Thermal Spray Solid Wire Products: Metco 8223

1 Introduction

Metco™ 8223 is a high carbon, iron-moly composite cored wire specially designed for electric arc spray. The material produces coatings that are hard, dense, and wear resistant that can be used for hard bearing surfaces with a low coefficient of friction.

Molybdenum in the core of the wire provides good scuff resistance as a result of the formation of molybdenum oxide in the coating.

Metco 8223 is recommended for applications requiring low coefficient of friction, abrasive resistance or a hard coating at low service temperatures. It can be also used for build up and salvage of grindable carbon steel components. Metco 8223 is very useful as a coating material for automotive applications.

1.1 Typical Uses and Applications

Metco 8223 are typically used to produce coatings that exhibit:
- High wear resistance
- Good Scuff resistance
- Good bond strength
- Low coefficient of friction

Typical applications include:
- Automotive applications such as piston rings, synchronizer rings, repairs on the I.D. of transmission gear rings
- Coatings that provide compatibility between mating surfaces, particularly for iron-based alloys
2  Material Information

2.1 Chemical Composition

<table>
<thead>
<tr>
<th>Product</th>
<th>Nominal Chemistry</th>
<th>Weight Percent (nominal)</th>
<th>Fe</th>
<th>Mo</th>
<th>C&lt;sub&gt;TOTAL&lt;/sub&gt;</th>
<th>B</th>
<th>Organic Solids</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metco 8223</td>
<td>Fe 21Mo 2C 1B</td>
<td>Bal.</td>
<td>18.0 – 25.0</td>
<td>1.2 – 1.9</td>
<td>0.5 – 1.2</td>
<td>1.5 (max)</td>
<td>0.8 (max)</td>
<td></td>
</tr>
</tbody>
</table>

2.2 Morphology and Available Wire Sizes

<table>
<thead>
<tr>
<th>Product</th>
<th>Morphology</th>
<th>Recommended Spray Process</th>
<th>Available Wire Diameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metco 8223</td>
<td>Composite</td>
<td>Electric Arc Wire Spray</td>
<td>1.6 mm (14 ga)</td>
</tr>
</tbody>
</table>

2.3 Key Selection Criteria

- Choose Metco 8223 when an electric arc wire sprayed coating should exhibit:
  - Low coefficient of friction
  - Scuff resistance
  - A hard and wear resistant surface at low service temperatures

2.4 Related Products

- Metco 350NS is an iron-based product that can be used to provide similar coating characteristics wherever feedstock in powder form is required or preferred for application using atmospheric plasma spray or combustion powder Thermospray™.
- Amdry 1371 and Metco 7837 are molybdenum-based powders applied using atmospheric plasma spray, that can be used up to 350 °C (660 °F) to produce a surface with a low coefficient of friction with good scuff resistance.
- Amdry 6200, Amdry 6204, Metco 101SF, Metco 101NS and Metco 6203 are alumina-titania materials, applied using atmospheric plasma spray, that can be used on textile production components for guiding and handling of threads.
- Metco 143 is ceramic powder that produces coatings with good scuff and erosion resistance, and resistant to high temperature corrosion at elevated temperatures up to 980 °C (1800 °F).

3  Coating Information

3.1 Coating Parameters

Please contact your Oerlikon Metco Account Representative for parameter availability. For specific coating application requirements, the services of Oerlikon Metco’s Coating Solution Centers are available.

4  Commercial Information

4.1 Ordering Information and Availability

<table>
<thead>
<tr>
<th>Product</th>
<th>Order No.</th>
<th>Wire Diameter</th>
<th>Package Size</th>
<th>Package Type</th>
<th>Availability</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metco 8223</td>
<td>1031732</td>
<td>1.6 mm (14 ga)</td>
<td>25 lb (approx. 11.3 kg)</td>
<td>Dorn Spool</td>
<td>Special Order</td>
<td>Global</td>
</tr>
</tbody>
</table>

4.2 Handling Recommendations

Store in the original container in a dry location.

4.3 Safety Recommendations

See SDS 50-572 (Safety Data Sheet) localized for the country where the material will be used. SDS are available from the Oerlikon web site at www.oerlikon.com/metco (Resources – Safety Data Sheets).