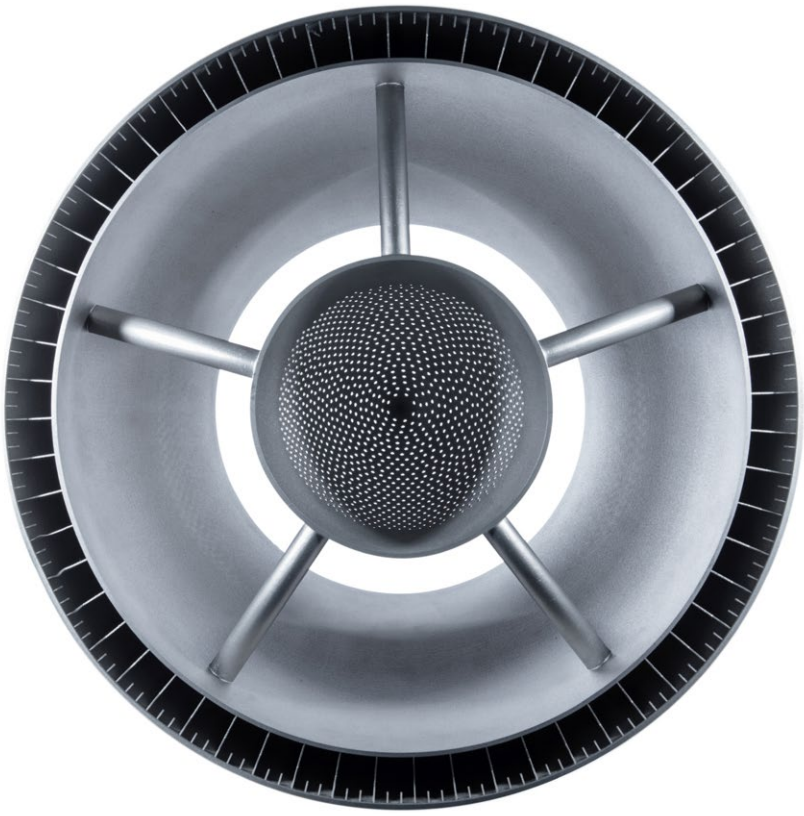
oerlikon
metco

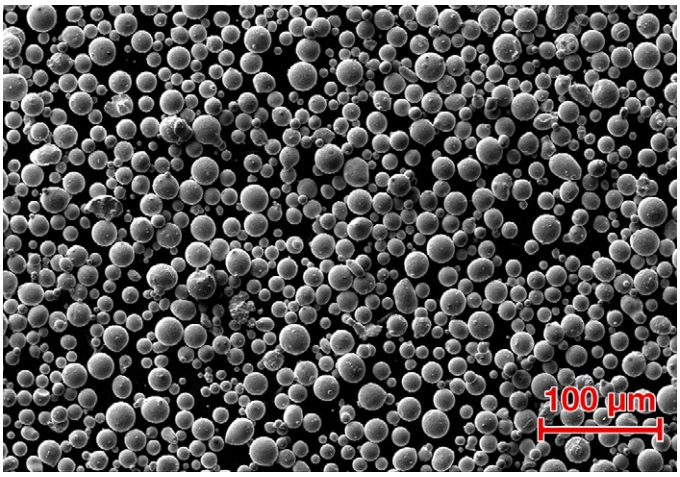


MetcoAdd™
MetcoMed™

Powder Portfolio for Additive Manufacturing

28	27	26	22
Ni	**Co**	**Fe**	**Ti**
Nickel	Cobalt	Iron	Titanium

MetcoAdd 625 Series



A nickel-based superalloy powder product with chemistry similar to AMS 5666 and Inconel 625 bar material. The material is optimized for producing additive manufactured components using Laser Powder Bed Fusion (LB-PBF).

