oerlikon
metco

Material Product Data Sheet
Nickel – Chromium – Iron Thermal Spray Powder for Repair and Buildup Applications

Thermal Spray Powder Product: Metco™ 44

1 Introduction

Metco 44 is a nickel-based thermal spray powder designed to produce machinable stainless coatings that are useful for salvage and buildup applications where high hardness is not required. As a result of the chromium content of Metco 44, the resulting coatings also offer good corrosion resistance.

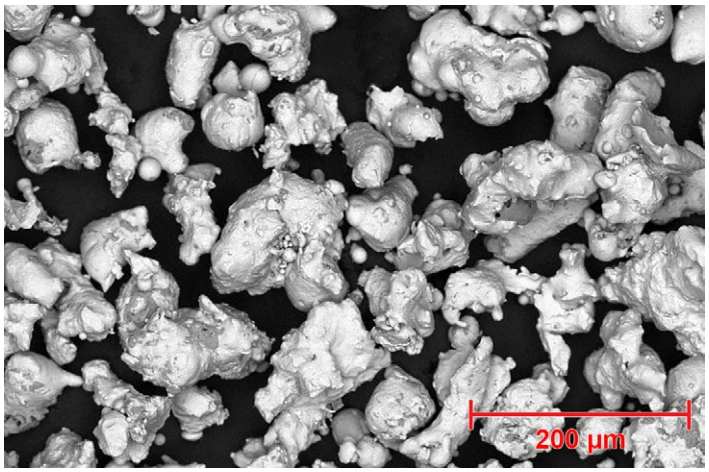
Coatings are readily applied using combustion powder Thermospray or atmospheric plasma spray processes. The coatings are readily post-coat machined using tungsten carbide tool bits.

Metco 44 is recommended for use on corrosion-resistant steels and on standard nickel or nickel-based alloy substrates.

1.1 Typical Uses and Applications

- Salvage and buildup on mis-machined parts
- Restoration of worn parts

Quick Facts	
Classification	Alloy, nickel-based
Chemistry	Ni 16Cr 8Fe
Manufacture	Water atomized
Morphology	Irregular
Melting Point	1395 °C (2540 °F)
Purpose	Salvage and buildup
Process	Combustion Powder Thermospray™ or Atmospheric Plasma Spray



SEM Photomicrographs showing the morphology of Metco 44 powder.

2 Material Information

2.1 Chemical Composition (all products)

Product	Weight Percent (nominal)		
	Ni	Cr	Fe
Metco 44	Balance	16	8

2.2 Particle Size Distribution

Product	Nominal Range µm	Manufacturing Method	Morphology
Metco 44	–106 +38	Water Atomized	Irregular

Size analysis by sieve.

2.3 Key Selection Criteria

Choose Metco 44 as a salvage or buildup coating material when:

- High surface hardness is not a requirement.
- A moderately corrosion resistant coating is desired.
- Ease of dimensional and finish machining is desired.

2.4 Related Products

- Pure nickel coating materials, such as the Metco 56 series, can also be used to restore damaged or mis-machined nickel substrates.
- Nickel-aluminum products can produce coatings that have enhanced bonding properties and better oxidation resistance than Metco 44 coatings.
- Similarly, nickel-chromium coatings can also be more oxidation resistant than coatings of Metco 44.
- When wire-sprayed coatings are preferred, such as combustion wire spray and electric arc wire spray, Oerlikon Metco has a wide range of options available.

3 Coating Information

3.1 Key Thermal Spray Coating Information

Characteristic		Typical Data [a]	
Recommended Process		Combustion Powder Thermospray or Atmospheric Plasma Spray	
Macrohardness	HRB	≈ 80	
Coating Density	g/cm^3	≈ 7.4	
Shrink		Medium low	
Surface Finish AA	as-sprayed machined ground	17.75 to 25.5 µm 1.25 to 2.5 µm 0.5 to 0.64 µm	700 to 1000 µin 50 to 70 µin 20 to 25 µin
Deposition Efficiency		70 – 80 %	

[a] Depending on the coating process, spray gun, spray parameters used and coating thickness applied.

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.

Combustion Powder Thermospray	Atmospheric Plasma Spray
Metco 6P-II	SinplexPro series
Metco 5P-II	F4MB-XL
	9MBM
	3MBM

3.3 Machining and Finishing Recommendations

Characteristic		Typical Data [a]	
Machining		Tungsten carbide tool bit	
Speed		115 m/min	375 ft/min
Traverse	per revolution	0.076 mm	0.003 in
Infeed	roughing finishing	0.25 mm 0.025 mm	0.010 in 0.001 in
Grinding		60 grit SiC wheel	

4 Commercial Information

4.1 Ordering Information and Availability

Product	Order No.	Package Size	Availability	Distribution
Metco 44	1000066	5 lb (approx. 2.25 kg)	Stock	Global

4.2 Handling Recommendations

- Store in the original container in a dry location.
- Tumble contents prior to use to prevent segregation.
- Open containers should be stored in a drying oven to prevent moisture pickup.

4.3 Safety Recommendations

See SDS 50-113 (Safety Data Sheet) in the version 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).

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