Molybdenum Disilicide Heating Element Operating Information

Atmospheres

Molybdenum disilicide ($MoSiO_2$) heating elements can be used in most furnace atmospheres. Most favorable are oxidizing atmospheres such as air, carbon dioxide and water vapor, but $MoSiO_2$ elements also operate successfully in neutral, reducing, and carburizing atmospheres. The maximum recommended element temperatures in some common types of furnace atmospheres and gasses are indicated in the table below.

Air

At low temperatures, an oxidation of molybdenum and silicon on the surface of the elements can occur at temperatures around 500°C (930°F). The oxidation product is a yellowish powder, and normally has no detrimental effect on the performance of $MoSiO_2$ elements.

Water Vapor and Carbon Dioxide

Water vapor and carbon dioxide in any amount in the atmosphere have an oxidizing effect. The presence of water vapor in a controlled atmosphere increases the maximum permissible operating temperature.

Sulphur Dioxide

The gas sometimes occurs as an impurity in the atmosphere. It normally has no harmful effect on $MoSiO_2$ heating elements.

Maximum Recommended Element Temperatures

There are three different grades of $MoSiO_2$ element. The table below identifies maximum element surface temperatures for each element grade in specific process atmospheres. Furnace operating temperatures will be lower.

$MoSiO_2$ Element Grades	1700		1800		1900	
Atmosphere	**°C**	**°F**	**°C**	**°F**	**°C**	**°F**
Air	1700	3090	1800	3270	1850	3360
Nitrogen	1600	2910	1700	3090	1800	3270
Argon, Helium	1600	2910	1700	3090	1800	3270
Dry hydrogen, dewpoint -80°C (-112°F)	1150	2100	1150	2100	1150	2100
Moist hydrogen, dewpoint 20°C (68°F)	1450	2640	1450	2640	1450	2640
Endogas (Ex. 40% N_2, 40% H_2, 20% CO)	1400	2550	1450	2640	1450	2640
Cracked and partially burnt ammonia	1400	2550	1400	2550	1400	2550

Foregoing data is courtesy of Kanthal Corporation. Keith Company offers this information to assist customers, but does not warrant its accuracy.