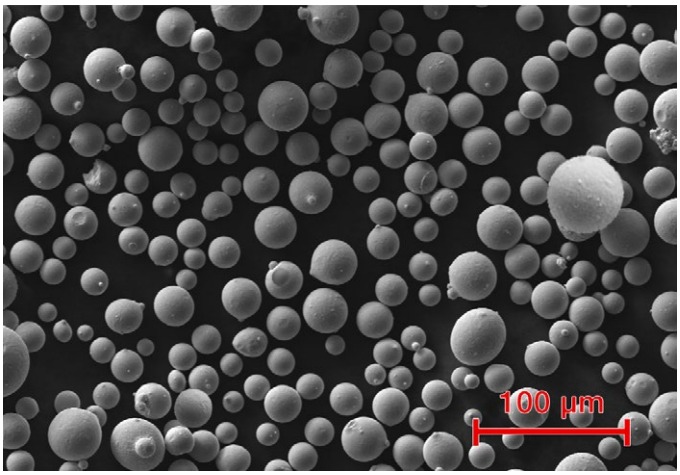
Some relevant applications are:

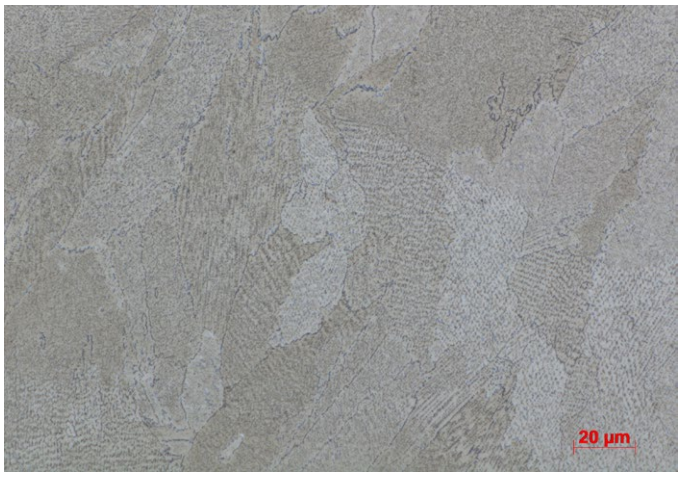
- Aerospace: engine components
- Power generation: gas turbine components
- Industrial: corrosion protection and various

Product	MetcoAdd 625A	MetcoAdd 625E
Nominal Chemistry	Ni 21Cr 9Mo 4Fe 4(Nb+Ta) 0.4Al 0.4Ti	
Nominal Size (µm)	-45 +15	-63 +20
Process	LB-PBF, EHLA	EB-PBF

Similar To:
UNS N06625
AMS 5666

MetcoAdd 718 Series





A family of nickel-based superalloy powders with chemistry similar to AMS 5662 bar material. Room temperature static properties of LB-PBF processed and heat treated material coupons have been shown to be comparable to those of AMS 5662.

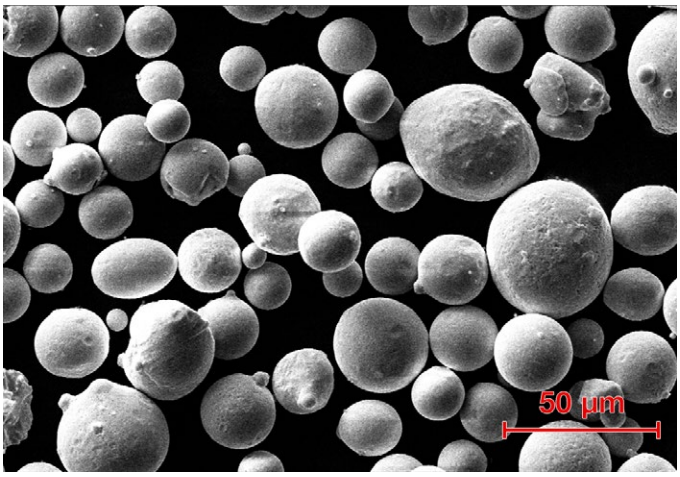
Some relevant applications are:

