

# Material Product Data Sheet

## Proprietary Cobalt and/or Nickel MCrAlY Alloy Powders

### Powder Products:

**Amdry™ 2231x series, Amdry 2453A, Amdry 2464x series, Amdry 2479x series, Amdry 4500x series, Amdry 4522x series, Amdry 9800B, Metco™ 4195, Metco 4196x series, Metco 4198, Metco 4199, Metco 4200, Metco 4516, Metco 4518x series,**

### 1 Introduction

Oerlikon Metco has a long-standing and close relationship with many OEMs. As such, Oerlikon Metco is a high-quality manufacturing source that meets the stringent quality requirements of these OEMs for their MCrAlY powder products. Throughout the manufacturing process, rigorous process and quality controls at Oerlikon Metco assures product consistency on a lot-to-lot basis. In addition, our global logistics allows us to supply these MCrAlY products anywhere in the world.

Oerlikon Metco works closely with OEMs to develop MCrAlY materials with new chemistries. All the products in this data sheet are proprietary to the OEMs for which they are listed, and available only to OEM-approved users.

Gas atomization ensures excellent chemical homogeneity and high purity which results in consistent coating results.

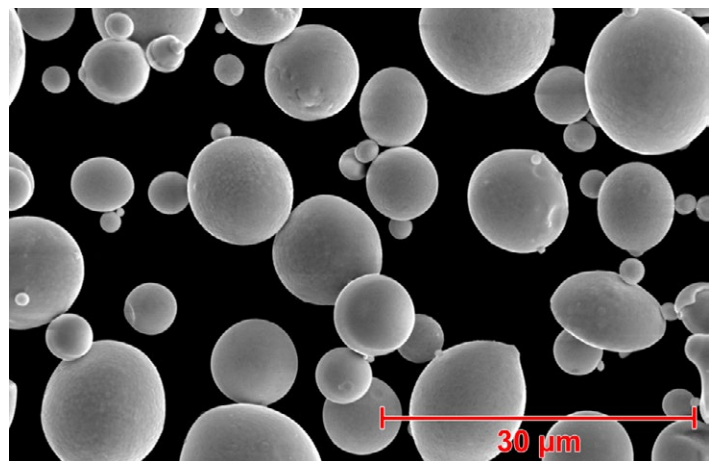
#### 1.1 Typical Uses and Applications

Generally used per OEM specification or drawing requirements as a thermal sprayed coatings for:

- Oxidation and hot corrosion resistance on gas turbine components such as airfoils, turbine buckets, turbine blades and shrouds
- Corrosion resistant bond coat layer for thermal barrier coatings and ceramic clearance control coatings

### Quick Facts

Classification	Alloys, MCrAlY
Chemistry	Proprietary MCrAlY formulas
Manufacture	Gas atomized
Morphology	Spheroidal
Purpose	Oxidation and hot corrosion resistance
Process	Atmospheric plasma spray, HVOF or ChamPro™ controlled atmosphere plasma spray



SEM photomicrograph showing the typical gas atomized morphology of a proprietary Oerlikon Metco MCrAlY material

## 2 Material Information

### 2.1 Chemistry and Physical Properties

All chemistries are proprietary. Approved users should contact the OEM for the product of interest for additional information.

Product	Nominal Particle Size (µm)	Previous Product Name	Recommended Thermal Spray Process		
			APS	HVOF	ChamPro
Amdry 4522A	-45 +11	Amdry SV20			✓
Amdry 4522B	-50 +22	Amdry SH20		✓	
Amdry 4522C	-90 +45	Amdry SL20	✓		
Amdry 4522D	-90 +22	---	✓		✓
Amdry 4500A	-45 +10	---		✓	✓
Amdry 4500B	-90 +38	---	✓		
Amdry 4500C	-125 +53	---	✓		
Amdry 4500D	-75 +38	---	✓		
Metco 4196A	-45 +5.5	---			✓
Metco 4196B	-148 +5.5	---			✓
Metco 4196C	-90 +22	---			✓
Metco 4196D	-44 +22	---		✓	✓
Metco 4196F	-90 +38	---	✓		✓
Metco 4195	-90 +11	---			✓
Metco 4198	-45 +11	---		✓	
Metco 4199	-176 +45	---	✓		
Metco 4200	-45 +5.5	---			✓
Metco 4516	-45 +16	---		✓	
Metco 4518D	proprietary	---		✓ <sup>a</sup>	
Metco 4518E	-148 +44	---	✓		
Amdry 2231A	-90 +45	Sicoat 2231		✓ <sup>a</sup>	
Amdry 2231B	-45 +22	Amdry 2231-2		✓	✓
Amdry 2231C	-75 +45	Sicoat 2231-3		✓ <sup>a</sup>	
Amdry 2231D	-45 +5.5	Metco 4201		✓	✓
Amdry 2453A	-37 +5.5	Metco 4485			✓
Amdry 2464A	-45 +11	Amdry 2464		✓	✓
Amdry 2464B	-63 +22	Amdry 2464-2		✓ <sup>a</sup>	
Amdry 2464C	-45 +15	Amdry 2464-3		✓	✓
Amdry 2464D	-90 +45	Amdry 2464-4	✓		
Amdry 2464E	-45 +22	Amdry 2464-5		✓	
Amdry 2464F	-75 +45	Amdry 2464-6	✓		
Amdry 2464G	-45 +11	Amdry 2464-7			✓
Amdry 2479A	-44 +11	---		✓ <sup>b</sup>	✓
Amdry 2479B	-63 +22	---		✓ <sup>a</sup>	
Amdry 2479C	-90 +45	---	✓		
Amdry 2479F	-44 +22	---		✓	✓
Amdry 2479G	-90 +22	---	✓		✓
Amdry 9800B	-45 +11	---		✓	

