

MATERIAL SAFETY DATA SHEET

Product Name: **SNOW CAP MIG & TIG**
 Product Code: 10096 10097 10098 10196 10197 10198 10296 10297 10298
 10487 10488 10489 10587 10588 10589

Manufactured For: Freedom Alloys
 Address: P.O. Box 1478
 Cypress, TX 77410-1478
 Phone Number: (281) 807-0757
 MSDS Date: 09/01/1995

EMERGENCY TELEPHONE NUMBER(S):

CHEM-TEL, INC. (800) 255-3924 24-Hour Emergency Response

Product Type: Aluminum & Magnesium Bare Welding Wire
 Hazard Rating: Health-2; Fire-0; Reactivity-0; Special-0

This Material Safety Data Sheet (MSDS) provides information on a specific group of manufactured metal products.
 The following alloys can be found on this MSDS: See Section II and Section IV for important health hazard data.

SECTION I - MATERIAL IDENTIFICATION

| ALUMINUM ALLOYS | | APPROXIMATE CHEMICAL COMPOSITION - % (Single figures are maximum) | | | | | | | | |
|-------------------------|-----------|---|-----------|-----------|-----------|-----------|------|-----------|-----------|--|
| TRADE NAME | Si | Fe | Cu | Mn | Mg | Cr | Zn | Ti | Al | |
| Bare Wire 1100 | (a) | (a) | 0.05-0.20 | 0.05 | --- | --- | 0.10 | --- | 99.0 Min. | |
| Bare Wire 2319 | 0.20 | 0.30 | 5.80-6.80 | 0.20-0.40 | 0.02 | --- | 0.10 | 0.10-0.20 | Balance | |
| Bare Wire 4043 | 4.50-6.00 | 0.80 | 0.30 | 0.05 | 0.05 | --- | 0.10 | 0.20 | Balance | |
| Bare Wire 5183 | 0.40 | 0.40 | 0.10 | 0.50-1.00 | 4.30-5.20 | 0.05-0.25 | 0.25 | 0.15 | Balance | |
| Bare Wire 718 (4047) | 11.0-13.0 | 0.80 | 0.80 | 0.15 | 0.10 | --- | 0.20 | --- | Balance | |
| Bare Wire 5356 | 0.25 | 0.40 | 0.10 | 0.05-0.20 | 4.50-5.50 | 0.05-0.20 | 0.10 | 0.06-0.20 | Balance | |
| Bare Wire 5554 | 0.25 | 0.40 | 0.10 | 0.50-1.00 | 2.40-3.00 | 0.05-0.20 | 0.25 | 0.05-0.20 | Balance | |
| Bare Wire 5556 | 0.25 | 0.40 | 0.10 | 0.50-1.00 | 4.70-5.50 | 0.05-0.20 | 0.25 | 0.05-0.20 | Balance | |
| Bare Wire 5654 | (b) | (b) | 0.05 | 0.01 | 3.10-3.90 | 0.15-0.35 | 0.20 | 0.05-0.15 | Balance | |
| Bare Wire C355 | 4.50-5.50 | 0.20 | 1.00-1.50 | 0.10 | 0.40-0.60 | --- | 0.10 | 0.20 | Balance | |
| Bare Wire A356 | 6.50-7.50 | 0.20 | 0.20 | 0.10 | 0.25-0.45 | --- | 0.10 | 0.20 | Balance | |
| Bare Wire 357 | 6.50-7.50 | 0.15 | 0.05 | 0.03 | 0.45-0.60 | --- | 0.05 | 0.20 | Balance | |
| Bare Wire A357 | 6.50-7.50 | 0.20 | 0.20 | 0.10 | 0.40-0.70 | --- | 0.10 | 0.04-0.20 | Balance | |

(a) = Si+Fe = 0.95(maximum)

