

Material Product Data Sheet

Amdry 718B Superalloy Braze Filler Metal

Products: Amdry 718B

1 Introduction

Amdry™ 718B is a spheroidal, inert gas-atomized brazing filler metal. It is a nickel-based material containing boron as a temperature suppressant. The high percentage of chrome in Amdry 718B gives rise to excellent joint strength along with corrosion and oxidation resistance. The chemistry of Amdry 718B is similar to that of superalloy Inconel 718, so it is an excellent choice for OEM or repair brazing for IN718 or other nickel-based superalloy components.

For crack repair and restoration processes, Amdry 718B is often mixed with a suitable superalloy powder. Such repairs made with Amdry 718B will have physical characteristics and chemical compositions similar to the original base metal.

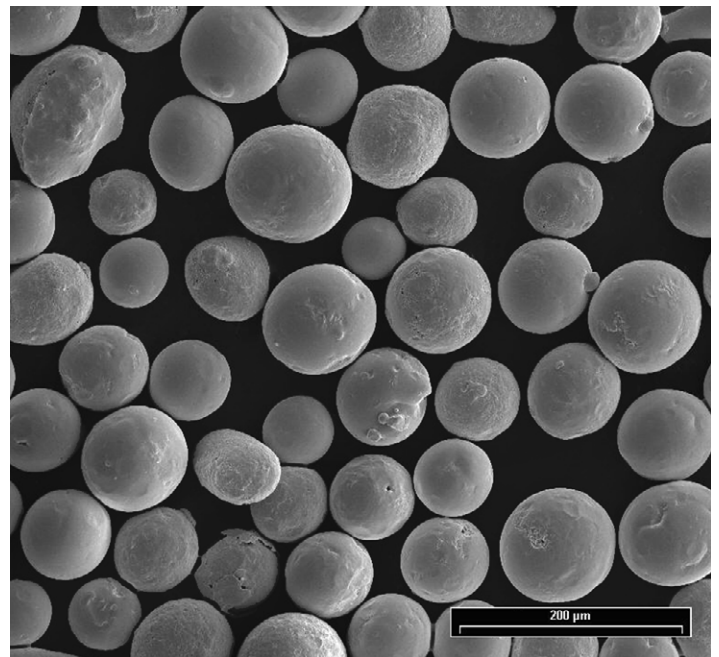
Gas atomization ensures excellent chemical homogeneity and high purity for consistent processing results.

1.1 Typical Use and Applications

- Joining of superalloy components of IN718, IN738, IN625 and MA754.
- For crack repair, restoration of worn or damaged areas, and brazed-in replacement sections when mixed with an appropriate superalloy powder.
- Amdry 718B can repairs cracks of 0.05 – 0.38 mm (0.002 – 0.015 in) in size.
- Blends of Amdry 718B plus a superalloy material can repair cracks or gaps of 0.38 – 1.5 mm (0.015 – 0.060 in).

Quick Facts

Classification	Nickel-based alloy
Chemical formula	Ni 18.5Cr 18Fe 5(Nb+Ta) 3Mo 2.5B 1Ti 0.5Al 0.5C
Manufacture	Gas Atomization
Morphology	Spheroidal
Apparent density	7.65 g/cm ³
Melting point	1232 °C (2250 °F)
Purpose	Joining & repair of Superalloys
Process	Braze
Gap Size	0.05 – 0.38 mm (0.002 – 0.015 in)
Viscosity	Sluggish
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	Fe	Nb+Ta	Mo	B	Ti	Al	C
Amdry 718B	Bal.	16.5–20.4	16.0–19.9	4.6–5.3	2.7–3.2	2.1–2.5	0.7–1.1	0.3–0.7	0.02–0.08

2.2 Particle Size Distribution

Product	Nominal Range	
	micrometers (µm)	Mesh (ASTM)
Amdry 718B	–106 +45 µm	–140 +325 mesh

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

2.3 Key Selection Criteria

- Choose Amdry 718B when the join or repair must have characteristics similar to the base metal of the component, particularly when blended with a suitable superalloy filler powder.
- Amdry 718B is available in powder, paste, tape or preforms. Please see the Commercial Section of this document and Materials Product Datasheets DSMB-0001 (paste) or DSMB-0002 (tape and preforms) for additional information.

2.4 Related Products

- Before considering an alternative product, customers should also review product compliance with required specifications.
- Amdry DF-6A is a similar braze alloy containing tantalum and chrome, but brazes at a lower temperature range and is somewhat less viscous than Amdry 718B.
- Oerlikon Metco has a broad portfolio of braze filler metal products for superalloy joining, repair and restoration applications. Please consult with us on your specific needs.

2.5 Customer Specifications

Amdry 718B	GE B50TF203, Class A Tulsa Airfoil Repair MS 1089
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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	1104 °C	2020 °F
	Liquidus	1232 °C	2250 °F
Braze range	1232 °C – 1274 °C		2250 °F – 2325 °F
Viscosity	Sluggish		
Wide-gap capability	Yes		
Recommended gap size	0.05 – 0.38 mm		0.002 – 0.015 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 718B	Powder	1001415	5 lb (approx. 2.25 kg)	Stock	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 Oerlikon Metco 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. See Materials Data Sheet DSMB-0001 (paste) for additional information.
- Store tape in sealed bags to minimize drying of the tape. Refer to Materials Data Sheet DSMB-0002 (tape and preforms) for additional information.

4.3 Safety Recommendations

See the SDS 50-952 (Safety Data Sheet) in the product form and 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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