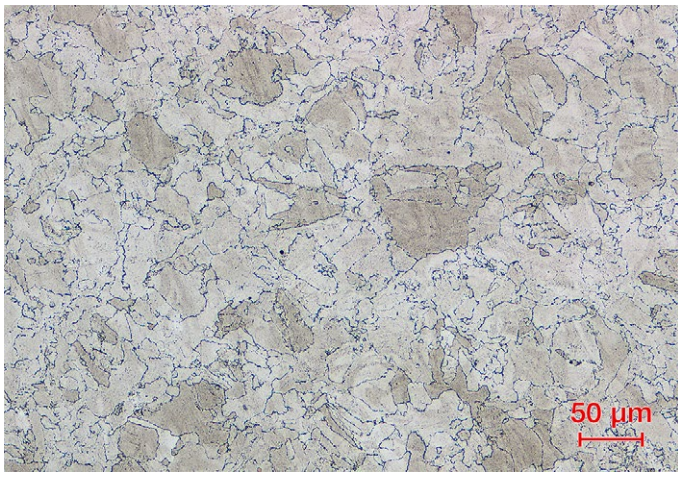
- Aerospace: engine components
- Power generation: gas turbine components
- Oil & Gas: sensors and other components
- Industrial: various

Product	MetcoAdd 718C	MetcoAdd 718E	MetcoAdd 718F	MetcoAdd 718 API C
Nominal Chemistry	Ni 18Cr 18Fe 5(Nb+Ta) 3Mo 1Ti 0.6Al			Fe 53Ni 18Cr 5(Nb+Ta) 3Mo 1Ti 0.5Al
Nominal Size (µm)	-45 +15	-63 +20	-106 +45	-63 +16
Process	LB-PBF, EB-PBF, DED			

Similar To:
UNS N07718 (All Products)
AMS 5662 (All Products)
API 6ACRA (API series products)

MetcoAdd 17-4PH-A





A high gamma prime nickel based, low carbon superalloy where the composition has been modified to improve the printability of the alloy and minimize cracking known to be present in printing the cast composition. The alloy powder has been printed with no or minimal cracks.

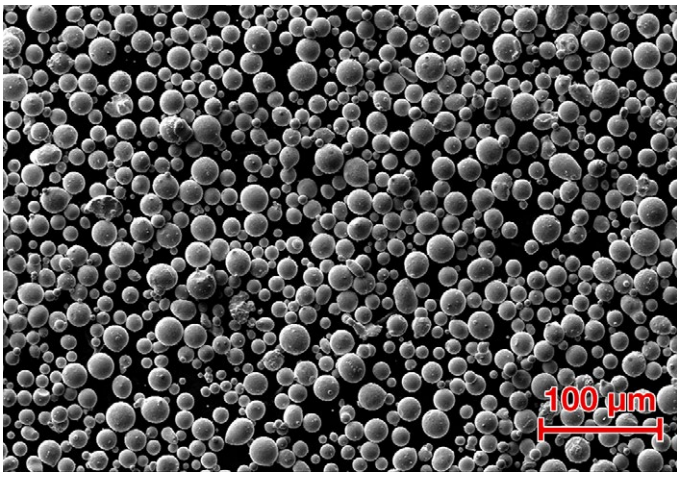
Some relevant applications are:

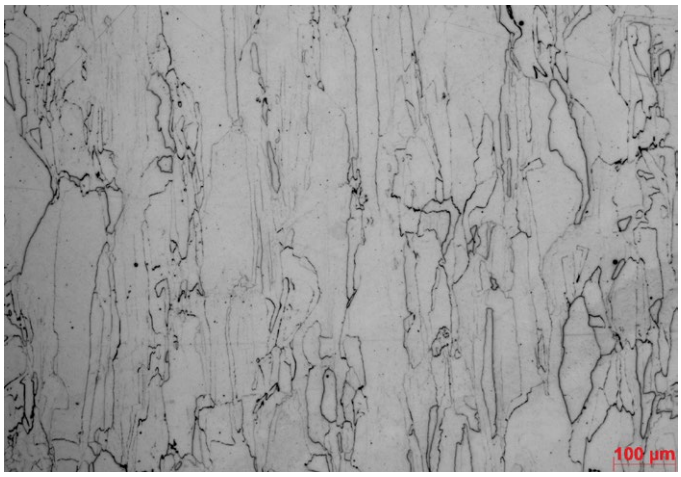
- Gas turbine engine hot section components
- Blades and heat shields

