DESCRIPTION
Among the highest density element and melting point, rhenium does not have a ductile to brittle transition temperature and does not form carbides. High resistivity, combined with low vapor pressure, it is an ideal material for filament applications. Excellent resistance to corrosion, resists acid attack and the mechanical effects of electrical erosion. Rhenium has a beneficial effect as an alloying addition with other refractory metals as it greatly enhances the ductility and tensile strength of these alloys.

APPLICATIONS
Mass spectrometer filaments; grid heaters; cathode cups; thermocouples; nuclear reactors; semiconductors.

PHYSICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>0.77 lb/in³</td>
</tr>
<tr>
<td>Melting Point</td>
<td>5767 °F</td>
</tr>
<tr>
<td>Thermal Conductivity</td>
<td>0.39 cal/cm²·°C/°C·sec</td>
</tr>
<tr>
<td>Specific Heat</td>
<td>0.033 Cal/gm/°C</td>
</tr>
<tr>
<td>Coefficient of Linear Thermal Expansion</td>
<td></td>
</tr>
<tr>
<td>micro-in/°F x 10⁴</td>
<td>11.70</td>
</tr>
<tr>
<td>micro-in/°C x 10⁴</td>
<td>6.50</td>
</tr>
<tr>
<td>Electrical Resistivity</td>
<td>13.5 micro-ohm-cm</td>
</tr>
</tbody>
</table>

MECHANICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile Strength KSI(MPa)-RT</td>
<td>200(1380)</td>
</tr>
<tr>
<td>KSI(MPa)-500°C</td>
<td>135(930)</td>
</tr>
<tr>
<td>KSI(MPa)-1000°C</td>
<td>70(480)</td>
</tr>
<tr>
<td>Elongation % in 1.0”</td>
<td>2</td>
</tr>
<tr>
<td>Modulus of Elasticity KSI</td>
<td>67,150</td>
</tr>
<tr>
<td>Gpa</td>
<td>463</td>
</tr>
</tbody>
</table>

*FORMS AVAILABLE

<table>
<thead>
<tr>
<th>Form</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rod</td>
<td>0.100” - 4.0”</td>
</tr>
<tr>
<td>Sheet</td>
<td>0.001” - 0.30”</td>
</tr>
<tr>
<td>Foil/Coil</td>
<td>0.001” - 0.005”</td>
</tr>
<tr>
<td>Plate</td>
<td>0.150” - 0.30”</td>
</tr>
</tbody>
</table>

CHEMISTRY - Minimum % 99.97

Ed Fagan Inc also specializes in locating exotic materials. So, if you can’t locate that hard-to-find material you need… Put EFI’s material locator service to work for you!

THE MATERIALS YOU NEED, WHEN YOU NEED THEM
Glass Sealing / Controlled Expansion Alloys / Electrical & Electronic Nickel
EFI provides the highest quality materials including materials from Carpenter Technology Corp.

ASTM F15 Alloy:
aka Kovar, Pernifer 2918, NILO K & Dilvar P1
Coil/Strip, Sheet, Plate, Round Bar

Invar 36:
aka Pernifer 36, NILO 36 & Invar Steel
Round Bar, Sheet, Plate

Super Invar 32-5:
Round bar, Sheet, Plate

42/46/48/52 Alloy:
aka Pernifer 42, 46, 48 & 50; NILO 42, 46, 48 & 50; Glass Seal 42, 46, 48 & 50
Coil/Strip, Sheet, Plate, Round Bar

Electronic Nickel
200/201/233/270:
Coil/Strip, Round Bar, Sheet

Soft Magnetic Alloys/ EMI Shielding & Laminations
EFI is a distributor of magnetic shielding alloys for the world’s leading producer of these alloys – VDM Metals GmbH.

EFI Alloy 79:
aka Magnifer 7904, Moly-Permalloy, HyMu 80, Hypennom & Peralloy 80
Round Bar, Sheet, Coil/Strip

EFI Alloy 50:
aka Magnifer 50, High Permeability 49 & Alloy 47-50
Round & Square Bar, Coil/Strip

Carpenter VimVar Core Iron:
Round Bar

Carpenter Hiperco 50:
Plate, Coil/Strip

Carpenter Hiperco 50A:
Round Bar

Radiometal 4550:
Round Bar, Coil/Strip

Refractory Metals/Alloys
EFI is a stocking distributor of Molybdenum & Tungsten products, as well as many other refractory metals and alloys, providing the highest quality materials available.

Molybdenum:
Round Bar, Sheet, Plate, Threaded Rod & Nuts
*Foil/Coil/Strip, Wire

TZM Molybdenum Alloy:
Round Bar, Sheet, Plate

Tungsten:
Round Bar, Plate, *Sheet, *Wire

Tungsten Alloy:

Tantalum: Round Bar, Sheet

Niobium: Foil/Coil/Strip

Rhenium: Sheet

*Products listed in Italics are special order and not standard stock items. Please call for availability.

METALS WE DISTRIBUTE
Titanium - CP & 6Al-4V • High Temperature Alloys • Corrosion Resistant Alloys • Stainless Steel

JUST IN TIME DELIVERY: All standard stock items can be shipped within 24 hours – and are often shipped the same day. For special order materials, EFI has long relationships with the manufacturers of these materials, so please contact a sales rep to discuss price and delivery options. All materials can be certified with shipment.

SERVICES WE OFFER
Slitting, Shearing, Saw Cutting, Centerless Grinding, Water-jet Cutting, Laser Cutting, Custom Stocking Programs, Consignment Programs

Material Locator
Are you spending too much of your valuable time trying to locate specialty metals and materials? If you can’t locate the hard-to-find materials you need, use EFI’s Material Locator to source them for you.

www.Material-locator.com

THE MATERIALS YOU NEED, WHEN YOU NEED THEM