# FLUX CORE ARC WELDING (FCAW) - SELF SHIELDED TUBULAR WIRE

# MATERIAL SAFETY DATA SHEET

02/05/00

MSDS PROVIDED BY:

STOODY INDUSTRIAL AND WELDING SUPPLY, INC.
3316 National Ave., San Diego, CA 92113
Phone: (619) 234-6750

MILITARY EMERGENCY RESPONSE NUMBER 1 (800) 851-8061

## MATERIAL SAFETY DATA SHEET (MSDS)

For Welding Consumables and Related Products
Conforms to OSHA Hazard Communication Standard 29CFR 1910.1200
Standard Must Be Consulted for Specific Requirements

### SECTION 1 - IDENTIFICATION

| | |
|---|---|
| Manufacturer/Supplier Name: Washington Alloy Company | Telephone No: 253-848-2230 |
| Address: 9809 160th St. E., Puyallup, WA 98373 | Emergency No: 253-848-2230 |
| Trade Name: E71T-GS | Classification: AWS A5.20 / AWS A5.29 |

### SECTION 2 - HAZARDOUS MATERIALS*

IMPORTANT: This section covers the materials from which the product is manufactured. The fumes and gases produced during welding with the normal use of this product are covered under Section V.

*The term "HAZARDOUS MATERIALS" should be interpreted as a term required and defined in OSHA HAZARD COMMUNICATION STANDARD 29 CFR 1910.1200

| Ingredient | CAS No. | Exposure Limit (mg/m$^3$) | |
|---|---|---|---|
| | | OSHA PEL | ACGIH TLV |
| IRON | 7439-89-6 | 5 | Not Reported |
| MANGANESE | 7439-96-5 | 5CL* | 1CL* (Fume) |
| TITANIUM OXIDES | 13463-67-7 | 15 | 10, 20 STEL** |
| MAGNESIUM OXIDE | 1309-48-4 | 15 | 10 |
| SILICON | 7440-21-3 | Nothing Found | 10,20 STEL** |
| FLUORSPAR | 7789-75-5 | 2.5 (Asf) | 2.5 (as F) |
| BARIUM FLUORIDE | 7787-32-8 | 0.5 (AS Ba) | 0.5 (as Ba) |
| ALUMINUM | 7429-90-5 | Nothing Found | 10 |
| ***NICKEL | 7440-02-0 | 1 | 1 |

*CL - Ceiling Limit **STEL - Short Term Exposure Limit ***Present in E71T-GS

### SECTION 3 - PHYSICAL/CHEMICAL CHARACTERISTICS

NOT APPLICABLE

### SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

Non-Flammable: Welding arc and sparks can ignite combustibles. See Z-49.1 referenced in Section 7

### SECTION 5 - REACTIVITY DATA

Hazardous Decomposition Products

Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedures, and electrodes 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 amount of ventilation, the 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 decreasing activities).

When the electrode is 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 materials shown in Section II, plus those from the base metal and coating, etc., as noted above.

It is understood, however, that the elements and or oxides to be mentioned are virtually always present as complex oxides and not as metals. [Characterization of Arc Welding Fume: American Welding Society]. The elements or oxides listed below correspond to the ACGIH categories located in [TLV Threshold Limit Values for Chemical Substances and physical Agents in the Workroom Environment].

Reasonably expected constituents of the fume would include: complex oxides of iron, manganese, silicon, titanium, magnesium, barium and aluminum. Fluorides would also be present. Nickel present in E71T-GS

| Substance | CAS No. | Exposure Limit (mg/m$^3$) | |
|---|---|---|---|
| | | OSHA PEL | ALGIH TLV |
| IRON OXIDE | 1309-38-2 | 5 | 10 (as $Fe_2O_3$) |
| MANGANESE | 7439-96-5 | 5 CL* | 1 CL* (Fume) |
| SILICON OXIDE | 7631-86-9 | 5 | 3 |
| TITANIUM OXIDE | 13463-67-7 | 15 | 10,20 STEL** |
| MAGNESIUM OXIDE | 1309-48-4 | 15 | 10 |
| FLUORIDES | | 2.5 (as F) | 2.5 (as F) |
| ALUMINUM OXIDE | 1344-28-1 | Nothing Found | 10 |
| ***NICKEL (SOLUBLE) | | 1 (as Ni) | 0.1 (as Ni) |
| ***NICKEL OXIDE | 1313-99-1 | Nothing Found | 1 (as Ni) |
| BARIUM | 7440-39-3 | 0.5 (sol.) | 0.5 |

*CL - Ceiling Limit **STEL - Short Term Exposure Limit ***Present in E71T-GS

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.
One method of determining the composition and quantity of the fumes and gases to which the workers are exposed is to take an air sample from inside the welder's helmet while worn or within the worker's breathing zone. See ANSI/AWS F-1.1 publication available from the American Welding Society P.O. Box 351040, Miami, Florida 33135. Also from AWS is F1.3 "Evaluating Contaminants in the Welding Environment - A Sampling Strategy Guide, " which gives additional advice on sampling. At a minimum, materials listed in this section should be analyzed.

