



M A T E R I A L S A F E T Y D A T A S H E E T

Section I - IDENTIFICATION

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Product Name: **TWS 101**
AWS Standard Terminology: Gas Metal Arc Welding Wire (GMAW)
WHMIS Classification: D-2A Very Toxic Material Causing Other Toxic Effects
D-2B Toxic Material Causing Other Toxic Effects
Transport Of Dangerous Goods: **Not applicable**

Section II - HAZARDOUS INGREDIENTS

Ingredients	Range wt%	CAS number	Exposure Limit (mg/m ³)	
			PEL	TLV
Aluminum, elemental	100.0	* 7429-90-5	5 (al Al ₂ O ₃)	10

PEL: permissible exposure limit; TLV: threshold limit value

- * This Ingredient is listed as a Toxic Chemical in Subpart D (40CFR372), Subject to the reporting requirements of Section 313 of the Emergency Planning and Community right-To-Know Act of 1986.
- # This ingredient is listed as a carcinogen or possible carcinogen by the NTP, IARC or OSHA 29 CFR 1910 (Z)
- \$ **WARNING:** This product contains a chemical known to cause cancer.

Section III – PHYSICAL DATA

The following data should only be used in the context of the Material Safety Data Sheet.

Physical State: Solid
Appearance and odor: Bare odorless wire

Section IV – FIRE AND EXPLOSION HAZARD DATA

Unusual Fire and Explosion Hazards: Will not occur
Level of stability: Stable
Hazardous Polymerization: Will not occur

Refer to ANSI Z49.1 for fire prevention during the use of welding and allied processes.

ELECTRODE/BRAZE/SOLDERS

Generally nonflammable; welding arc, sparks and flames can ignite combustibles and flammables.

SPECIAL FIREFIGHTING PROCEDURES

Toxic fumes may be produced --- use an approved Self Contained Breathing Apparatus. See Hazardous decomposition products in Section 5.

EXTINGUISHING MEDIA

CO₂, dry chemical foam type, dry sand or class D extinguisher. Do not use water when live power wires are present.

UNUSUAL FIRE AND EXPLOSION HAZARD

Some fluxes and chemical aids may give off hydrogen chloride, phosgene and chlorine gases. Cans, under pressure, and flammables may explode.

Section V – REACTIVITY DATA

Fumes issued created by a thermal process cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure, and the wire used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating, or galvanizing), the number of welders and the volume of the work area, the quality and the amount of ventilation, position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities).

When the wire is consumed, fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. Fume and decomposition products, not the ingredients in the wire, are important. Decomposition products include those originating from the volatilization, reaction, or oxidation of materials in Section II, plus those from the base metal, etc., as noted above. These components are virtually always present as complex oxides and not as metals (Characterization of Arc Welding Fume: American Welding Society). Reasonably expected fume constituents of the fume could include complex oxides of iron and manganese. Chromium and nickel oxides may also be present.

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may also be formed by radiation from the arc. The fume limit for Cr VI (5 micrograms/m³) may be reached before the ACGIH recommended general welding fume limit of 5 mg/m³ is reached. Monitor fume levels and Cr VI level. Train workers about the hazards of Cr VI. Read and comply with the new OSHA permissible exposure limits for hexavalent chromium (Cr VI), Fed. Reg. 71 – 10099 (specifically 29 CFR 1910.1026, 29 CFR 1915.1026, and 29 CFR 1926.1126). For Cr VI, OSHA requires: “The employer shall perform initial monitoring to determine the 8-hour TWA exposure for each employee on the basis of a sufficient number of personal breathing zone air samples to accurately characterize full shift exposure on each shift, for each job classification, in each work area”. Specialized equipment is required for monitoring Cr VI concentration in the workplace. OSHA Analytical Method Number ID-215 for area and breathing zone sampling and OSHA Analytical Method Number W4001 for wipe samples are listed on the OSHA website - www.osha.gov -as methods for measuring Cr VI. This standard is complex and the employer should contact an occupational health professional for doing the Cr VI monitoring and all other fume monitoring.

