

# MATERIAL SAFETY DATA SHEET

## ELECTRODES

REVISION DATE: 7/15/08

**ELECTRO ARC MFG. COMPANY**  
**161 ENTERPRISE DRIVE**  
**ANN ARBOR, MI 48103**  
**EMERGENCY PHONE: (734) 761-5400**

### **Material Identification**

Part Number: 1602-06 through A1799-12 (.020 through 1.000 diameters x 6", 9", and 12" Lengths)  
A1815-18 through A1844-18 (.156 through .437 diameters x 18" and 24" Lengths)  
A2013-03 through A2050-06 (.125 through .500 Square x 3", 6" Lengths)  
A2113-03 through A2150-06 (.125 through .500 Hex x 3", 6" Lengths)  
1607-RL through 1631-RL (.075 through .312 diameters in Random Lengths as required)  
Trade Name: Molybdenum Electrode  
Form: Tubing

Hazardous Components: Pure Molybdenum Electrode CAS No. 7439-92-7 99.95%

Boiling Point:	10,040 F	Appearance and Odor:	Metallic, no odor
Specific Gravity:	10.2	Vapor Pressure:	N/A
Melting Point:	4,748	Vapor Density:	N/A
Solubility in water:	N/A	Evaporation Rate:	0
Flash Point (Method Used):	N/A	Flammable Limits:	N/A
Extinguishing Media:	N/A		
Special Fire Fighting Procedures:	N/A		
Unusual Fire Explosion Hazards:	N/A		

### **NFPA Hazard Rating:**

Health:	0	Hazard Rating Scale:	
Flammability:	None	0-Minimal	3-Serious
Reactivity:	None	1-Slight	4-Servere
Special:	None	2-Moderate	

### **Stability:**

Unstable  Stable

**Conditions to avoid:** None Known

**Hazardous Decomposition or by Products:** Small Particles Resultant of Disintegration Process

### **Hazardous Polymerization:**

May Occur  May not occur

### **Route(s) of entry:**

Inhalation: N/A Skin: N/A Ingestion: N/A

**MSDS – DISINTRODES CONTINUED**

Health Hazards:	None Known
Carcinogenicity:	None Known
Sign and Symptoms of Exposure:	None Known
Medical Conditions Aggravated by Exposure:	None Known
Emergency & First Aid Procedures:	If small metal particle comes in contact with eyes, rinse until particle is removed or seek medical help.
Steps taken in Case Material is released or spilled:	Not Relevant
Waste Disposal Methods:	Not Relevant
Precautions to be taken in handling and storing:	None
Other Precautions:	None
Control Measures:	None
Respiratory Protection:	None
Ventilation:	Not Relevant
Protection Gloves:	Not Relevant
Eye Protection:	Safety Glasses
Other:	None
Working/Hygienic Practices:	None

**\*\*Note: Electrodes subjected to continual water rinse in our application**

## ELECTRODE MATERIAL EVALUATION FOR DISINTEGRATORS

First, it should be noted that the Electro Arc machine operates with any material that conducts electricity as the electrode. The question is then what material will be more efficient in the disintegration process.

The disintegration process works on the principle of vibration, electrical spark and coolant. The cutting power is low voltage rectified DC current. Sixty sparks are discharged a second between the electrode and the work piece. The coolant is passed through the electrode, which is hollow tubing, onto the work piece causing a thermal shock (heat and coolant). The material is fractured into minute particles and washed away by the coolant. Both the electrode and the work piece erode during the cutting process. With this in mind, the following information should then be considered:

### Melting temperature of various materials:

- Molybdenum 4600 degree F
- Copper 2000 degree F
- Brass 2000 degree F
- Steel 2500 degree F

It is important to use an electrode material that will break down less than the work piece. Molybdenum has this advantage. The melting temperature is double that of other electrode materials, which means you will erode more of the broken tool and less of the electrode. The disintegrating time will be faster and the labor cost lower. In comparison, other lower melting material, such as copper, erode as rapidly as the work material raising the labor cost for removing broken tools. Molybdenum is a more expensive material to use as the electrode; however, the savings in labor in removing broken tools more than justifies the cost—a proven fact in industry for over 25 years. Thousands of disintegrator customers use molybdenum or comparable high—priced material in the electrical discharge process.