APS = Atmospheric Plasma Spray; HVOF = High Velocity Oxygen Fuel Spray; ChamPro = Controlled Atmosphere Plasma Spray

<sup>a</sup> HVOF-LF (HVOF Liquid Fuel)

<sup>b</sup> HVOF-GF (HVOF Gas Fuel)

## 2.2 Key Selection Criteria

Approved users should choose the product that meets the OEM material and process specifications.

## 2.3 Related Products

- Oerlikon Metco also offers standard (non-proprietary) MCrAlY products for general use, such as Amdry 997, Amdry 961, Amdry 963, Amdry 964, Amdry 365-1, Amdry 365-2, Amdry 386 series, Diamalloy 4454, Diamalloy 4700, Metco 4451, Amdry 962 product series and Amdry 995 series products. These products are made with the same care and quality as the proprietary products, and are approved to a variety of customer material specifications. They can be used in highly oxidizing and/or sulfidizing environments, or where a specific customer specification is not required. See data sheets DSMTS-0092, DSMTS-0093 and DSMTS-0117 for more information.
- Oerlikon Metco has a broad range of thermal barrier and abradable oxide ceramic materials, for which the CoNiCrAlY materials are often used as an oxidation resistant bond coat. For more information, please contact your Oerlikon Metco Sales Representative.

## 2.4 Customer Specifications

Product	Specifications
Amdry 4522A	Alstom HTCT 650557 (SV20) <sup>a</sup>
Amdry 4522B	Alstom HTCT 650515 (SH20) <sup>a</sup>
Amdry 4522C	Alstom HTCT 650565 (SL20) <sup>a</sup>
Amdry 4522D	Alstom HTCT 650557 (SV20) (except size) <sup>a</sup>
Amdry 4500A	GE B50TF242, CI A
Amdry 4500B	GE B50TF242, CI B
Amdry 4500C	GE B50TF242, CI C
Amdry 4500D	GE B50TF242, CI D
Metco 4196A	GE B50AG31, CI A <sup>a</sup>
Metco 4196B	GE B50AG31, CI B (except Section 3) <sup>a</sup>
Metco 4196C	GE B50AG31 (except size) <sup>a</sup>
Metco 4196D	GE B50AG30, CI A
Metco 4196F	GE B50AG30, CI C
Metco 4195	GE B50AG5, CI B
Metco 4198	GE B50AG12, CI A
Metco 4199	GE B50AG12, CI C
Metco 4200	GE B50AG6, CI A GE MPP 4160-98327
Metco 4516	GE B50AG16, CI B
Metco 4518D	GE B50AG29, CI D
Metco 4518E	GE B50AG29, CI E
Amdry 2231A	Siemens Sicoat 2231 per TLV511114001 Index F (rough cut)
Amdry 2231B	Siemens Sicoat 2231 per TLV51100305
Amdry 2231C	Siemens Sicoat 2231 per MS 003 Index 06
Amdry 2231D	Siemens Sicoat 2231 per TLV511114001 Index F
Amdry 2453A	Siemens SiCoat 2453 per TLV511114001 Index F
Amdry 2464A	Chromalloy C-80 Siemens TLV51100305 Siemens TLV51114001 Index F
Amdry 2464B	Siemens TLV51100305
Amdry 2464C	Siemens Sicoat 2464 per TLV 51100305
Amdry 2464D	Siemens Sicoat 2464 per TLV 51100305
Amdry 2464E	Siemens Sicoat 2464 per TLV 51100305
Amdry 2464F	Chromalloy C-81
Amdry 2464G	Chromalloy C-80 Siemens Sicoat 2464 per TLV 51100305 Turbine Airfoil Coating and Repair TACR 05-367 Type 1
Amdry 2479A	Siemens TLV511114001 Index F,
Amdry 2479B	Siemens TLV511114001 Index F,
Amdry 2479C	Siemens TLV511114001 Index F,
Amdry 2479F	Siemens TLV511114001 Index F,
Amdry 2479G	Siemens TLV511114001 Index F,
Amdry 9800B	Solar ES9-362, Type B (chemistry and size only)

<sup>a</sup> Meets requirements as stated but not approved

### 3 Coating Information

#### 3.1 Coating Parameters

Please contact your Oerlikon Metco Account Representative for parameter availability. For these proprietary products,

approved users should first contact the OEM directly. 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

