

**MSDS 002**  
Revised 11/2010

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MATERIAL SAFETY DATA SHEET

MWS Wire Industries  
31200 Cedar Valley Drive  
Westlake Village, CA 91362  
(818) 991-8553

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Trade Name: Aluminum Magnet Wire, including Multifilar®, Twistite™ and Microsquare™  
(see insulation glossary on Page 4)

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Chemical Family: Aluminum alloy (see types and composition on Page 4)

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Chemical Formula: N/A

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HAZARDOUS INGREDIENTS

<u>Ingredient</u>	<u>CAS No.</u>	<u>TLV</u>	<u>PEL</u>	<u>STEL</u>
Aluminum	7429-90-5	10 (D) 5 (F)	15 (D) 5 (F)	20
Magnesium	7439-95-4	10 (F)	5 (F)	
Chromium	7440-47-3	0.5	1	
Copper	7440-50-8	1 (D)	1 (D) 0.2 (F)	2 0.1 (F)

Note: TLV - American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (mg/m<sup>3</sup>)

PEL - OSHA Permissible Exposure Level (mg/m<sup>3</sup>), 8 hour time weighted average

STEL - ACHIH Short Term Exposure Limit (mg/m<sup>3</sup>), 15 minutes maximum

\* Ceiling Level (Not to be exceeded)      D = Dust      F = Fume      NS = Not Specified

Aluminum constitutes 65-97% of total product weight. Resin insulation coatings constitute 3-35% of the total product weight.

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PHYSICAL DATA

Boiling Point: 2519°C

Vapor Pressure: NA

Vapor Density: NA

% Volatile: NA

Evaporation Rate: NA

Solubility in H<sub>2</sub>O: Insoluble

Specific Gravity: 2.7

Melting Temperature: 661°C

Appearance & Odor: Solid with no odor to very mild cresol odor. Color varies with type of coating. Basic colors are red, green, brown and amber. Special colors are also produced.

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### FIRE & EXPLOSION HAZARD DATA

Flash Point: N/A

Fire or Explosion Hazard HMIS Rating: 1

Note: Aluminum magnet wire presents minimal explosion or fire hazard, however toxic fumes may be evolved when subject to high heat as from a surrounding fire. Use extinguishing media suitable for the surrounding fire. Fire fighters should use self-contained breathing apparatus if necessary.

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### HEALTH HAZARD DATA

Health Hazard HMIS Rating: 3, based on exposure to fumes from combustion products during soldering, hot staking or otherwise burning the insulation. Copper magnet wire is not hazardous as shipped.

When burned, soldered or hot staked, magnet wire coatings may release hazardous decomposition products that can cause eye and/or respiratory irritation. Decomposition products may include isocyanates such as toluene diisocyanate (TDI). The National Toxicology Program has listed TDI as reasonably anticipated to be a human carcinogen (9<sup>th</sup> Report, January 2001). Decomposition of urethanes and coatings rated at 155°C and lower will begin at 230°C. Use with adequate exhaust to maintain isocyanate exposure below the OSHA ceiling limit of 20 ppb and below 5 ppb as a ten hour time weighted average.

Health Hazards: Excessive exposure to dust or fumes from soldering, burning or mechanically stripping insulation coatings may cause irritation to the eyes, nose, throat and respiratory system. Acute exposure to aluminum fumes can cause metal fume fever and irritation of the respiratory tract. If ingested, aluminum may be irritating to the stomach and intestinal lining.

Emergency First Aid: If fumes or dust are inhaled, move the individual to fresh air immediately and seek medical attention.

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### REACTIVITY DATA

HMIS Reactivity Rating: 0, stable material. Hazardous polymerization will not occur.

Incompatibility: Contact with ammonium nitrate may produce violent reaction

Hazardous Decomposition Product: When subjected to temperatures exceeding 200° C, toxic fumes may be evolved from insulation coatings.

