oerlikon
metco

Material Product Data Sheet
Manganese-Cobalt Oxide (MCO) Powder

Thermal Spray Powder Products: New! **Metco 6820**

1 Introduction

Manganese-Cobalt Oxide (MCO) is used for YsZ electrolyte-based Solid Oxide Fuel cells. It is utilized as an evaporation barrier on chromite-based interconnects to avoid cathode poisoning. What makes this material particularly interesting is that its coefficient of thermal expansion is similar to that of doped zirconia and it exhibits good electrochemical performance above 800 °C (1475 °F).

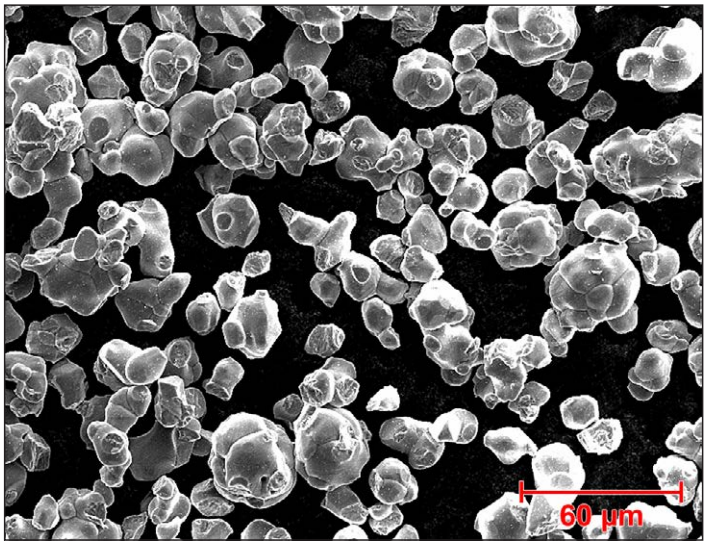
Metco™ 6820 is an MCO product synthesized in-house using a solid state reaction process from high-purity raw materials to produce a $Mn_{1.5}$ $Co_{1.5}$ O_4, spinel-structured material. Chemical compositions for Oerlikon Metco fuel cell materials are expressed in mol %.

Oerlikon Metco's MCO products are agglomerated and sintered materials sized for application using thermal spray processes.

1.1 Typical Uses and Applications

- Protective coating to limit the effects of chromia evaporation from metallic SOFC interconnects
- Catalysts and sensors

Quick Facts	
Classification	Ceramic, SOFC
Chemical formula	$Mn_{1.5}$ $Co_{1.5}$ O_4
Crystal structure	Multi-phase Spinel
Manufacture	Agglomerated and sintered
Purpose	Protective coating
Morphology	Spheroidal
Apparent density	2.4 ± 0.5 g/cm^3
Process	Atmospheric Plasma Spray



2 Material Information

2.1 Chemical Composition

Product	Stoichiometry	Crystal Structure	% Purity
Metco 6820	$Mn_{1.5}\ Co_{1.5}\ O_4$	Multi-phase Spinel	99.8 min.

2.2 Particle Size Distribution

Product	Apparent Density g/cm³	Nominal Size Range µm	D90 µm	D50 µm	D10 µm
Metco 6820	2.4 ± 0.5	–45 +15	40 ± 5	25 ± 5	15 ± 5

Note: Particle size analysis by laser diffraction (Microtrac). Other size distributions are available on request.

2.3 Key Selection Criteria

- Choose Metco 6820 when a cost-effective alternative to an LSM material is satisfactory for the application.
- Choose material according OEM specification, if applicable.

2.4 Related Products

- Metco 6613 is an 8 mol % YsZ material designed for SOFC applications.
- Metco 6800 and Metco 6801 are LSM materials that can be used for the same applications as Metco 6820; however, Metco 6820 was designed an economical alternative to these materials.
- Metco 683X series products are LSCF materials designed for SOFC electrode applications and for use as oxygen permeable membranes.

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 Atmospheric Plasma Spray Guns
Metco 9MB series
Metco F4 series
TriplexPro series
SinplexPro series

4 Commercial Information

4.1 Ordering Information and Availability

	Order No.	Package Size	Availability	Distribution
Metco 6820	1078687	5 kg (approx. 11 lb)	Special Order	Global

4.2 Handling Recommendations

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

4.3 Safety Recommendations

See SDS 50-1562 (Safety Data Sheet) in the localized version applicable 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).

www.oerlikon.com/metco
info.metco@oerlikon.com