

ARNCO TECHNOLOGY TRUST
MATERIAL SAFETY DATA SHEET (MSDS)
For Welding Consumables and Related Products
Complies with OSHA Hazard Communication Standard 29 C. F.R. 1910.1200

SECTION I - IDENTIFICATION

IDENTITY: ARNCO 200XT WELDING WIRE

SUPPLIER: ARNCO TECHNOLOGY TRUST, **EMERGENCY TELEPHONE NO.** -832-214-5200

ADDRESS: 3657 BRIARPARK, HOUSTON, TEXAS 77042 **TELEPHONE NO. FOR INFORMATION** - 832-214-5200

PRODUCT TRADE NAME (S) 200XT **PRODUCT CLASSIFICATION(S):** N/A

PRODUCT INGREDIENTS (NOT AIRBORNE CONTAMINANT'S)

Chromium	27%	Carbon	<5%
Silicon	1%		
Iron	Balance		
Manganese	2%		

SECTION II - HAZARDOUS INGREDIENTS

IMPORTANT: THIS SECTION COVERS THE MATERIALS FROM WHICH THE PRODUCT IS MANUFACTURED. THE FUMES AND GASES PRODUCED DURING WELDING WITH NORMAL USE OF THIS PRODUCT ARE COVERED IN SECTION V.

THE TERM "HAZARDOUS" IN "HAZARDOUS MATERIALS" SHOULD BE INTERPRETED AS A TERM REQUIRED AND DEFINED IN OSHA HAZARD COMMUNICATION STANDARD (29 C.F.R. 1910.1200) AND IT DOES NOT NECESSARILY IMPLY THE EXISTENCE OF ANY HAZARD.

<u>Ingredient</u>	<u>(CAS No.)</u>	<u>Exposure Limit</u> mg/M3	<u>Source</u>	<u>Ingredient</u>	<u>(CAS No.)</u>	<u>Exposure Limit</u> mg/M3	<u>Source</u>
Iron [Fe]	(7439-89-6)	10-5	(1) (2)	Carbon [C]	(7440-44-0)	3.5-3.5	(1) (2)
Chromium [Cr]	(7440-47-3)	1-0.5	(1) (2)				
Silicon [Si]	(7440-21-3)	5-10	(1) (2)				
Manganese [Mn]	(7439-96-5)	1-.2 (fume)	(1) (2)				

- Occupational Safety and Health Administration, 29 C.F.R. 1910.1000 Permissible Exposure Limit (PEL).
- American Conference of Governmental Industrial Hygienist (ACGIH) Threshold Limit Value (TLV[R]).
- Not known; nuisance particulate concentration per OSHA 1910.1000, Table Z-3, is 5 mg/M3 respirable dust, and per ACGIH is 10 mg/M3.

SECTION III - PHYSICAL AND CHEMICAL DATA

As shipped, these products are non-flammable, non-explosive, non-reactive non-hazardous.

Physical State: GAS () LIQUID () SOLID (X)

Odor and Appearance: Tubular steel wire containing minerals and alloys: Odorless.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flammable/Explosive: NO (X) YES ()

Under what Conditions: Only the package for this product will burn

Extinguishing Media: This product will not burn, welding arcs and sparks can ignite combustible and flammable materials. Use the extinguishing media recommended for the burning materials and fire situation. see ANSI Z49.1 "Safety in Welding and Cutting" and "Safe Practices" Code SPA, published by the American Welding Society, P.O. Box 351040, Miami, FL. 33135, and NAPA 51B "Standard for Fire Prevention During Welding, Cutting and Other Hot Work," published by the National Fire Protection Association, Batterymarch Park, Quincy, MA. 02269 for additional fire prevention and protection information.

Special Fire Fighting Procedures: Full protective equipment required. When involved in a fire, these products may emit toxic and irritating fumes of the metals, metal oxides and their compounds.

SECTION V - REACTIVITY DATA

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Stability: Stable (X) UNusable () Polymerization will not occur.

Incompatible products: None currently known.

Hazardous decomposition products: Welding fumes cannot be classified simply. Their composition and quantity are dependent upon the material being worked, the process, procedures and consumables 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 material being worked (such as paint, plating, or galvanizing), the number of welding operations and volume of the work area, the quality and amount of ventilation, position of the worker's head with respect to the fume plume, as well as the presence of contaminant's in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning or painting activities. Vapors of chlorinated hydrocarbon solvents will decompose in the presence of heat and ultraviolet radiation and form highly toxic phosgene gas when the material are consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the ingredients, plus those from the material being worked and the coatings etc. noted above.

