material.

Mechanical (general): As above to reduce airborne dust or fume levels.

Protective gloves: Required for welding operations. Select glove approved for the specific operation.

Eye Protection: Required for welding operations. Minimum requirements include special eye protection such as face shields for grinding and welding helmet during weld operations.

Other Protective Clothing or Equipment: Use leather or equal protective gloves and body clothing while welding.

Work/Hygiene Practices: Use ear muffs or plugs if noise level is above 90 dBA.

IX. SPECIAL PRECAUTIONS

WARNING

The use of these welding rods may create fumes in the breathing zones of workers. Be certain to evaluate the levels of metal fumes for these workers and always use approved (NIOSH) respirators where necessary.

11/25/85

filedate-AMM1

MATERIAL SAFETY DATA SHEET J79-196 CONT'D

SPECIAL ANNEX-SECTION X
Data on Welding Rod Coating Material

The welding rods covered by this material safety data sheet are manufactured with a coated surface. The data below concerns the composition of this coating material.

HAZARDOUS INGREDIENTS				
	CAS No.	%	OSHA - PEL	ACGIH - TLV
Sodium Silicate	6834-92-0	26.9	None	None
Cryolite (as Fluoride)	15096-52-3	51	2.5 mg/m ³	2.5 mg/m ³
Petroleum Coke	64743-05-1	1.8	None	None
Magnesite	546-93-0	5.1	None	None
Silica Sand	7631-86-9	3.2	<u>10 mg/m³</u> %SiO ₂ + 2	0.1 mg/m ³
Feldspar		2.7	None Nuisance dust=Total-15 mg/m ³ Respirable - 5 mg/m ³	None*

The decomposition of this coating during the welding process should not produce levels of the above in amounts above the permissible exposure limit. However, if use in improperly ventilated or exhausted areas should generate fumes, vapors, or dust, use approved (NIOSH) respirators only.

Fluorides are highly irritating to the eyes, nose, and throat while overexposures have been associated with cumulative bone damage. Long term silica exposure is associated with a lung disease called silicosis. The degree of the hazard depends upon the concentration, size, and length of exposure.

Incomplete combustion may produce carbon monoxide or carbon dioxide, odorless, colorless gases which are asphyxiants.

MATERIAL SAFETY DATA SHEET J79-196 CONT'D

Long Term Exposure- Long term exposure can result in a buildup of lead in the body and more severe symptoms. These may include anemia, pale skin, a blue line at the gum margin, decreased hand-grip strength, abdominal pain, severe constipation, nausea, vomiting, and paralysis of the wrist joint. Prolonged exposure may also result in kidney damage. If the nervous system is affected, usually due to very high exposures, the resulting effects include severe headache, convulsions, coma, delirium, and death. Alcohol ingestion and physical exertion may bring on symptoms. Continued exposure can result in decreased fertility and/or increased chances of miscarriage or birth defects.

Nickel

The most common ailment arising from contact with nickel or its compounds is an allergic dermatitis known as "nickel itch" which usually occurs when the skin is moist. Generally nickel and most salts of nickel do not cause systemic poisoning. IARC has determined that there is at least limited evidence that nickel and certain nickel compounds may be human carcinogens. Several nickel compounds are carcinogenic to laboratory animals by various routes of entry.

Chromium

In some workers, chromium compounds act as allergens and may cause dermatitis and may also produce pulmonary sensitization. Chromic acid and chromates have a direct corrosive effect on the skin and the mucous membranes of the upper respiratory tract. Although rare, there may be the possibility of skin and pulmonary sensitization. IARC has determined that there is sufficient evidence of increased lung cancer among workers in the chromate-producing industry and possible chromium alloy workers. This determination is supported by sufficient evidence for carcinogenicity to animals and possible mutagenicity testing of Cr VI compounds.

Copper

Melting, grinding, cutting of copper may produce fumes or dust exposure and breathing these fumes or dust may present potentially significant health hazards. Fumes of copper may cause metal fume fever with flu-like symptoms and skin and hair discoloration. While industrial dermatitis has not been reported, keratinization of the hands and the soles of the feet has been reported. Systemically as well, copper dust and fume cause irritation of the upper respiratory tract, metallic taste in the mouth, and nausea.

Iron

The inhalation of iron oxide fumes may cause an apparent benign pneumoconiosis which is called siderosis. This disease is reported not to be disabling, but makes x-ray determination of other lung conditions difficult or impossible.

Manganese

Chronic manganese poisoning may result from inhalation of dust or fume. The central nervous system is the chief site of the injury. Chronic manganese poisoning is not a fatal disease although it is extremely disabling. Some individuals may be hypersusceptible to manganese. Freshly formed manganese fume has caused fever and chill similar to metal fume fever.

Tin

The inhalation of inorganic tin fumes or dust may cause an apparent benign pneumoconiosis called stannosis which is reported not to be disabling.

Zinc

Zinc is relatively low in toxicity but inhalation of fumes may cause "metal fume fever." Onset of symptoms may be delayed 4-12 hours and include irritation of the nose, mouth, and throat, cough, stomach pain, headache, nausea, vomiting, metallic taste, chills, fever, pains in the muscles and joints, thirst, bronchitis or pneumonia and a bluish tint to the skin. These symptoms go away in 24-48 hours and leave no effect.

Emergency and First Aid Procedures:

Eye Contact: Flush well with running water to remove particulate. Get medical attention.

Skin Contact: Vacuum off excess dust. Wash well with soap and water. Avoid blowing particulate into the atmosphere.

Inhalation: Remove to fresh air. Get medical attention.

Ingestion: Seek medical attention if large quantities of material have been ingested (unlikely in the product state as solid, welding rods.)