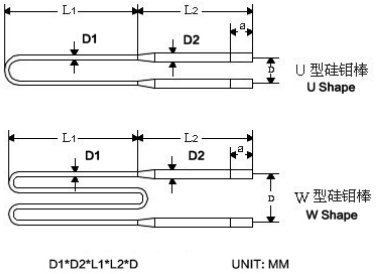
Molybdenum Disilicate Electric Heating Element

（Silicon Molybdenum Rod）

Molybdenum Disilicate Electric Heating Element（Silicon Molybdenum Rod）is a kind of resistance heating element base on molybdenum disilicate materials, high temperature using under oxidizing atmosphere, the surface will be vitrify, produce a bright and compact quartz (SiO2) glass film, it can protect the silicon molybdenum no longer oxidation. That is why the silicon molybdenum has the unique high temperature oxidation resistance. During oxidation atmosphere, the maximum using temperature is 1800℃， Base on user require it can made of bar shaped, U, W, U right angles and other shapes. Silicon molybdenum rods usually can use at the furnace which temperature range is around 1300 ℃ to 1800 ℃, It widely used in metallurgy, glass, ceramics, magnetic materials, refractory materials, crystal, electronic components, kiln manufacturing and other fields. It is the ideal heating element for high temperature sintering.

The structure of silicon molybdenum rod ：



Physical properties of silicon molybdenum rod:

Bulk Density	Flexural strength	Vickers hardness	Porosity	Bibulous rate	Heat extensibility
5.5 g/cm3	15-25 kg/cm3	(HV)570kg/mm2	7.4%	1.2%	4%

Chemical properties of silicon molybdenum rod:

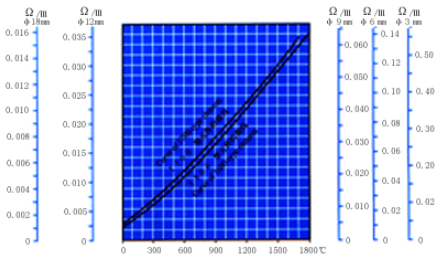
high temperature using under oxidizing atmosphere, the surface will be vitrifying, produce a bright and compact quartz (SiO2) glass film, it can protect the silicon molybdenum no longer oxidation. When the element temperature above 1700℃, The quartz protection layer melts. Continue to use, the quartz protection layer is regenerated. Silicon molybdenum rods should not be use under the temperature range 400-700℃ for a long time, Under low temperature environment the element will pulverization due to strong oxidation.

Silicon molybdenum rod working Temperature changing during different atmosphere

Atmosphere	Element Maximum Using Temperature	
	Model 1700	Model 1800
NO2, CO2, O2, Air	1700℃	1800℃
He, Ar, Ne	1650℃	1750℃
SO2	1600℃	1700℃
CO, N2	1500℃	1600℃
Wet H2	1400℃	1500℃
Dry H2	1350℃	1450℃

The Electric Appliance Performance Of Silicon Molybdenum Rod

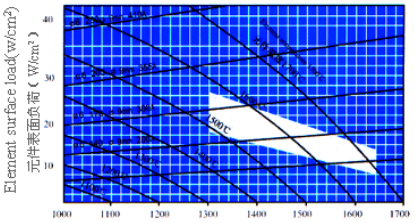
The resistivity of element rapidly rises as the temperature rises, undernormal operating conditions, generally the element resistance doesn'tchange with the service time changing, So old and new components can be mixed.



电阻——温度曲线
Resistance-temperature curve

The Load Of Silicon Molybdenum Rod Surface

Base on furnace structure、atmosphere and temperature to choice the load of right element is the key point to let the element to reach the maximum lifetime, as the picture shown below shows the relationship between the temperature of the furnace, the temperature of the element and the surface load in the unhindered condition of the heating element. The shadow part is the common surface load - the temperature range.



Installation of silicon carbide rod

Silicon molybdenum rods it has brittleness at normal temperature and it has plasticity at high temperature. That is why the U type silicon molybdenum rod is better to choose the vertical installation, If the element requires horizontal installation, then need using refractory materials to support the element, horizontal setting the silicon molybdenum rod, the conical part of the element must extend inside the furnace hearth, silicon molybdenum rod clip cannot be once screwed too tight, until the element reach to high temperature， tighten up again, Then the element cannot easily break off.(Suggestion: Please select the special clips and wires equipped from our company), furnace top need better heat preservation performance, usually temperature cannot beyond 300℃， The contact voltage between the clip and the element should be less than 0.1v, To avoid heat transfer to the clip, the distance of clip bottom and plug brick top need above 50mm. φ6 element cannot long term using 170A，φ9 element cannot long term using 300A。Newly built or long-unused furnaces need to be dried before use, The drying temperature is 100-200℃. Large furnace drying time is long, it is best to use other heating element oven, lest the silicon molybdenum rod low temperature oxidation, the furnace drying, can follow the following steps to start heating up.

Miniature furnace (Rated power < 100KW)		Large scale furnace (Power 100-500KW)	
Furnace Temperature (℃)	Voltage（v）	Furnace Temperature(℃)	Voltage（v）
20-150	1/3 Working Power	20-300	1/3 Working Power
150-500	2/3 Working Power	300-700	2/3 Working Power
500-Working Temperature	Full working voltage	700- Working Temperature	Full working voltage