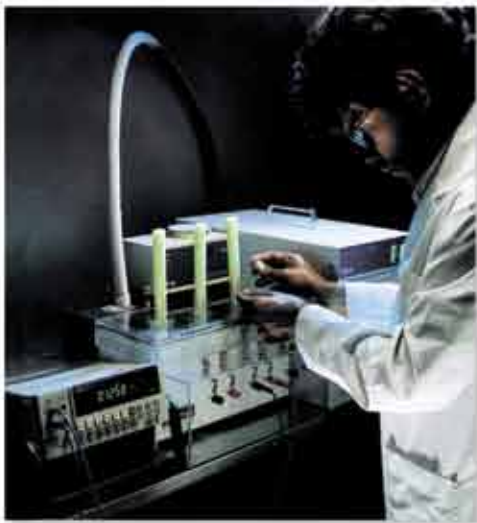


## Laboratory Services

Consistent product quality is an essential requirement for our wire users. MWS maintains one of the most comprehensive wire testing facilities in the specialty wire industry, capable of testing per NEMA MW 1000 for insulated copper and aluminum magnet wire. MWS is a qualified UL producer to OBWM2, Magnet wire component, File # E211068. MWS is an ISO 9001:2008 registered company.

### Testing capabilities include:

|                       |  |
|-----------------------|--|
| DIMENSIONAL ANALYSIS  | Contact and non-contact laser micrometer analysis, and cross-section optical measurements for concentricity and corner radius measurements.  |
| MECHANICAL PROPERTIES | Stress/strain analysis; tensile, yield, break strength values.   |
| ELECTRICAL PROPERTIES | DC resistance, dielectric strength, capacitance, impedance, continuity of insulation, completeness of insulation cure, and TCR measurements. |
| THERMAL PROPERTIES    | Thermoplastic flow, heat shock, insulation adherence, thermal endurance, and solderability of insulations per NEMA MW 1000.                  |
| MATERIAL ANALYSIS     | Base metal chemical analysis accurate to 1ppm. Insulated material analysis performed using infrared spectroanalysis.                         |
| SPECIAL TESTING       | To customer specification, custom-built test equipment for unique applications.  |



*This Techne temperature-controlled bath provides MWS the capability to perform temperature coefficient of resistance (TCR) measurements for a variety of specialty metals and alloys. Precise resistance values can be obtained between -0°C and 100°C.*



*The Olympus Stereo Microscope, together with the Boeckeler Measurement and Sony Imaging System, can take cross-sectional measurements as small as 3 microns. Measurements include X-axis / Y-axis measurements as well as corner radius. Verification can then be sent to our customers by either a printed color photograph or digital image sent via e-mail.*



*The Satec Model T1000, incorporated with Satec's "Partner" software, provides precise values for the physical and mechanical properties of metals. Specific tensile strength, break load (from 2 grams to 1,000 pounds), yield strength, elongation and bond strength data is obtained on a wide range of bare and insulated wire and ribbon. Reports can be generated and sent to our customers for test value verification.*



*The Associated Research Model 7550DT Hi-pot/Dielectric tester has a testing range of 0 to 5,000 volts AC and 6,000 volts DC. The Hipotronics Model M 120 TT dielectric tester (shown right) has a range of 20,000 volts AC.*



*Metering dies are used to apply smooth, concentric film coats to wires sizes AWG 30 and heavier.*

MWS produces custom round, square, rectangular, ribbon, Multifilar® Twistite™ and Microsquare™ wires in a well-equipped, fully permitted manufacturing facility. Products offered include film insulated wire conforming to NEMA MW 1000 and IEC 60317 in temperature classes 105 to 240°C, from single through quadruple film builds. Low minimums, quick deliveries and top quality are our standards.



*This specially designed machine draws precious metals to ultra-fine sizes in standard and custom diameters and tempers.*



*A MAG vertical oven enamel coats round, square and rectangular wire and is suitable for both small quantity and high production runs.*



*In-line drawing machines can be utilized on any enameling oven, enabling production efficiencies as well as excellent bare wire quality.*



*Reusch Model#154 Rolling mill provides state-of-the-art capabilities for production of tight tolerance flat conductors. Sizes range from .0005" thickness to 2" widths with tolerances as close as +.00015".*



*Twistite™ magnet wire, up to 50 twists per inch, is produced for numerous electronic applications, utilizing a wide range of conductor materials, insulations and colors.*



*Continuous in-line diameter measurement provides effective quality assurance on high speed enameling lines. The data can be converted into reports that record the minimum, maximum and average dimensions, and the process capability for a given production run.*