Section VI - HEALTH HAZARD DATA

THE BODY CAN BE AFFECTED IF FUMES AND GASES ARE INHALED, AND/OR COME INTO CONTACT WITH EYES.

FUMES AND GASES CAN BE DANGEROUS TO YOUR HEALTH

SHORT TERM (ACUTE) OVER EXPOSURE TO WELDING FUMES

May result in discomfort such as dizziness, nausea or irritation of the nose, throat or eyes.

LONG TERM (CHRONIC) OVER EXPOSURE TO WELDING FUMES

May lead to siderosis (iron deposits in lungs), affect pulmonary functions, blood and cell disorders.

FLUORIDES

Compounds evolved may cause skin and eye burns and/or pulmonary edema.

Repeated exposure to fluorides can cause serious bone erosion.

MANGANESE, MANGANESE DIOXIDE

Toxicity caused by inhalation of dust or fumes. Remove from exposure. Wash eyes and/or skin with water to remove dust.

Long term over exposure to these compounds may affect the central nervous system. Symptoms include muscular weakness, tremors and behavioral and handwriting changes.

SILICON, SILICON OXIDE

Possible eye irritant. Remove by washing eyes with lots of water.

Prolonged exposure to dust can cause pulmonary fibrosis (silicosis).

CHROMIUM

Inhalation of fume with chromium (VI) compounds can cause irritation of the respiratory system, damage lungs and cause asthma. Swallowing chromium (VI) salts can cause severe injury or death. Dusts on the skin can form ulcers. Eyes can be burned by chromium (VI) compounds.

Chromium (VI) compounds are considered by OSHA to be carcinogenic. Absorption of chromium (VI) compounds through the skin can cause systemic poisoning primarily affecting the kidneys and liver.

NICKEL, NICKEL OXIDE

Inhalation of fumes containing nickel compounds may cause metallic taste, nausea, tightness in chest, fever and allergic reactions.

Long term over exposure to nickel compounds may cause lung fibrosis or pneumoconiosis. Nickel and its compounds are considered by the OSHA as carcinogenic.

MOLYBDENUM

Trioxide has caused irritation of the eyes, nose and throat, weight loss and digestive disturbances in animals.

No adverse long term effects have been reported.

BARIUM

Inhalation of fumes with barium compounds may cause aching eyes, rhinitis, frontal headache, wheezing, laryngeal spasms, salivation and anorexia.

Long term exposure to soluble barium compounds may cause nervous disorders and may have deleterious effects on the heart and circulatory systems.

COPPER

Metal fume fever can be caused by fresh copper oxide fumes.

No adverse long term effects have been reported.

LEAD

Inhalation of gases, fumes, dust or compounds (soluble or insoluble) can cause blood and cell problems.

Repeated and prolonged exposures to gases, fumes or dusts are poisonous. This may lead to blood, cell, kidney, liver and/or generic disorders.

SILVER

Silver salts are corrosive. Ulceration and eye burns are treated by flushing with copious amounts of water.

Silver and its compounds cause pigmentation of the skin, eyes and respiratory tract (argyria).

ZINC

Inhalation of zinc fumes may cause chills, breathing difficulties, fever, cough, muscular pain, nausea and vomiting. Recovery is generally complete.

Severe and prolonged over exposure may cause pulmonary edema and pneumonia.

CADMIUM

Fumes cause irritation of the nose and throat. Sufficient inhalation (after a delay of several hours) may develop coughing, chest pain, sweating, chills, shortness of breath and weakness. Death may occur.

Repeated and prolonged exposures to fumes may cause loss of smell, ulceration of the nose, shortness of breath (emphysema), kidney damage and mild anemia.

TIN

Eye, skin and respiratory system irritation from fumes.

No adverse long term effects have been reported.

ARC RAYS

Arc rays can injure eyes and burn skin. Skin cancer has been reported.

ELECTRIC SHOCK

Electric shock can kill! In case of electrical shock, turn off power and follow recommended treatment. Obtain medical assistance.

