

Material Product Data Sheet

Amdry 100 Series Braze Filler Metals

Products:
Amdry 100, Amdry 100C

1 Introduction

The Amdry™ 100 series of braze filler metals are spherical, inert gas atomized, nickel braze alloys containing silicon and chrome.

The silicon acts as a temperature depressant while the high chrome content provides improved joint strength and excellent oxidation and corrosion resistance. This alloy flows extremely well during the braze process. The absence of boron permits use of these alloys in applications where boron cannot be tolerated.

Gas atomization ensures excellent chemical homogeneity and high purity for consistent processing results.

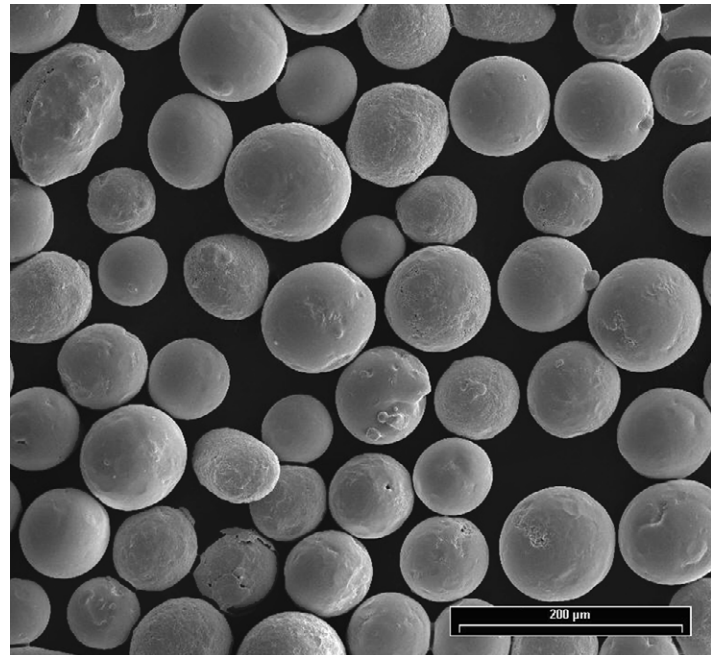
1.1 Typical Use and Applications

Usually used as a brazed filler metal for:

- Joining superalloys and stainless steels where oxidation and corrosion resistance is required.
- Service conditions up to 1038 °C (1900 °F).
- Nuclear applications or other applications where boron cannot be tolerated.
- Thin-walled components such as honeycomb seals, heat exchangers and catalytic converters, where no erosion can be tolerated.
- Applications where excellent joint strength is required at elevated service temperatures.
- Applications with tight, deep joint configurations where a freely flowing braze filler metal is required to insure complete coverage.

Quick Facts

Classification	Nickel-based alloy
Chemical formula	Ni 19Cr 10Si
Manufacture	Gas Atomization
Morphology	Spheroidal
Melting point	1135 °C (2075 °F)
Purpose	Joining
Process	Braze
Gap Size	0.012 – 0.1 mm (0.0005 – 0.004 in)
Viscosity	Free Flowing
Joint Strength	Excellent
Ductility	Good



SEM of typical gas atomized braze filler metal powder particles

2 Material Information

2.1 Chemical Composition

Product	Weight Percent				
	Ni	Cr	Si	Fe (max.)	Other (max.)
Amdry 100	Balance	18.5 – 19.5	9.8 – 10.3	0.2	0.50
Amdry 100C	Balance	18.5 – 19.5	9.8 – 10.3	0.2	0.50

2.2 Particle Size Distribution

Product	Nominal Range	
	Micrometers (µm)	Mesh (ASTM)
Amdry 100	-106 +45	-140 +325
Amdry 100C	-125 +45	-120 +325

Other particle size distributions may be available on request. Please contact your Metco Joining & Cladding Account Manager.