## SECTION 6- HEALTH HAZARD DATA

Threshold Limit Value:

The ACGIH recommended general limit for welding fume NOC (Not otherwise classified) is 5 mg/m3. ACGIH - 1985 preface states: "The TLV-TWA should be used as guides in the control of health hazards and should not be used as fine lines between safe and dangerous concentrations." See section V for specific fume constituents which may modify this TLV.

Effects of Overexposure:

Electric arc welding may create one or more of the following health hazards:
FUMES AND GASES can be dangerous to your health.
SHORT-TERM (ACUTE) OVEREXPOSURE to welding fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of nose, throat, or eyes.
NICKEL - NICKEL OXIDE (NiO) Metallic taste, nausea, tightness in chest, fever, allergic reactions. Remove from over exposure. Apply artificial respiration. Wash skin or eyes with soap and water. Allergic reactions likely in about 10% of workers.
LONG-TERM (CHRONIC OVEREXPOSURE may lead to siderosis (iron deposits in lungs) and is believed by some investigators to affect pulmonary functions.
NICKEL- NICKEL OXIDE (NiO) long term overexposure to nickel compounds may cause lung fibrosis or pneumoconiosis. Studies of nickel refinery workers indicated a higher incidence of lung and nasal cancers. Nickel and its compounds are required to be considered as carcinogenic by OSHA although the International Agency for Research on Cancer states that specific nickel compounds that may be carcinogenic to humans cannot be identified.

Arc Rays can injure eyes and burn skin.
Electric shock can kill.
See Section 7.
.

Emergency and First Aid Procedures:

Call for medical assistance. Use first aid procedures recommended by the American Red Cross
Eyes & Skin: If irritation or flash burns develop after exposure, consult a physician.

Carcinogenicity

Nickel must be considered as a possible carcinogen under OSHA ( 29CFR 1910.1200)

## SECTION 7 - CONTROL MEASURES AND PRECAUTIONS FOR SAFE HANDLING AND USE

Read and understand the manufacturer's instructions and precautionary label on this product. See American Standard Z49.1 Safety in Welding and Cutting, published by the American Welding Society, P.O. Box 351040, Miami, Florida 33135 and OSHA Publication 2206 (29 CFR 1910), U.S. Government Printing Office, Washington D.C. 20402 for more details on the following topics.
**VENTILATION:** Use plenty of ventilation and/or local exhaust at the arc, to keep the fumes and gases below the threshold limit value within the worker's breathing zone and the general work area. Welders should be advised to keep their head out of the fumes.
**RESPIRATORY PROTECTION:** Use respirable fume respirator or air supplied respirator when welding in a confined space or general work area where local exhaust and/or ventilation does not keep exposure below the threshold limit value.
**EYE PROTECTION:** Wear a helmet or face shield with a filter lens shade number 12-14 or darker. Shield other workers by providing screens and flash goggles.
**PROTECTIVE CLOTHING:** Wear approved head, hand and body protection which help to prevent injury from radiation, sparks and electrical shock. See ANSI Z-49.1. This would include wearing welder's gloves and a protective face shield and may include arm protectors, apron, hats, shoulder protection, as well as dark substantial clothing. Welders should be trained not to allow electrically live parts to contact the skin or wet clothing and gloves. The welders should insulate themselves from the work and ground.

**PROCEDURE FOR CLEANUP OF SPILLS OR LEAKS:** Not applicable
**WASTE DISPOSAL:** 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.
SPECIAL PRECAUTIONS: IMPORTANT: Maintain exposure below the PEL/TLV. Use Industrial hygiene monitoring to ensure that your use of this material does not create exposures which exceed PEL/TLV. Always use exhaust ventilation. Refer to the following sources for important additional information.

ANSIZ49.1 American Welding Society, P.O. Box 351040, Miami, Florida 33135 - OSHA (29CFR1910) U.S. Dept. of Labor, Washington, D.C. 20210.

U.S. Alloy believes this data to be accurate and to reflect qualified expert opinion regarding current research. However, U.S. Alloy cannot make any express or implied warranty as to this information.