

Material Product Data Sheet

Carbon and Low-Alloy Steel (Sprasteel) Thermal Spray Wires

Thermal Spray Solid Wire Products: Sprasteel 11, Sprasteel 80, Metco 8230

1 Introduction

Sprasteel™ thermal spray wires are typically carbon steels with high or low shrink characteristics depending on the carbon content. They can be sprayed using electric arc wire spray or combustion wire spray.

Sprasteel 11 is a high shrinkage, silicon-kill steel. Because of the high shrink, Sprasteel 11 requires grooves for coatings over 0.75 mm (0.03 in) thick, wherever there are edges such as on ball bearing seats in electric motors end seals or on shafts.

Sprasteel 80 is a cost-effective material that is typically used in areas where hardness is a dominant requirement. Coatings are low shrink, wear resistant and harder than Sprasteel 11. The low shrinkage allows Sprasteel 80 coatings to be applied to a reasonable thickness without cracking or special surface preparation.

Metco™ 8230 is a low to moderate shrink material that can be applied to a reasonable thickness. It is recommended for machine element repair and dimensional restoration on surfaces that require moderate wear resistance. It produces well-bonded coatings.

1.1 Typical Uses and Applications

- Reclamation of bearing surfaces
- Repair of castings such as engine blocks and headers
- Coatings where a harder steel is not required (Sprasteel 11)
- Machine element repair and dimensional restoration (Metco 8230)

Quick Facts

| | |
|------------------|---|
| Classification | Wire, Fe-based |
| Chemical formula | Various (see Section 2.1) |
| Manufacture | Drawn wire |
| Density | 6.5 – 7.0 g/cm ³ |
| Melting Point | 1198 – 1498 °C (2188 – 2728 °F) |
| Purpose | Salvage and restoration |
| Process | Electric Arc Wire Spray or Combustion Wire Spray |







2 Material Information

2.1 Chemical Composition

| Product | Weight Percent (nominal) | | | | |
|--------------|--------------------------|------|----|-----|------|
| | Fe | Mn | Cr | Si | C |
| Sprasteel 11 | Balance | 1.63 | – | 1.0 | 0.07 |
| Sprasteel 80 | Balance | 0.7 | – | – | 0.8 |
| Metco 8230 | Balance | 0.8 | – | 0.2 | 0.15 |

2.2 Morphology and Available Wire Sizes

| Product | Morphology | Available Wire Diameters | |
|--------------|------------|---|---|
| | | 1.6 mm (14 ga) | 3.2 mm (1/8 in) |
| Sprasteel 11 | Solid |  | – |
| Sprasteel 80 | Solid |  |  |
| Metco 8230 | Solid |  | – |

Recommended Spray Process:  Electric Arc Wire Spray,  Combustion Wire Spray

2.3 Key Selection Criteria

- Sprasteel materials are recommended for surface reclamation or repair of carbon or low alloy steel substrates.
- For applications requiring a softer steel coating, such as the repair of ball bearing seat edges, Sprasteel 11 is recommended.
- Choose Sprasteel 80 when coatings having moderate hardness and low shrinkage are required.
- Choose Metco 8230 for general machine element repair and restoration. It produces moderately thick, wear-resistant coatings with low to moderate shrink that are somewhat harder than Sprasteel 11, but not as hard or wear-resistant as Sprasteel 80.

2.4 Related Products

- For high wear resistance and anti-skid coatings, Metco 8235 is recommended.
- For machine element work, Metcoloy 2 is a suitable candidate coating material.

- When better corrosion and abrasion resistance is required, choose Metco 8295.
- Metco 453 is a thermal spray powder that can be applied using atmospheric plasma spray or combustion powder Thermospray™ that is recommended for salvage and repair of ferrous-based substrates.
- Amdry 959 and Metco 452 are also powder materials that can be applied using atmospheric plasma spray or combustion powder Thermospray™. These materials offer excellent oxidation resistance at high temperatures.
- For better corrosion resistance applied using atmospheric plasma spray, Metco 41C or Metco 42C, applied using atmospheric plasma spray are recommended.
- Diamalloy 1003 and Diamalloy 1008 are of the same chemistry as Metco 41C and Metco 42C, respectively, but are applied using gas-fuel HVOF (high velocity oxy-fuel spray).

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.

Recommended Spray Guns

| Electric Arc Wire | Combustion Wire |
|-------------------|------------------|
| SmartArc PPG | Metco 16E series |
| Metco LD/U2 | |

4 Commercial Information

4.1 Ordering Information and Availability

| Product | Order No. | Wire Diameter | Package Size | Package Type | Availability | Distribution | Origin |
|----------------|-----------|-----------------|-------------------|------------------|---------------|--------------|----------|
| Sprasteel 11 * | 1057685 | 1.6 mm (14 ga) | 15 kg (33 lb) | Wire Basket Reel | Special Order | Europe | Germany |
| Sprasteel 80 * | 1002455 | 1.6 mm (14 ga) | 12.5 kg (27.5 lb) | Dorn Spool | Stock | Europe | Germany |
| Sprasteel 80 | 1077818 | 1.6 mm (14 ga) | 250 kg (550 lb) | Drum | Stock | Europe | Germany |
| Sprasteel 80 * | 1004594 | 3.2 mm (1/8 in) | 25 kg (55 lb) | Coil | Stock | Europe | Germany |
| Metco 8230 * | 1063117 | 1.6 mm (14 ga) | 33 lb (15 kg) | Dorn Spool | Stock | Global | Americas |

* Wire is provided with copper coating

4.2 Handling Recommendations

- Store in the original container in a dry location.

4.3 Safety Recommendations

See the SDS (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).

| Product | SDS No. |
|--------------|---------|
| Sprasteel 11 | 50-1141 |
| Sprasteel 80 | 50-226 |
| Metco 8230 | 50-1232 |

Information is subject to change without prior notice.