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### SPILL, LEAK, DISPOSAL PROCEDURES

Scrap aluminum magnet wire has reclamation value. If this is not practical, it must be disposed of in accordance with local, state and federal regulations, which may require specific labeling, packaging, transportation and disposal procedures. In solid form magnet wire poses no special clean up problems. If material is in powder or dust form, clean up should be conducted to minimize airborne powder and dust and to avoid contamination of air and water.

RCRA Hazardous Waste Number: Not regulated.

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SARA TITLE III SECTION 313

Aluminum fume or dust is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR Part 372 of the Federal Register. Additional information can be obtained from the Emergency Planning and Community Right-To-Know Information Hot Line, US EPA, (800) 535-0202.

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EC RoHS DIRECTIVE COMPLIANCE

Aluminum magnet wire complies with Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

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ECHA REACH COMPLIANCE

Aluminum magnet wire meets the definition of an article under REACH and does not contain SVHC listed as of the revision date of this MSDS. Also see [http://www.mwswire.com/pdf\\_files/reach.pdf](http://www.mwswire.com/pdf_files/reach.pdf) for more information on MWS Wire products and REACH.

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SPECIAL PROTECTION

Use adequate ventilation to meet exposure limits, prevent irritation and maintain exposure limits to by-products from soldering or burning insulation below OSHA permissible exposure levels. If these levels are exceeded use NIOSH approved respiratory protection. Wear safety glasses when risk of eye injury is present, particularly during machining, grinding, welding, powder handling, etc. Gloves and other protective equipment may be required during handling operations as appropriate to the circumstances of exposure.

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SPECIAL PRECAUTIONS

No special precautions are required for normal handling of magnet wire. Avoid storing magnet wire near materials that are reactive with aluminum.

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PACKAGING & LABELING REQUIREMENTS

D.O.T. Shipping Name: Not regulated

Hazard Class: NA

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MWS Wire Industries (MWS) has attempted to provide current and accurate information in this data sheet, however MWS makes no representations regarding the accuracy or completeness of the information. Information is supplied upon the condition that the persons receiving it will make their own determinations as to its suitability prior to use. MWS assumes no liability for any loss, damage or injury of any kind which may arise out of the use or reliance on the information by any person. No warranties, either express or implied, of merchantability, fitness for a particular purpose or of any other nature are made with respect to the foregoing information or the product to which the information refers. Contact person: Ken Goss at (818) 991-8553.

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## INSULATION GLOSSARY

Name	NEMA Temperature Class*	Description
Plain Enamel	105 C	Synthetic oleoresinous
Formvar <sup>1</sup>	105 C	Polyvinyl Formal
Polyurethane	155 / 180 C	Modified Polyurethane
Polyurethane Nylon	155 / 180 C	Modified Polyurethane with Polyamide overcoat
Solderable Polyesterimide	180 C	Polyesterimide
Polyester 200	220 C	Modified Polyester
Armored Polyester	220 C	Modified Polyester or Polyesterimide with Amide- Imide overcoat
ML <sup>2</sup>	240 C	Polyimide

\*Thermal class ratings for all but Polyester 200 and Armored Polyester are determined on copper. All insulations may be supplied with a bondable overcoat.

Butvar Bond	Polyvinyl Butyral
Polyester Bond	Polyester
Epoxy Bond	Epoxy
Polyamide Bond	Polyamide

<sup>1</sup> Chisso Corp. Registered Trademark

<sup>2</sup> IST (USA) Corp. Registered Trademark

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## ALUMINUM ALLOY COMPOSITIONS

Aluminum 1350 (standard alloy for magnet wire unless otherwise designated)	99.5% Al minimum
Aluminum 1199	99.99% Aluminum
Aluminum 1100	0.12% Copper, balance Aluminum
Aluminum 5005	0.8% Magnesium, balance Aluminum
Aluminum 5056	5% Magnesium, 0.12% Manganese, 0.12% Chromium, balance Aluminum
Aluminum 6061	1% Magnesium, .06% Silicon, 0.28% Copper, 0.2% Chromium, balance Aluminum

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