(b) = Si+Fe = 0.45(maximum)

| MAGNESIUM ALLOYS | | APPROXIMATE CHEMICAL COMPOSITION - % (Single figures are maximum) | | | | | | | | | |
|---------------------|---------|---|-------------|------|-----------|-----|------------|------|-------|-------|------|
| TRADE NAME | Mg | Al | Be | Mn | Zn | Zr | Rare Earth | Cu | F | Ni | Si |
| Bare Wire AZ61A | Balance | 5.80-7.20 | .0002-.0008 | 0.15 | 0.40-1.50 | --- | --- | 0.05 | 0.005 | 0.005 | 0.05 |
| Bare Wire AZ101A | Balance | 9.50-10.5 | .0002-.0008 | 0.13 | 0.75-1.25 | --- | --- | 0.05 | 0.005 | 0.005 | 0.05 |

| | | | | | | | | | | | |
|-----------|---------|-----------|-------------|------|-----------|-----------|-----------|------|-------|-------|------|
| AZ92A | Balance | 8.30-9.70 | .0002-.0008 | 0.15 | 1.70-2.30 | --- | --- | 0.05 | 0.005 | 0.005 | 0.05 |
| Bare Wire | | | | | | | | | | | |
| EZ33A | Balance | --- | --- | --- | 2.00-3.10 | 0.45-1.00 | 2.50-4.00 | --- | --- | --- | --- |

SECTION II – HAZARDOUS CONSTITUENTS

IMPORTANT – Welding electrodes are a nonhazardous solid at ambient temperatures. This section covers the materials from which these products are manufactured. The fumes are gases produced while welding during normal use of these products are covered in Section V and VI.

BARE WIRE

| HAZARDOUS COMPONENTS | CAS NO. | OSHA PEL mg/m³ | ACGIH TLV mg/m³ | STEL mg/m³ |
|----------------------------------|----------------|----------------------------------|-----------------------------------|------------------------------|
| *Chromium (VI) (Soluble) | 7440-47-3 | --- | 0.05 | 0.10 |
| *Nickel | 7440-02-0 | 0.10 | 0.10 | --- |
| Aluminum (Welding Fume) | 7429-90-5 | 5.00 | 5.00 | --- |
| *Titanium (dioxide) | 13463-67-7 | 15.00 | 10.0 | --- |
| *Magnesium (Fume) | 7439-96-5 | 1.00 | 1.00 | 3.00 |
| Magnesium (Oxide Fume) | 1309-48-4 | 15.0 | 10.0 | --- |
| Iron (Oxide Dust & Fume) | 1309-37-1 | 10.0 | 5.00 | --- |
| *Zinc (Fume) | 1314-13-2 | 5.00 | 5.00 | --- |
| Zirconium | 7440-67-7 | 5.00 | 5.00 | --- |
| Silica (Amorphous Silica, Fused) | 60676-86-0 | 0.10 | 0.10 | --- |
| Copper (Fume) | 7440-50-8 | 0.10 | 0.20 | --- |

SUBSTANCES OF VARIABLE COMPOSITION

| HAZARDOUS COMPONENTS | CAS NO. | OSHA PEL mg/m³ | ACGIH TLV mg/m³ | STEL mg/m³ |
|-----------------------------|----------------|----------------------------------|-----------------------------------|------------------------------|
| *Welding Fume | NOC | 5.00 | 5.00 | --- |

** SUBSTANCE IDENTIFIED BY OTHER SOURCES AS SUSPECTED OR CONFIRMED HUMAN CARCINOGEN*

SECTION III – PHYSICAL DATA

Solid wire or rod, grey to silver in color.

SECTION IV – FIRE AND EXPLOSION DATA

FLASH POINT (WITH TEST METHOD): None **FLAMMABLE (EXPLOSIVE) LIMITS V/V%:** LEL: None UEL: None

EXTINGUISHING MEDIA: This alloy is noncombustible. Use extinguishing media appropriate to the surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES: If this material is reduced to powder form, caution must be used to prevent fire or explosion. To extinguish a metal powder fire use dry sand, dry graphite or other class "D" fire extinguishing powder.

UNUSUAL FIRE AND EXPLOSION HAZARD: No unusual fire or explosion hazards are associated with this material.

INCOMPATIBILITY (MATERIALS TO AVOID): Avoid contact with mineral acids and oxidizing agents which may generate hydrogen gas: The evolution of hydrogen may be an explosion hazard.

HAZARDOUS DECOMPOSITION PRODUCTS: Various elemental metals and metal oxides may be generated from melting or dross handling operations. Refer to Section II for permissible exposure limits.