2.3 Key Selection Criteria

- Choose the powder that meets the required customer material specification, and/or the particle size distribution suitable to the application method to be used.
- These filler metal materials are available in powder, paste, tape or preforms. Please see the Commercial Section of this document or contact your Metco Joining & Cladding account manager for additional information.
- However, the addition of small amounts of boron in Amdry 103 may make it unsuitable for nuclear applications.
- For a lower cost braze filler metal, such as may be required for mass production applications, or applications requiring high burst strength, Amdry 805 can be considered.
- For applications requiring a lower braze temperature range, Amdry 105 can be considered.
- Metco Joining & Cladding offers a broad portfolio of nickel-based braze filler metals that cover a wide variety of applications and service conditions. Please consult with us on your specific needs.

2.4 Related Products

- Before considering an alternative product, customers should also review product compliance with required specifications.
- Amdry 103 is recommended for wider gap applications,

2.5 Customer Specifications

Amdry 100	American Welding Society AWS A5.8 BNi 5, 140F GE B14Y3 Honeywell EMS 54752 Type V Rolls-Royce MSRR 9500/116 Rolls-Royce MSRR 9500/116T (tape) SAE International AMS 4782, 140F Tulsa Airfoil Repair MS 1064
Amdry 100C	American Welding Society AWS A5.8 BNi 5, 140C GE B14Y3 GE B50TF81, Class A Rolls-Royce MSRR 9500/116 Rolls-Royce MSRR 9500/116T (tape) SAE International AMS 4782, 140C

3 Braze Processing and Joint Information

3.1 Key Processing Information

Substrate preparation	Clean and dry, free of oxides and organic contaminants. Nickel flash substrates rich in titanium or aluminum to improve flow through the joint.		
Flux requirements	None		
Recommended atmospheres	Vacuum		
Other atmospheres	Type	pure dry H ₂	
	Dew point	≤ -52 °C	≤ -60 °F
Melting range	Solidus	1080 °C	1975 °F
	Liquidus	1135 °C	2075 °F
Braze range	1150 °C – 1205 °C		2100 °F – 2200 °F
Viscosity	Free flowing		
Recommended gap size	0.012 – 0.1 mm		0.0005 – 0.004 in

3.2 Key Braze Joint Information

Joint strength	Excellent
Joint ductility	Good
Corrosion resistance	Excellent
Oxidation resistance	Excellent

3.3 Rebrazing

During the braze cycle, the braze filler metal interacts metallurgically with the substrate to alter the braze alloy's chemical composition, resulting in an increased remelt temperature. The new melting temperature cannot be accurately predicted; therefore, each particular application must be investigated for variation. If a rebraze operation is designed as part of

the original manufacturing process, or as a repair operation, it is important to determine the rebraze temperature. To ensure minimal effects on the original braze joint, it is best to braze at the upper limit of the braze range for the maximum time the part can withstand. It is then recommended that subsequent cycles be performed below the original braze temperature.

4 Commercial Information

4.1 Ordering Information and Availability

Product	Form	Order No.	Package Size	Availability	Distribution
Amdry 100	Powder	1000071	5 lb (approx. 2.25 kg)	Stock	Global
	CNT Paste	1000070	3.5 oz (approx. 100 g) syringe	Special Order	Global
Amdry 100C	Powder	1000072	5 lb (approx. 2.25 kg)	Stock	Global
	CNT Paste	1006357	3.5 oz (approx. 100 g) syringe	Special Order	Global

Other product forms and packaging combinations are available on a special order basis. Customized braze tape and preforms are available to meet specific customer requirements. Please contact your local Metco Joining & Cladding sales office or account representative for additional information.

4.2 Handling Recommendations

- Store powder in the original, closed container in a dry location. Tumble contents prior to use to prevent segregation.
- Paste should be stored tip down in the original packing container. Please refer to the data sheet on Amdry Paste for more information.
- Store tape in sealed bags to minimize drying of the tape. Refer to Please refer to the data sheet for Amdry tape and preforms for additional information.

4.3 Safety Recommendations

See the SDS (Safety Data Sheet) in the product form and for the version localized for the country where the material will be used. SDS are available from the Metco Joining & Cladding web site at www.metcojoiningcladding.com (Resources – Safety Data Sheets).

Product	Product Form	SDS No.
Amdry 100, Amdry 100C	Powder	50-1037
	Paste, CNT	50-1094
	Paste, CNG	50-1103
	Tape	50-1116