



MATERIAL SAFETY DATA SHEET

ALUMINUM WELDING WIRE AND ROD

SECTION 1 - MATERIAL IDENTIFICATION

Manufacturers Name J. W. Harris Co., Inc. Distributor Name (If Applicable) _____
 Address 10930 Deerfield Road
 Address Cincinnati, Ohio 45242
 Emergency Telephone (513) 891-2000
 MSDS Date November 1985

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The following table lists the trade name and composition of products covered by this Material Safety Data Sheet. See Section 2 and especially Section 6 for important health hazard data.

Trade Name	Chemical Composition (%)								
	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Al
1100	a	a	0.05-0.20	0.05			0.10		99.0 Minimum
2319	0.20	0.30	5.8-6.8	0.20-0.40	0.02		0.10	0.10-0.20	Remainder
4043	4.5-6.0	0.8	0.30	0.05	0.05		0.10	0.20	Remainder
5183	0.40	0.40	0.10	0.05-1.0	4.3-5.2	0.05-0.25	0.25	0.15	Remainder
5356	0.25	0.40	0.10	0.50-0.20	4.5-5.5	0.5-0.20	0.10	0.06-0.20	Remainder
5554	0.25	0.40	0.10	0.50-1.0	2.4-3.0	0.05-0.20	0.25	0.05-0.20	Remainder
5556	0.25	0.40	0.10	0.50-1.0	4.7-5.5	0.05-0.20	0.25	0.05-0.20	Remainder
5654	c	c	0.10	0.10	3.1-3.9	0.15-0.35	0.20	0.05-0.15	Remainder
718 (4047)	11.0-13.0	0.8	0.30	0.15	0.10		0.20		Remainder

Single figures are maximum
 a. - Si + Fe = 0.95 max.
 b. - Vanadium 0.05-0.15. c. - Si + Fe = 0.45 max.

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SECTION 8 AND 9 - SPECIAL PROTECTION INFORMATION AND PRECAUTIONS

Read and understand the manufacturer's instructions and the precautionary label on the product. See American National Standard Z49.1, *Safety in Welding and Cutting* published by the American Welding Society, P.O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, Washington, D.C. 20402 for more detail on many of the following.

Ventilation

Use enough ventilation, local exhaust at the arc (or flame), or both, to keep the fumes and gases below TLV's in the worker's breathing zone and the general area. Train the employee to keep his head out of the fumes. See ANSI/ASC Z49.1 Section 5.

Respiratory Protection

Use respirable fume respirator or air supplied respirator when welding, brazing, or soldering in confined space or where local exhaust or ventilation does not keep exposure below TLV.

Eye Protection

Wear helmet or use face shield with filter lens of appropriate shade number (see ANSI/ASC Z49.1 - Section 4.2). Provide protection screens and flash goggles, if necessary, to shield others.

Protective Clothing

Wear head and body protection which help to prevent injury from radiation, sparks, flame, and electrical shock. See ANSI Z49.1. At a minimum this includes 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 employee not to touch live electrical parts and to insulate himself from work and ground.

The information and recommendations contained in this publication have been compiled from sources believed to be reliable and to represent the best information on the subject at the time of issue. No warranty, guarantee, or representation is made by Unibraze Corp. or J.W. Harris Co., Inc. as to the absolute correctness or sufficiency of any representation contained in this and other publications; Unibraze Corp. and J.W. Harris Co., Inc. assume no responsibility in connection therewith; nor can it be assumed that all acceptable safety measures are contained in this (and other publications), or that other or additional measures may not be required under particular or exceptional conditions or circumstances.



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SECTION 6 - REACTIVITY DATA

Hazardous Decomposition Products

Welding and brazing fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being brazed or welded, the process, procedures, and filler metals 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 operator'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 filler metal is consumed, the fume and gas decomposition products generated are different in percent and form from the solid wire or rod ingredients listed in Section 1. Fume and gas decomposition products, and not the ingredients in the electrode or wire are important. The concentration of a given fume or gas component may decrease or increase by many times the original concentration in the electrode. Also, new compounds not in the electrode or wire may form. Decomposition products of normal operation include those originating from the base metal and coating, etc., as noted above.