SECTION V – HEALTH HAZARD DATA – ALUMINUM & MAGNESIUM BARE WELDING WIRE

Welding generates fumes, gases and electromagnetic radiation with known adverse health effects. The composition of welding emissions varies substantially with the welding process.

Exposure: Section I lists normal composition of aluminum welding wire. Section II 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.

Possible Effects of Exposure: Short term exposure to welding fume may result in discomfort, dizziness, nausea and dryness or irritation of the throat. Long term exposure to welding fume, gases or dust may contribute to pulmonary irritation or pneumoconiosis. Long term exposure to iron fume may produce siderosis, which is generally regarded as benign. Nickel and chromium should be considered a possible carcinogen per OSHA 29cfr 1910. 1200. Certain nickel compounds have been implicated based on experience in some nickel refining operations. The specific compounds, however, have not been determined and a direct association between nickel in welding fume and cancer has not been demonstrated. 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 II.

Routes of Entry: (1) Inhalation of Fume (2) Burns from Electromagnetic Radiation

Pre-existing Medical Condition: Individuals with impaired pulmonary function or illness may have symptoms exacerbated by irritants contained in welding fumes.

SECTION VI – REACTIVITY DATA

Exposure Limits: Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure 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 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 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. Fume and gas decomposition products, and not the ingredients in the electrode, 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 electrodes may form. 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.

Most welding, even with primitive ventilation, does not produce exposures inside the welding helmet above 5mg/m³. That which does should be controlled.

SECTION VII – SPILL OR LEAK PROCEDURES

NOT APPLICABLE

SECTION VIII – SPECIAL PROTECTION INFORMATION

Ventilation: Use enough ventilation, local exhaust at the arc (or flame), or both, to keep the fumes and gases below PEL's, TLV's or STEL'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 PEL, TLV or STEL.

Eye Protection: Wear helmet or use face shield with filter lens of appropriate shade number (see ANSI/ASC Z49.1 Section 4.2). Provide protective 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. Welders should not wear short sleeve shirts, short pants or cutoffs.

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

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

Read and understand the manufacturer's instructions and the precautionary label on the product. See American National Standard A49.1, Safety in Welding and Cutting published by the American Welding Society, P.O. Box 351040, Miami, FL 33135 and OSHA publication 2206 (29CFR 1910), U.S. Government Printing Office, Washington D.C. 20402 for more detailed information.

SECTION IX – SPECIAL PRECAUTIONS

Other Precautions: Use exhaust system to clear welding fumes. Make sure that inhaled air does not contain fume constituents above permissible levels.

NOTE: For other precautions or additional safety information on welding and cutting, see American Standard A49.1-1980, *Safety in Welding and Cutting*, and the *Welding Handbook*, Volume 1, Chapter 9, Safe Practices in Welding and cutting, both available from the:

American Welding Society, Inc. 550 N.W. LeJeune Road, P.O. Box 351040, Miami, FL 33135, Telephone Number (305) 554-9353.

SECTION X – DISCLAIMER OF LIABILITY

As the conditions or methods of use are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any use of this material. Information contained herein is believed to be true and accurate but all statements or suggestions are made without any warranty, expressed or implied, regarding accuracy of the information, the hazards connected with the use of the material or the results to be obtained from use thereof.

References:

Air Contaminants-Permissible Exposure Limits
Title 29 Code of Federal Regulations Part 1910.1000

Threshold Limit Values and Biological Exposure Indices for 1989-1990 Second Printing
American Congress of Governmental Industrial Hygienists

Guide to Occupational Exposure Values – 1994
American Conference of Governmental Industrial Hygienists

Code of Federal Regulation
Parts 1900 to 1910 Revised July 1, 1993

Operator's Manual for Oxyfuel Gas Cutting
ANSI/AWS C4.2-90 An American National Standard

Effects of Welding on Health-VI
Prepared for: Safety and Health Committee of the American Welding Society

OSHA: Employee Workplace Rights
U.S. Dept. of Labor, OSHA 3021 Revised

Respiratory Protection
U.S. Dept. of Labor, OSHA 3079 Revised 1988

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