

# Material Product Data Sheet

## Molybdenum – Nickel Chromium Iron Boron Silicon Powder Blend for Thermal Spray

### Thermal Spray Powder Products: Amdry 1371

#### 1 Introduction

Amdry 1371 is a thermal spray powder that contains molybdenum blended with a self-fluxing constituent to form hard, dense coatings that resist scuffing and abrasion in mild oxidizing environments. They are excellent for high wear resistance applications.

This two-component blend of Amdry 1371 consists of an agglomerated and sintered molybdenum constituent and an inert gas-atomized nickel-chromium-iron (NiCrFeBSiC) self-fluxing component. Molybdenum imparts toughness, scuff-resistance and a low coefficient of friction to the coating. The self-fluxing alloy constituent provides additional high temperature corrosion, erosion and oxidation resistance to the coating.

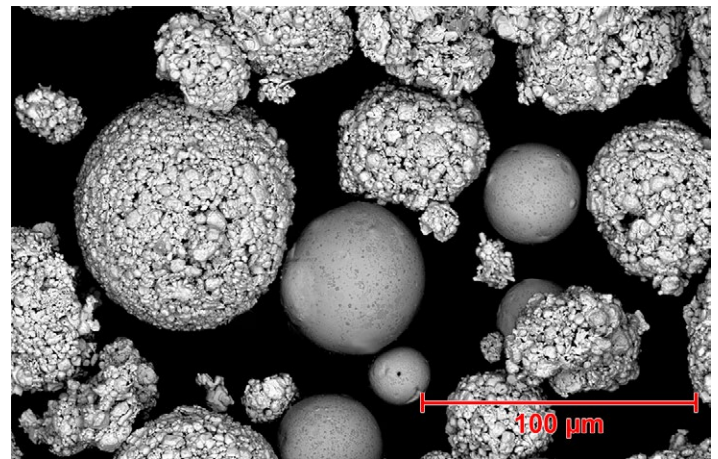
Coatings of Amdry 1371 are self-bonding on most substrates, but use on copper and copper-alloy substrates should be avoided.

#### 1.1 Typical Uses and Applications

- Automotive piston and synchronizer rings
- Shifter forks
- Gear cones
- Pinion gear journals
- Pump bushings, sleeves and impeller shafts
- Hot strip mill cooling tables
- Agricultural grinding rolls
- Rudder bearing surfaces
- Wire drawing capstans
- Dragline brake drums

#### Quick Facts

Classification	Blend, Molybdenum-based
Chemistry	Mo-NiCrFeBSiC
Manufacture	Blended
Morphology	Spheroidal
Melting Point	660 °C (1215 °F)
Service Temperature	≤ 340 °C (650 °F)
Purpose	Wear and scuff resistance; low coefficient of friction
Process	Atmospheric Plasma Spray or HVOF



SEM Photomicrograph of Amdry 1371 showing the morphology of this blended powder product

## 2 Material Information

### 2.1 Chemical Composition

Product	Nominal Chemical Composition (wt. %)							
	Mo	Ni	Cr	Fe	B	Si	C	Others
Amdry 1371	Balance	17.5	4.0	1.0	0.85	1.0	0.25	< 0.3

### 2.2 Particle Size Distribution and Other Properties

Product	Nominal Particle Size Distribution (µm) <sup>a</sup>	Manufacturing Method <sup>b</sup>	Morphology
Amdry 1371	-90 +15	Blended	Spheroidal

<sup>a</sup> Particle size ≥ 45 µm analyzed via sieve analysis in accordance with ASTM B214; particle sizes < 45 µm analyzed via analysis via laser diffraction (Microtrac).

<sup>b</sup> Molybdenum constituent manufactured by agglomeration and sintering; other constituents are inert gas atomized.

### 2.3 Key Selection Criteria

■ Amdry 1371, with its high molybdenum content, produces coatings with excellent scuff resistance, high toughness and a low coefficient of friction.

### 2.4 Related Products

■ For applications where low frictional characteristics or better scuff resistance is needed, particularly in dry-running conditions, coatings of pure molybdenum using

Amdry 313X, Metco 63NS, Metco 4063; however, coatings of these materials have lower erosion resistance.

- When a good scuff-resistant surface with better hardness is needed, Metco 350NS can be considered. This is an iron-based composite powder that contains molybdenum and carbon. It has lower corrosion and oxidation resistance than coatings of Amdry 1371.

### 2.5 Customer Specifications

Product	Customer Specification
Amdry 1371	Chromalloy BZ-0003 Type 56 Honeywell EMS 52417, Table 1, Class F

## 3 Coating Information

### 3.1 Key Thermal Spray Coating Information

Specification	Typical Data
Recommended Spray Process	HVOF or Atmospheric Plasma Spray
Recommended Finishing Method	Wet grind using a SiC or diamond wheel. Ample coolant has to be applied during grinding
Maximum Service Temperature	340 °C 650 °F

Data is provided is typical and variability can be expected. Changes in spray process, spray equipment or spray parameters can significantly change coating results.

### 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.

#### Recommended Spray Guns

Atmospheric Plasma	HVOF
Metco 9MB series	DiamondJet (water-cooled) series
Metco F4 series	WokaJet series
TriplexPro series	WokaStar Series
SimplexPro series	

## 4 Commercial Information

### 4.1 Ordering Information and Availability

Product	Order No.	Package Size	Availability	Distribution
Amdry 1371	1001034	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.

### 4.3 Safety Recommendations

See SDS 50-818 (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).