

Material Product Data Sheet

Amdry 788 High Temperature Braze Filler Metal

Products: Amdry 788

1 Introduction

Joints and deposits produced using Amdry™ 788 braze filler metal are very hard and wear resistant. These characteristics are the result of high chromium and tungsten additives. While silicon and boron are used as melt suppressants, Amdry 788 remains a very high-temperature melting braze alloy.

This cobalt-based brazing alloy has a sluggish flow, so it is a good choice for restoration work on cobalt-based superalloy components, and can be used to repair cracks or to build-up worn or damaged areas.

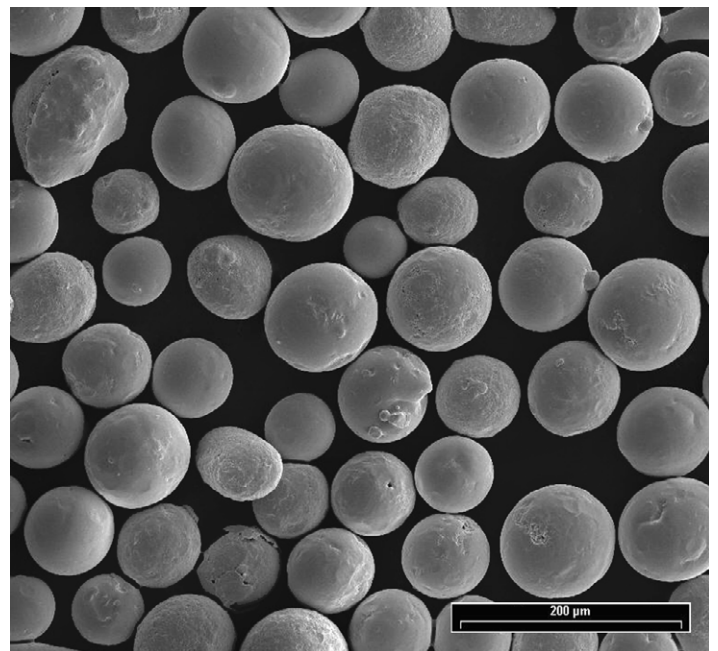
1.1 Typical Use and Applications

Usually used as a brazing filler metal for:

- Repair and restoration of turbine components
- Brazing cobalt-based components such as Haynes 188, MM509, WI-52 and X40
- Restoration operations such as crack repair, rebuilding worn or damaged surfaces, or brazing in replacement details
- Brazing on MM509 with a post-braze diffusion cycle, producing a hardness of HRC30 – HRC50
- Blending with cobalt superalloy powders to deliver a brazed joint with characteristics similar to the cobalt-based parent material

Quick Facts

Classification	Cobalt-based braze alloy
Chemical formula	Co 22Cr 21Ni 14W 2B 2Si
Manufacture	Gas Atomization
Morphology	Spheroidal
Density	7.65 g/cm ³
Melting point	1241 °C (2265 °F)
Purpose	Joining, repair and restoration
Process	Brazing
Gap size	0.05 – 0.15 mm (0.002 – 0.006 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						
	Co	Cr	Ni	W	B	Si	La
Amdry 788	Balance	20.0 – 23.0	20.0 – 23.0	13.0 – 15.0	1.8 – 2.2	1.8 – 2.2	0.02 – 0.10

2.2 Particle Size Distribution

Product	Nominal Range		AWS Grade
	micrometers (µm)	Mesh (ASTM)	
Amdry 788	-106 +45 µm	-140 +325 mesh	140C

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

2.3 Key Selection Criteria

- Amdry 788 is available as a powder. Paste, tape or preforms to aid in application of 788 are available on a special order basis.

2.4 Related Products

- Before considering an alternative product, customers should also review product compliance with required specifications.
- Amdry MM509B is another cobalt-based braze alloy suitable for brazing cobalt superalloys. It can be used to

repair cracks or mixed with a superalloy powder for restoration of worn or damaged surfaces.

- Amdry DF-3 or Amdry DF3-325, while nickel-based brazing alloys, can also be used for brazing cobalt-based metals because of the high percentage of cobalt in these filler metals. Choose Amdry DF-3 or Amdry DF-3-325 when developing a repair process for nickel or cobalt based components..

2.5 Customer Specifications

Amdry 788	MTU MTS 1523-1
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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	1160 °C	2120 °F
	Liquidus	1241 °C	2265 °F
Braze range		1218 °C – 1260 °C	2225 °F – 2300 °F
Viscosity	Sluggish		
Recommended gap size		0.05 – 0.15 mm	0.002 – 0.006 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 788	Powder	1032401	5 lb (approx. 2.25 kg)	Stock	Global

Other product forms and packaging combinations are available on a special order basis. Braze paste, 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 (Safety Data Sheet) for the product form and 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 (Resources – Safety Data Sheets).

Product	Product Form	SDS No.
Amdry 788	Powder	50-837
	Paste, CNT	50-1098
	Paste, CNG	50-1107
	Tape	50-1120