Reasonably expected decomposition products From normal use of these products include a complex of the oxides and fluorides of the materials listed in Section II as well as carbon monoxide, carbon dioxide, ozone and nitrogen oxides (refer to "Characterization of Arc Welding Fumes" available from the American Welding Society). The TLV for Manganese (0.2mg/m3), Chromium and Nickel will be reached before the general limit for welding fumes of 5 mg/m3 is reached. Monitor fumes for Nickel, Chromium, and Manganese levels, A significant amount of the Chromium in the fumes can be Hexavalent Chromium, which has a very low exposure limit, 0.005 mg/m3 (5 g/m3). The only way to determine the true identity of the decomposition products is by sampling and analysis. The composition and quantity of the fumes and gases to which a worker may be overexposed can be determined from a sample obtained from inside the worker's helmet, if worn, or in the workers breathing zone. See ANSI/AWS F1.5, "Methods for Sampling and Analyzing Gases from Welding and Allied Processes," and ANSI/AWS1.1 "Methods for Sampling Airborne Particles Generated by Welding and Allied Processes," available from the American Welding Society. Possible hazards during processing by soldering, brazing, braze welding, welding or arc spray metallizing.

	ACGIH TLV	OSHA PEL
Ozone	0.1 ppm (ceiling)	0.1 ppm
Nitric oxide	25 ppm	25 ppm
Nitrogen dioxide	3,5 ppm (STEL)	5 ppm (ceiling)
Welding fumes	5 mg/m3	---
Carbon monoxide	25 ppm	50 ppm
Phosgene gas	0.1 ppm	0.1 ppm

SECTION VI - PHYSICAL AND HEALTH HAZARD DATA

WARNING: Electric arc working may create one or more of the following health or physical hazards. Fumes and gases can be dangerous to your health. Fumes/gases containing fluoride burn eyes and skin on contact and can be fatal if swallowed. Electric shock can kill you. Arc rays can injure eyes and burn skin. Heat rays (infrared radiation) from flame or hot metal can injure eyes. Noise can damage hearing. See ANSI Z49.1 "Safety in Welding, Cutting, and Allied Processes" available from the American Welding Society.

Potential Health Effects: Direct contact with the product cause irritation of the eyes; irritation of the skin is not expected. If the product is pulverized the airborne dust may irritate the mucous membranes and upper respiratory tract. The dust may also contain crystalline silica which must be considered a possible carcinogen under OSHA 29CFR1910.1200. Exposure level must be kept below those levels specified in Section II.

Route of overexposure: The primary route of entry of the decomposition products is by inhalation. skin contact, eye contact, and ingestion are possible. Absorption by skin contact is unlikely. When these products are used as recommended by ARNCO and ventilation maintains exposure to the decomposition products below the limits recommended in this section, overexposure is unlikely.

Effects of acute (short Term) overexposure to the gases, fumes, and dusts may include irritation of the eyes, lungs, nose, and throat. Some toxic gases associated with welding may cause pulmonary edema, asphyxiation, and death. Acute overexposure may include signs and symptoms such as watery eyes, nose and throat irritation, headache, dizziness, difficulty in breathing, frequent coughing, or chest pain. The presence of chromium/chromate in fume can cause irritation of nasal membranes and skin. The presence of nickel compounds in fume can cause metallic taste, nausea, tightness of the chest, fever, and allergic reaction. Exposure to the fluoride ion may cause hypocalcemia-calcium deficiency in the blood that can result in muscle cramps and inflammation and necrosis of mucous membranes.

Pre-existing Medical Conditions Aggravated by Overexposure: Individuals with allergies or impaired respiratory function may have symptoms worsened by exposure to welding fumes; however, such reaction cannot be predicted due to the variation in composition and quantity of the decomposition products.

Effects of chronic (long-term) overexposure to air contaminants may lead to their accumulation in the lungs, a condition which may be seen as dense areas on chest x-rays. The severity of the change is proportional to the length of the exposure. The changes seen are not necessarily associated with symptoms or signs of reduced lung function or disease. In addition, the changes on x-rays may be caused by non-

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work factors such as smoking, etc. Long term exposure to welding and allied processes gases, dusts and fumes may contribute to pulmonary irritation or pneumoconiosis. Inhalation of too much iron oxide fume over long time can cause siderosis, sometimes called "iron pigmentation" of the lung, which can be seen on a chest X-ray but causes little or no disability. Nickel and chromium are considered carcinogenic. Long term overexposure to nickel fumes may also cause pulmonary fibrosis and edema. Chromates may cause an ulceration and perforation of the nasal septum. Liver damage and allergic skin rash have also been reported.

