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 I - IDENTIFICATION

Manufacturer/Supplier Name: Washington Alloy Company	Telephone No: 206-848-2230
Address: 9809 160th St. E., Puyallup, WA 98373	Emergency No: 206-848-2230

Trade Name:

USA 7010-G, USA 7010-A1, USA 7016-A1, USA 7018-A1, USA 8010-G, USA 8016-B1, USA 8016-B2, USA 8016-B2L, USA 8016-G, USA 8018-B1 USA 8018-B2, USA 8018-B2L, USA 8018C1, USA 8018C2, USA 8018C3, USA 8018-G, USA 9010-G, USA 9016-B3, USA 9016-G, USA 9018-B3, USA 9018-B3L, USA 9018-G, USA 9018M, USA 10016-D2, USA 10016G, USA 11016G, USA 10018-D2, USA 10018G, USA 10018M, USA 11018, USA 11018M, USA 12018, USA 12018M

Classification:
AWS A5.5
(Low Alloy)
(Stick Electrode)

SECTION II - 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 however the use of this term does not necessarily imply the existence of any hazard.

Flux or other ingredients	CAS No.	Exposure Limit (mg/m³)	
		OSHA PEL	ACGIH TLV
Iron	7439-89-6	5	Not Reported
Manganese	7439-96-5	5*	1* (Fume)
Titanium Oxide	13463-67-7	15	10, 20 **
Fluorspar	7789-75-5	2.5 (as F)	2.5 (as F)
Potassium Silicate	1312-76-1	Nothing Found	Nothing Found
Sodium Silicate	1344-09-8	Nothing Found	Nothing Found
Calcium Carbonate	1317-65-3	5 (as CaO)	10
Bauxite and Aluminum Oxide	1344-28-1	5	10
Silicon	7440-21-3	5 (as SiO_2)	3 (as SiO_2)
Molybdenum	7439-98-7	15	10
Chromium	7440-47-3	05 (as Cr VI)	.05 (as Cr VI)
Nickel	7440-02-0	1	1
Calcium Fluoride	14542-23-5	2.5 (as F)	2.5 (as F)
Potassium Titanate	12030-97-6	Nothing Found	10
Feldspar	68476-25-5	Nothing Found	2
Cryolite	15096-52-3	2.5 (as F)	2.5 (as F)
Magnesite	546-93-0	15 (as MgO)	10
Potassium Hydroxide	1310-58-3	Nothing Found	2

Occupational Safety and Health Administration 29 CFR 1910.1000 Permissable Exposure Limit (PEL). American Conference of Governmental Industrial Hygenists (ACGIH) Threshold Limit Value (TLV[R]). *Ceiling Limit **Short Term Exposure Limit

SECTION III - PHYSICAL DATA

NOT APPLICABLE

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

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

SECTION V - REACTIVITY DATA

Hazardous Decomposition Products

Welding fumes and gases cannot be classified simply. The composition and quantity of these fumes and gases are dependent upon the metal being welded, the procedures followed and the electrodes used.

Workers should be aware that the composition and quantity of fumes and gases to which they may be exposed, are influenced by: coatings which may be present on the metal being welded (such as paint, plating, or galvanizing), the number of welders in operation 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 degreasing procedures). When the electrode is consumed, the fumes and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. The composition of these fumes and gases are the concerning matter and not the composition of the electrode itself. Decomposition products include those originating from the volatilization, reaction, or oxidation of the ingredients shown in Section II, plus those from the base metal, coating and the other factors noted above.

Reasonable expected fume constituents of this product would include: Complex oxides of aluminum, iron, manganese, silicon, titanium, chromium, nickel, calcium, molybdenum, potassium and sodium. Fluorides will also be present. Fume limit for Cr(VI) (0.05 mg/m³) may be reached before limit of 5 mg/m³ for general welding fumes is reached. Watch the (Cr VI) level.

Substance	CAS No.	Exposure Limit (mg/m³)	
		OSHA PEL	ALGIH TLV
Iron Oxide	1309-38-2	5	10 (as Fe_2O_3)
Manganese	7439-96-5	5*	1* (Fume)
Silicon Oxide	7631-86-9	5	3
Titanium Oxide	13463-67-7	15	10, 20 **
Fluorides	—	2.5 (as F)	2.5 (as F)
Chromium Oxide	1308-38-9	0.5 (as Cr)	0.5 (ox)
Chromic Acid	1333-82-0	0.1*	0.05 (as Cr)
Nickel (soluble)		1 (as Ni)	0.1 (as Ni)
Nickel Oxide	1313-99-1	Nothing Found	1 (as Ni)
Calcium Oxide	1305-78-8	5 (as CaO)	2 (as CaO)
Aluminum Oxide	1344-28-1	Nothing Found	10
Magnesium Oxide	1309-48-4	15	10
Molybdenum	7439-98-7	15 (Mo)	10 (Mo), 20 **

*Ceiling Limit **Short Term Exposure Limit

(Continued on back page)

(Continued from front page)

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 F1.1 publication available from the American Welding Society 550 N.W. LeJeune Road, Miami, Florida 33126.

SECTION VI - 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.

Common Entry is by Inhalation

Effects of Overexposure: Inhalation of welding 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. Inhalation of extremely high levels of fluorides may cause abdominal pain, diarrhea, muscular weakness and convulsions. Continued inhalation could cause loss of consciousness and death. Chromium (VI) compounds may burn eyes. Chromium compounds may cause allergic reactions in some people. Nickel oxides present in the fume may cause tightness around the chest, fever and allergic reactions in some people. Long-term (chronic) over-exposure to welding fumes can lead to siderosis (iron deposits in lung) and is believed to affect pulmonary function. Repetitive exposure to fluoride fumes and/or gases may cause excessive calcification of the bones and ligaments of the ribs, pelvis and spinal column. Constant inhalation of chromium (VI) compounds may cause an ulceration and perforation of the nasal septum as well as liver and kidney damage. Repetitive overexposure to nickel oxides may lead to lung fibrosis or pneumoconiosis. Workers exposed to chromium (VI) compounds and/or nickel oxides have a higher incidence of lung and nasal cancers. Chromium and nickel compounds are on the IARC (International Agency for Research of Cancer) list as posing a carcinogenic risk to humans.

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

Emergency and First Aid Procedures: Call for medical assistance. Use first aid procedures recommended by the American Red Cross. If breathing is difficult - give oxygen. If not breathing - use CPR (cardiopulmonary resuscitation). Consult a physician if irritation of the eyes and skin or flash burns develop after exposure.

Carcinogenicity
OSHA (29 CFR 1910.1200) lists Nickel and Chromium as possible carcinogens.

SECTION VII - 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, 550 N.W. LeJeune Road, Miami, Florida 33126 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. See ANSI Z49.1. 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.

Waste Disposal Method: Discard any product, residue, disposal container, or liner in an environmentally acceptable manner approved by Federal, State and Local regulations.