Section 1 lists composition of the aluminum wire or rod. The chart below lists those constituents, defined as hazardous, which are likely to be present in the welding fume.

Element	CAS#	PEL mg/m ³ (1)	TLV mg/m ³ (2)
Silicon (SiO ₂ , amorphous, respirable)	60676-86-0	Not Listed	5mg/m ³ Respirable dust 10mg/m ³ total dust
Iron (oxide fume)	1309-37-1	10.0	5.0
Copper (fume)	7440-50-8	0.1	0.2
Manganese	7439-96-5	5.0 (ceiling)	1.0 (fume)
Magnesium (oxide fume)	1309-48-4	15.0	10.0
Zinc (oxide)	1314-13-2	5.0 (fume)	5.0 (fume)
Titanium (dioxide)	13463-67-7	15.0	10mg/m ³ of total dust or 5mg/m ³ respirable dust
Aluminum (welding fume)	7429-90-5	Not Listed	5.0
Chromium (VI)	7440-37-3	0.1	0.05

(1) Permissible exposure limit OSHA 29CFR 1910.1000 Subpart Z

(2) Threshold limit value American Conference of Government Industrial Hygienists

Gaseous reaction products such as carbon monoxide and carbon dioxide, ozone and nitrogen oxides may be formed by the radiation from the arc during electric arc welding.

One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample from inside the welder's helmet if worn or in the worker's breathing zone. See ANSI/AWS F1.1 available from the American Welding Society, P.O. Box 351040, Miami Florida 33135.

SECTION 7 - SPILL OR LEAK PROCEDURES

NOT APPLICABLE

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SECTION 2 - HAZARDOUS MATERIALS

Welding rod or wire is a nonhazardous solid at ambient temperature. Hazards (as defined by OSHA 29CFR 1910.1200) may result from fume generated during welding or brazing. Section 1 lists product designations and composition as manufactured. **IMPORTANT - See Section 6 for information on potential fume hazard resulting from use of the product.**

SECTION 3 - PHYSICAL DATA

Solid wire or rod.

SECTION 4 - FIRE AND EXPLOSION DATA

(Nonflammable) Welding arc, open flame and sparks can ignite combustibles, See ANSI/ASC Z49.1-1983 Section 6.

SECTION 5 - HEALTH HAZARD DATA - ALUMINUM WELDING WIRE

Exposure - Section 1 lists normal composition of aluminum welding wire. Section 6 lists exposure limits for hazardous decomposition products which might be present in fume generated during welding or brazing. Actual exposure should be determined by monitoring fume in the operator's breathing zone.

Primary Route of Exposure - Inhalation of fume.

Pre-existing medical conditions - Individuals with impaired pulmonary functions or illness may have symptoms exacerbated by fume irritants.

Possible Effects of Exposure - Short term exposure to welding fume may result in discomfort, dizziness, nausea, dryness or irritation of the throat. Long term exposure to welding fume, gases or dust may contribute to pulmonary irritation or pneumoconiosis. Some compounds of hexavalent chromium have been reported to be carcinogenic. No clear association however, has been established between chromium in welding fume and the development of cancer. Exposure limits should be maintained below the levels listed in Section 6. Copper fume may cause metal fume fever which may include fever, body ache, chills.

Emergency First Aid - Remove from dust or fume exposure. If breathing has stopped, perform artificial respiration. Summon medical aid immediately.

Other Health Considerations -

Arc Rays from electric arc welding operations can injure eyes and burn skin.

Electric Shock - From arc welding equipment can kill.

Heat Rays - (Infrared radiation from flame or hot metal) can injure eyes.