

Material Product Data Sheet

Nickel-Titanium Thermal Spray Wire

Thermal Spray Solid Wire Products: Metco 8448

1 Introduction

Metco™ 8448 is applied using the electric arc wire spray process. Typically, it is used as a bond coat layer for thermal sprayed metal, ceramic or pseudoalloy top coat materials.

An exothermic reaction between the nickel and the titanium increases the temperature of the semi-molten particles during their flight to the surface to be coated. Thus, the over-heated particles tend to alloy with the substrate surface in a layer that is on the order of nanometers in thickness. Thus, bonding with the substrate is not only mechanical but also metallurgical.

The surface structure and profile from the arc sprayed Metco 8448 provides a very good base surface for subsequent thermal sprayed top coats.

1.1 Typical Uses and Applications

- Bond Coatings under ceramic top coats
- Bond coatings under metallic top coats
- Bond coatings under cored wire top coats, if required

Quick Facts

Classification	Wire, Ni-based
Chemical formula	Ni 3Ti
Manufacture	Drawn wire
Melting Point	1450 °C (2642 °F)
Service Temperature	800 °C (1470 °F)
Purpose	Bond coat
Process	Electric Arc Wire Spray



2 Material Information

2.1 Chemical Composition

Product	Nominal Chemistry	Weight Percent (nominal)		
		Ni	Ti	Other
Metco 8448	Ni 3Ti	Bal.	3.3	0.9

2.2 Additional Powder Characteristics

Product	Morphology	Recommended Spray Process	Available Wire Diameters
Metco 8448	Solid	Electric Arc Wire Spray	1.6 mm (14 ga)

2.3 Key Selection Criteria

- Coatings of Metco 8448 are self-bonding.
- Bonding of these coatings is metallurgical instead of mechanical.
- Creates an excellent surface for subsequent top coats
- Metco 8448 coatings are corrosion resistant, and can be used in alkaline conditions.

2.4 Related Products

- Metco 402 produces hard, thin, self-bonding stainless steel coatings with good wear, corrosion and oxidation resistance.
- Metco 470 AW is used as a bond coat or dimensional restoration coating on hardened steels, aluminum alloys, cast iron, nickel alloys, titanium alloys and alloys containing niobium or tantalum.

- Metco 8400 and Metco 8401 are good candidates for bond coats and dimensional restoration on nickel and nickel alloy substrates. Coatings are easily machined.
- Metco 8443 provides high temperature oxidation and hot gas corrosion resistance at temperatures up to 980 °C (1800 °F).
- Metco 8447 is recommended for salvage and build-up on carbon steel substrates. For a wire coating, it provides good wear and solid particle erosion resistance with high strength and low shrinkage.
- When thermal spray coatings using powder as the feed-stock material are preferred, Oerlikon Metco also has a broad portfolio of products of many compositions suitable for a wide range of bond coat applications using atmospheric plasma spray, combustion spray or HVOF spray.

3 Coating Information

3.1 Key Thermal Spray Coating Information

Characteristic	Typical Data
Deposit Efficiency (approx.)	70%
Bond Strength	≥ 29.0 MPa ≥4200 psi
Microhardness	140 – 210 HV0.3
Maximum Service Temperature	800 °C 1470 °F
Finishing	Generally used as-sprayed for bond coats. For other applications requiring control of dimension or surface finish, machine and/or grind.

Values shown above may vary from actual achieved values depending on the coating equipment, gun hardware, parameters used and the thickness of the applied coating.

3.2 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.

When coatings with the lowest possible oxides are required, the SmartArc PPG gun is recommended because of its ability to use other types of atomizing gases, such as nitrogen.

Recommended Electric Arc Wire Spray Guns

Metco LD/U2

Metco LD/Schub 5

Metco LD/U3

SmartArc PPG

4 Commercial Information

4.1 Ordering Information and Availability

Product	Order No.	Wire Diameter	Package Size	Package Type	Availability	Dist.	Origin
Metco 8448	1057669	1.6 mm (14 ga)	12 kg (26.5 lb)	Dorn Spool	Stock	Global	Germany

4.2 Handling Recommendations

Store in the original container in a dry location.

4.3 Safety Recommendations

See the SDS 50-1142 (Safety Data Sheet) in the localized version 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).