# SUPERIOR MOLYBDENUM GLASS MELTING ELECTRODES

ELMET
TECHNOLOGIES

Elmet Technologies provides the industry with the highest standards for efficient glass melting and electric boosted melting with its high purity molybdenum (Mo) and premium molybdenum-zirconium (MoZr) glass melting electrodes (GME). The high temperature strength and rigidity of molybdenum electrodes, plus the inherent electrical properties of molybdenum, provide maximum operating efficiency.

We machine simple or complex thread forms to precise customer requirements.

> Standard or tapered threads

> Mo GME and MoZr GME (coated and uncoated)

> Machined or centerless ground surfaces 128 micro in. (3.25 µm) or better

> High purity (99.95% minimum)

> Bubble free, low carbon electrodes

> 1.25 in. (32 mm) to 8 in. (203 mm) diameter

> Uniform recrystallized grains for creep resistance

**TOLERANCE**

| DIAMETER | | DIAMETER VARIATIONS (POWDER METALLURGICAL) | | DIAMETER VARIATIONS (ELECTRON BEAM MELTED) | |
|---|---|---|---|---|---|
| MM | INCH | MM | INCH | MM | INCH |
| 31.7 | 1 1/4 | ± 0.38 | ± 0.015 | ± 0.5 | ± 0.02 |
| 38.1 | 1 1/2 | ± 0.38 | ± 0.015 | ± 0.5 | ± 0.02 |
| 50.8 | 2 | ± 0.76 | ± 0.030 | ± 0.5 | ± 0.02 |
| 63.5 | 2 1/2 | ± 0.76 | ± 0.030 | ± 0.5 | ± 0.02 |
| 76.2 | 3 | ± 1.0 | ± 0.040 | ± 0.5 | ± 0.02 |
| 101.6 | 4 | ± 1.0 | ± 0.040 | ± 0.5 | ± 0.02 |

Length variations ± 5 mm / ± 0.2 inch

Elmet Technologies' molybdenum is the "best" choice for electric heating in the glass melting process:

> Excellent strength and stability at temperatures over 2000 °C

> High thermal and electrical conductivity

> Low coefficient of thermal expansion (CTE)

> Resistance to corrosion

> Minimizes detrimental glass discoloring

> Good machinability

**Chemical Characteristics1)**

Molybdenum powder chemical compositions are used for producing glass melting electrodes.

U.S. and European standard and special threads are available on either or both ends.

**HIGH PURITY MOLYBDENUM ELECTRODES**

| ELEMENT | | STANDARD |
|---|---|---|
| Mo | min. | 99.95 % |
| C | max. | 0.005 % |
| Ca | max | 0.003 % |
| Cu | max | 0.002 % |
| Fe | max | 0.005 % |
| Mg | max | 0.001 % |
| Mn | max | 0.001 % |
| Ni | max | 0.0015 % |
| Sn | max | 0.003 % |

Mass fraction in %

1) Information on testing methods available upon request.

Maximum variations from straightness will be 0.030 inch per foot (2.50 mm per meter). Maximum variation in cut lengths will be +1/4", -0 inch (+6.35 mm, -0 mm). Special tolerances upon request.

**PREMIUM MOLYBDENUM ZIRCONIUM ELECTRODES**

| ELEMENT | | STANDARD |
|---|---|---|
| Mo (By Difference) | min. | 98.50 % |
| Mg | max. | 0.001 % |
| Mn | max | 0.001 % |
| Ni | max | 0.002 % |
| Al | max. | 0.002 % |
| Cu | max. | 0.002 % |
| Pb | max. | 0.002 % |
| Ti | max. | 0.002 % |
| Ca | max. | 0.003 % |
| Si | max | 0.003 % |
| Sn | max | 0.003 % |
| C | max | 0.005 % |
| Fe | max | 0.005 % |
| Cr | max. | 0.005 % |
| Zr | | 1.2-1.4 % |

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