Overexposure to manganese compounds may affect the central nervous system; symptoms of which are languor, sleepiness, muscular weakness, emotional disturbances, and spastic gait. The effect of manganese on the nervous system is irreversible. Overexposure to respirable crystalline silica may result in silicosis a disabling lung disease, overexposure to respirable crystalline silica is a known cause of carcinogenicity in humans. Chronic fluoride absorption can result in osseous fluorosis, increased radiographic density of the bones and mottling of the teeth. Welding fumes (not otherwise specified) are possibly carcinogenic to humans.

Exposure limits for the ingredients are listed in Section II. The 1998 OSHA TWA for welding fume is 5 mg/m³. TLV-TWAs should be used as a guide in the control of health hazards and not as fine lines between safe and excessive concentrations. As noted in section V, the welding fume is a mixture of many components. Therefore a statutory computation of the equivalent exposure is required. The equivalent exposure value for the welding fume mixture shall always be less than one. When these products are used as recommended by Wear Sox, and the preventive measures taught in this MSDS are followed, overexposure to hazardous substances will not occur.

Emergency First Aid Measures: In case of emergency, call for medical aid. Employ first aid technique recommended by the Red Cross. If breathing is difficult, give oxygen and call for a physician. For electric shock, disconnect and turn off the power. If not breathing, begin artificial respiration, preferably mouth-to-mouth. If no detectable pulse, begin Cardio Pulmonary Resuscitation (CPR). Immediately call a physician. For arc burns, apply cold, clean compresses and call a physician.

Eye Contact: Flush with water for a least fifteen minutes to remove all residue. If irritation persists, obtain medical assistance.

Skin Contact: Promptly flush with soap water to remove residue. If irritation persists, consult a physician

Inhalation: Remove to fresh air. If breathing has stopped, perform artificial respiration and obtain medical assistance.

Ingestion: Call a physician or your Poison Control Center immediately! Advise of Section II.

Carcinogenic Assessment (NTP Annual Report, IARC Monographs, Other):

Chromates, alkaline as Cr; Chromic Acid and chromates; and Chromite ore processing (Chromate) as Cr; TLV-A1, confirmed human carcinogen.

Chromium (III) inorganic compounds, as Cr: EPA-D not classified as to human carcinogenicity. IARC-3 unclassified as to carcinogenicity in humans. TLV-A4 not classified as a human carcinogen.

Chromium (VI) inorganic compounds, as Cr, water-insoluble: EPA-A human carcinogen, studies support a casual association between exposure and cancer; EPA-K known human carcinogen; IARC-1 carcinogenic to humans; TLV-A1 confirmed human carcinogen; NTP-K known to be a human carcinogen.

Chromium (VI) inorganic compounds; as Cr, certain water insoluble; EPA-A human carcinogen, studies support a causal association between exposure and cancer; EPA-K known human carcinogen; IARC-1 carcinogenic to humans; TLV-A1 confirmed human carcinogen; NTP-K known to be a human carcinogen.

Chromium Metal: IARC-3 unclassifiable as to carcinogenicity in humans. TLV-A4 not classified as a human carcinogen.

Molybdenum Soluble Compounds, as Mo; TLV-A3 confirmed animal carcinogen with unknown relevance to humans.

Molybdenum Trioxide: MAK-3B substance for which in vitro tests or animal studies have yielded evidence of carcinogenic effects.

Nickel, Alloys--IARC-2B: Possibly carcinogenic to humans.

Nickel Compounds - IARC-1: Carcinogenic to humans; MAK-1; Substances that cause cancer in man and can be assumed to make a significant contribution to cancer risk; NTP-K: Known to be a human carcinogen.

Nickel, Elemental - IARC-2B: Possibly carcinogenic to humans; NTP-K: known to be a human carcinogen; MAK-1: Substance that cause cancer in man and can be assumed to make a significant contribution to cancer risk; TLV-A5: Not suspected as a human carcinogen on the basis of properly conducted epidemiological studies in humans.

Nickel, Insoluble Compounds, as Ni - NTP-K: Known to be a human carcinogen; TLV-A1: Confirmed human carcinogen; NTP-K: Known to be a human carcinogen.

Nickel, Soluble Compounds, as Ni - NTP-K: Known to be a human carcinogen; TLV-A4: No classified as a human carcinogen.