CARCINOGENICITY

CHROMIUM

Chromium VI is listed as being carcinogenic to humans on IARC and NTP lists, and is listed by NIOSH as being a potential occupational carcinogen (with no further categorization).

NICKEL

Nickel is listed as being carcinogenic to humans on IARC and NTP lists, and is listed by NIOSH as being a potential occupational carcinogen (with no further categorization).

WELDING FUMES

Welding fumes (not otherwise specified) are considered to be carcinogenic defined with no further categorization by NIOSH and IARC.

MUTATION HAZARD

No known mutagenic agent is used in the making of this wire nor is created during the arc spray process.

Section VII - EMERGENCY FIRST AID

GENERAL INTERVENTION

Remove victim to well ventilated area. Obtain medical assistance and employ recommended first aid techniques.

INHALATION OVEREXPOSURE

Move victim to fresh air source. If breathing is difficult, administer oxygen. If not breathing, begin artificial respiration. If no detectable pulse, begin Cardiopulmonary Resuscitation. (CPR). Contact a physician and Mention the ingredients and possible fume contents listed in Sections 2 and 5.

SKIN CONTACT

Thoroughly wash hands or effected areas with soap and water to remove all residue. If rash or burn develops, consult a physician.

EYE CONTACT

Thoroughly flush eyes with water for at least 15 minutes to remove all residues. Obtain prompt medical advice for fluxes and chemical aids. Mention the ingredients and possible fume contents listed in Sections 2 and 5.

INGESTION

Call a physician and/or local Poison Control Center. Mention the ingredients and possible fume contents listed in Sections 2 and 5.

Section VIII - PREVENTIVE MEASURES

Please read and understand the product label information for proper procedures and use. See ANSI Z49.1 "Safety in Welding and Cutting", and chapter 11 of "Thermal Spraying", published by the American Welding Society and OSHA publication 2206 (29 CFR 1910) for more detail.

RESPIRATORY PROTECTION

If the work station is not properly ventilated to exhaust all fumes, vapors and dusts below the recommended exposure limits, use a CCOHS approved air-purifying respirator (APR) or a supplied-air respirator (SAR) if no adequate APR can be found.

VENTILATION

Use enough general ventilation and local exhaust at the work site to keep all fumes and dust from the worker's breathing zone and the general area. Train welder to keep his/her face away from the fume/dust plume.

EYE PROTECTION

Wear helmet or use face shield with appropriate filter lens. Provide protective screens and flash goggles if necessary, to shield others. As a rule, start with a shade that is too dark to see the spray zone, then go to the next lighter shade which gives sufficient view of the spray zone.

OTHER PROTECTIVE EQUIPMENT

Wear hand, head, and body protection which help prevent injury from radiation, sparks and electrical shock. At a minimum, this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats as well as dark, protective clothing. Train workers not to touch live electrical parts and to insulate themselves from work and electrical ground. Refer to CSA W117.2 - Safety in Welding and Cutting - for further information.

Section XI – STORAGE AND HANDLING

STORAGE

Keep material sealed and dry before use. Keep remaining product sealed in a cool dry place.

HANDLING

No particular handling procedure is required.

Section X – SPILL CLEAN-UP AND WASTE DISPOSAL

IN CASE OF SPILL

Steps to be taken if material is released or spilled: Wires themselves are not hazardous.

WASTE DISPOSAL

Dispose of waste material, powders, grinding, or filter residues in an environmentally sensitive manner in accordance with Federal, Provincial and Local regulations.

Use appropriate measures to keep airborne dust levels contained in accordance with exposure levels of sections 2 and 5.

STATEMENT OF INTENT

The information in this MSDS was obtained from sources we believe are reliable. However, this information is provided without any representation or warranty, expressed or implied, regarding accuracy or correctness. The conditions or methods of handling, storage, use, and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons we do not assume responsibility and expressly disclaim liability of loss, damage, or expense arising from it or any way connected with the handling, storage, use, or disposal of the product.

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