**Moly-D® XLR**

**MOLYBDENUM DISILICIDE HEATING ELEMENTS**

**GENERAL DESCRIPTION**

The Moly-D XLR element is a dense cermet material consisting of MoSi$_2$ and an oxide, glassy phase component that has been specifically designed to operate in dry nitrogen and other furnace atmospheres that have a depleted oxygen content at temperatures above 1250ºC (2280ºF).

Moly-D XLR provides a significantly longer life in nitrogen based protective and oxygen deficient atmospheres than other Moly-D grades.

Moly-D XLR is a silica former, so forms a protective surface oxide glaze of SiO$_2$. In oxidizing atmospheres this silica scale provides excellent protection against further oxidation and this provides a very long element life.

When operating in nitrogen however, this surface oxide becomes consumed and the silicon in the silicide will react with the nitrogen to form silicon nitride (Si$_3$N$_4$). For other grades of Moly-D this can lead to scaling and gradual disintegration of the MoSi$_2$ structure below, but Moly-D XLR withstands nitration better due to it’s enhanced morphology and diffusion tight matrix, which significantly reduces the reaction rate with nitrogen compared with other MoSi$_2$ element grades, and provides a substantially longer heater lifetime in such aggressive reactive environments.

**THE UNIQUE PROPERTIES**

1. Moly-D XLR elements may be used up to a surface temperature of 1700ºC (3090ºF) in oxidizing atmospheres and in nitrogen with a dew point of +40 ºC (+104ºF).

2. Longer service life and ease of replacement contribute to high furnace utilization and low maintenance costs.

3. 50% slower nitration rate compared with other Moly-D grades.

4. Can be used continuously or intermittently.

5. Available as standard 2-shank and 4-shank elements, or as part of Moly-D Module Heaters.

6. Provide rapid furnace temperature ramping.
TECHNICAL INFORMATION

Resistivity

The electrical resistivity of Moly-D XLR is at the same level as MD-31 and MD-33 as shown in figure below.

![Resistivity Graph](image)

Maximum recommended element temperature of Moly-D XLR in nitrogen atmosphere vs. dew point

![Temperature Graph](image)

Availability

Moly-D XLR are available in all sizes across the range but most commonly in sizes 6/12 and larger.

Available as 2-shank and 4-shank elements with optional fixed contacts for safe and reliable electrical connections.

Supplied also as part of Moly-D Module Heaters.

<table>
<thead>
<tr>
<th>MOLY-D XLR SIZES AVAILABLE</th>
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<tbody>
<tr>
<td><strong>Size</strong></td>
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<tr>
<td>3/6</td>
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DELIVERY

Most sizes and types can be shipped 2 to 3 weeks after receipt of an order. Emergency shipments for smaller quantities can usually be made in 2 to 3 days.

All other properties as per MD-31

If additional information is required, please contact your I Squared R representative or agent, or our technical support department at the address below.

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