Nickel Carbonate - IARC-1: Carcinogenic to humans; MAK-1: Substances that cause cancer in man and can be assumed to make a significant contribution to cancer risk; NTP-K: Known to be a human carcinogen

Nickel Dioxide - IARC-1: Carcinogenic to humans; MAK-1: Substances that cause cancer in man and can be assumed to make a significant contribution to cancer risk; NTP-K: Known to be a human carcinogen.

Nickel Hydroxide - IARC-1: Carcinogenic to humans; MAK-1: Substances that cause cancer in man and can be

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assumed to make a significant contribution to cancer risk; NTP-K: Known to be a human carcinogen.

Nickel Oxide - IARC-1: Carcinogenic to humans; MAK-1: substances that cause cancer in man and can be assumed to make a significant contribution to cancer risk; NTP-K: Known to be a human carcinogen, TLV-A1: Confirmed human carcinogen.

Nickel Sulfide - EPA-A: Human carcinogen, studies support a casual association between exposure and cancer; IARC-1: Carcinogenic to humans; MAK-1: Substances that cause cancer in man and can be assumed to make a significant contribution to cancer risk; NTP-K: Known to be a human carcinogen, TLV-A1: Confirmed human carcinogen.

Silica-Crystalline Cristobolite; Silica-Crystalline Quartz; IARC-1: Carcinogenic to humans; NTP-K: Known to be a human carcinogen; TLV-A2: Suspected human carcinogen.

Silica fume - IARC-3: Unclassifiable (inadequate evidence) as to carcinogenicity in humans.

Vanadium Pentoxide V205 - IARC-2B: Possibly carcinogenic to humans; TLV-A4: Not classified as a human carcinogen.

Welding Fumes (not otherwise classified) IARC-2B: Possibly carcinogenic to humans.

WARNING: This product when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code 25249.5 et seq.)

WARNING: This product contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code 25249.5 et seq.)

SECTION VII PRECAUTIONS FOR SAFE HANDLING AND USE/APPLICABLE CONTROL MEASURES

Read and understand the manufacturer's instructions and the precautionary label on this product. See American National Standard Z-49.1 "Safety in Welding and Cutting", published by the American Welding Society, P.O. Box 351040, Miami, FL. 33135 and OSHA Publication 2206 (29 C.F.R. 1910), U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA. 15250-7954 for more detail on many of the following:

Ventilation: Use enough ventilation, local exhaust at the arc, or both, to keep the exposure within legal limits. In the worker's breathing zone and the general area, fumes and gases must be kept below the TLVs and the equivalent exposure must compute to less than one. Train the welder to keep his head out of the fumes. Keep exposure as low as possible.

Respiratory Protection: Use respirable fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below TLVs. Where respiratory protection is necessary, NIOSH approved respiratory protection should be used. The selection of the appropriate respiratory protection (dust respirator, etc.) should be based on the actual or potential airborne contaminants and their concentrations present. However, at least a NIOSH approved type TC-21-C dust mask is recommended.

Eye Protection: Wear helmet or use face shield with filter lens. As a rule of thumb, start with a shade which is too dark to see the weld zone. Then go to the next lighter shade which gives sufficient view of the weld zone. Provide protective screens and flash goggles, if necessary, to shield others. Wear safety glasses or goggles when handling this material to prevent eye contact. Do not wear contact lenses in any environment where dust or fumes are present. Readily available eye baths are recommended in areas where operations may produce fumes and dusts.

Protective Clothing: Wear head, hand and body protection which help to prevent injury from radiation, sparks and electrical shock. See ANSI Z-49.1. At a minimum, this included welder's gloves and a protective face shield and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

Hygienic Work Practices: Avoid contact to eyes, skin and mucous membranes. Avoid inhalation of vapors. Wash thoroughly after handling and use. Do not smoke, eat, drink, chew gum or tobacco, or apply cosmetics within the working area. Do not carry or store tobacco products, gum, food, drinks or cosmetics in the working area. Otherwise follow the standards of good industrial hygiene practices.

Procedure for Cleanup of Spills or Leaks: NOT APPLICABLE

Waste Disposal Method: Prevent waste from contaminating surrounding environment. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with Federal, State and local regulations.

The opinions expressed in this MSDS are those of ARNCO. We believe that the information contained herein is current. Since the use of this information and these opinions and the conditions of use of these products are not within the control of ARNCO, it is the user's obligation to determine the conditions of safe use of these products and correctly train the designated user.