



High Performance Metal Solutions

Superior Molybdenum Glass Melting Electrodes

H.C. Starck 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



High Performance Metal Solutions

H.C. Starck's 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 %

The conditions of your use and application of our products, technical assistance and information (whether verbal, written or by way of production evaluations), including any suggested formulations and recommendations, are beyond our control. Therefore, it is imperative that you test our products, technical assistance and information to determine to your own satisfaction whether they are suitable for your intended uses and applications. This application-specific analysis at least must include testing to determine suitability from a technical as well as health, safety, and environmental standpoint. Such testing has not necessarily been done by H.C. Starck Solutions. All information is given without warranty or guarantee. It is expressly understood and agreed that the customer assumes and hereby expressly releases H.C. Starck Solutions from all liability, in tort, contract or otherwise, incurred in connection with the use of our products, technical assistance and information. Any statement or recommendation not contained herein is unauthorized and shall not bind H.C. Starck Solutions. Nothing herein shall be construed as a recommendation to use any product in conflict with patents covering any material or its use. No license is implied or in fact granted under the claims of any patent. Properties of the products referred to herein shall as general rule not be classed as information on the properties of the item for sale. In case of order please refer to issue number of the respective product data sheet. All deliveries are based on the latest issue of the product data sheet and the latest version of our General Conditions of Sale and Delivery.

The values in this publication are typical values and do not constitute a specification.

For additional info please contact:

H.C. Starck Inc.
 460 Jay Street
 Coldwater, MI 49036 USA
 F +1 517 279 3647
 info@hcstarcksolutions.com
 www.hcstarcksolutions.com