Product	Order No.	Package Size	Availability	Distribution
Amdry 4522A	1095014	10 lb (approx. 4.5 kg)	Stock	Global
Amdry 4522B	1095015	10 lb (approx. 4.5 kg)	Stock	Global
Amdry 4522C	1095016	10 lb (approx. 4.5 kg)	Stock	Global
Amdry 4522D	1101422	10 lb (approx. 4.5 kg)	Stock	Global
Amdry 4500A	1093178	10 lb (approx. 4.5 kg)	Special Order	Global
Amdry 4500B	1093187	10 lb (approx. 4.5 kg)	Special Order	Global
Amdry 4500C	1093188	10 lb (approx. 4.5 kg)	Special Order	Global
Amdry 4500D	1093180	10 lb (approx. 4.5 kg)	Special Order	Global
Metco 4196A	1094957	10 lb (approx. 4.5 kg)	Stock	Global
Metco 4196B	1094959	10 lb (approx. 4.5 kg)	Stock	Global
Metco 4196C	1101235	10 lb (approx. 4.5 kg)	Special Order	Global
Metco 4196D	1101236	10 lb (approx. 4.5 kg)	Stock	Global
Metco 4196F	1101238	10 lb (approx. 4.5 kg)	Special Order	Global
Metco 4195	1032560	10 lb (approx. 4.5 kg)	Stock	Global
Metco 4198	1015309	10 lb (approx. 4.5 kg)	Stock	Global
Metco 4199	1032572	10 lb (approx. 4.5 kg)	Stock	Global
Metco 4200	1029021	10 lb (approx. 4.5 kg)	Special Order	Global
Metco 4516	1032574	10 lb (approx. 4.5 kg)	Stock	Global
Metco 4518D	1093806	10 lb (approx. 4.5 kg)	Special Order	Global
Metco 4518E	1093807	10 lb (approx. 4.5 kg)	Special Order	Global
Amdry 2231A	1036276	10 lb (approx. 4.5 kg)	Special Order	Global
Amdry 2231B	1062992	10 lb (approx. 4.5 kg)	Stock	Global
Amdry 2231C	1093296	10 lb (approx. 4.5 kg)	Special Order	Global
Amdry 2231D	1004647	10 lb (approx. 4.5 kg)	Stock	Global
Amdry 2453A	1020495	10 lb (approx. 4.5 kg)	Special Order	Global
Amdry 2464A	1036262	10 lb (approx. 4.5 kg)	Stock	Global
Amdry 2464B	1060092	10 lb (approx. 4.5 kg)	Stock	Global
Amdry 2464C	1051712	10 lb (approx. 4.5 kg)	Special Order	Global
Amdry 2464D	1041322	10 lb (approx. 4.5 kg)	Stock	Global
Amdry 2464E	1081604	10 lb (approx. 4.5 kg)	Special Order	Global
Amdry 2464F	1090080	10 lb (approx. 4.5 kg)	Special Order	Global
Amdry 2464G	1092401	10 lb (approx. 4.5 kg)	Stock	Global
Amdry 2479A	1097386	5 kg (approx. 11 lb)	Special Order	Global
Amdry 2479B	1097387	5 kg (approx. 11 lb)	Special Order	Global
Amdry 2479C	1097391	5 kg (approx. 11 lb)	Special Order	Global
Amdry 2479F	1305665	5 kg (approx. 11 lb)	Stock	Global
Amdry 2479G	1305666	5 kg (approx. 11 lb)	Stock	Global
Amdry 9800B	1093186	10 lb (approx. 4.5 kg)	Stock	Global

## 4.2 Handling Recommendations

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

## 4.3 Safety Recommendations

See the SDS (Safety Data Sheet) in the localized version applicable to the country where the material will be used. SDS are available from the Oerlikon web site at [www.oerlikon.com/metco](http://www.oerlikon.com/metco) (Resources – Safety Data Sheets).

<b>Product</b>	<b>SDS No.</b>
Amdry 4522A	50-913
Amdry 4522B	50-913
Amdry 4522C	50-913
Amdry 4522D	50-913
Amdry 4500A	50-1945
Amdry 4500B	50-1945
Amdry 4500C	50-1945
Amdry 4500D	50-1945
Metco 4196A	50-2088
Metco 4196B	50-2088
Metco 4196C	50-2088
Metco 4196D	50-2088
Metco 4196F	50-2088
Metco 4195	50-743
Metco 4198	50-712
Metco 4199	50-1030
Metco 4200	50-1030
Metco 4516	50-852
Metco 4518D	50-1961
Metco 4518E	50-1961
Amdry 2231A	50-743
Amdry 2231B	50-743
Amdry 2231C	50-743
Amdry 2231D	50-743
Amdry 2453A	50-806
Amdry 2464A	50-919
Amdry 2464B	50-919
Amdry 2464C	50-919
Amdry 2464D	50-919
Amdry 2464E	50-919
Amdry 2464F	50-919
Amdry 2464G	50-919
Amdry 2479A	50-2008
Amdry 2479B	50-2008
Amdry 2479C	50-2008
Amdry 2479F	50-2008
Amdry 2479G	50-2008
Amdry 9800B	50-1946