Product	MetcoAdd 17-4PH-A
Nominal Chemistry	Fe 17Cr 4.5Ni 4Cu 0.3(Nb+Ta) 0.07C
Nominal Size (µm)	-45 +15
Process	LB-PBF, EB-PBF, DED

Similar To:
AMS 5410
Alloy IN-738

MetcoAdd HX Series





A family of nickel-based solid solution strengthened powder products with chemistry similar to AMS 5536, EN 2.4665 and UNS N06002. This material has been optimized to mitigate cracking when processing with Laser Powder Bed Fusion (LPBF).

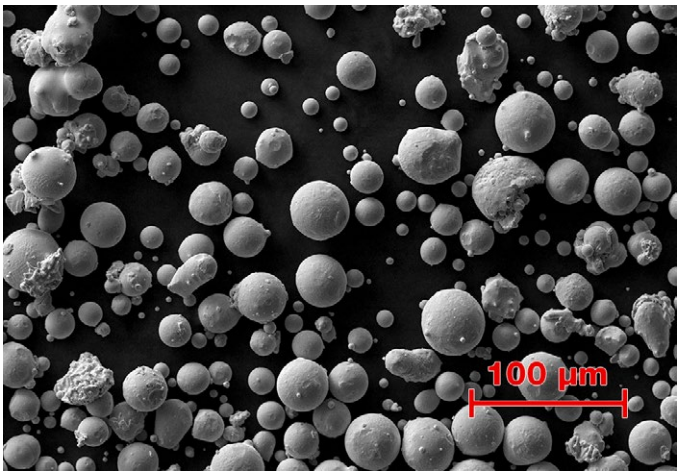
Some relevant applications are:

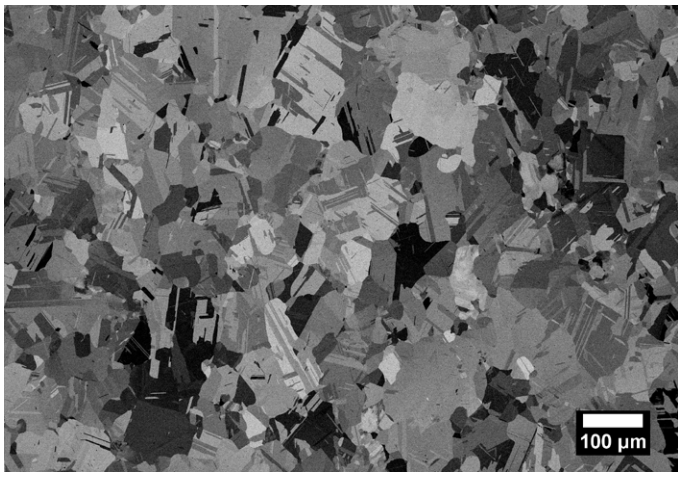
- Aerospace: gas turbine and airframe parts
- Power Generation: gas turbine parts
- Parts for petrochemical applications
- Industrial furnace components
- Structural components

Product	MetcoAdd HX-D	MetcoAdd HX-L
Nominal Chemistry	Ni 21Cr 18Fe 9Mo	
Nominal Size (µm)	-45 +15	-53 +20
Process	LB-PBF	

Similar To:
UNS N06002
AMS 5536
EN 2.4665

MetcoAdd 6022





A nickel-chromium-molybdenum superalloy, similar to UNS N06022 and DIN 2.4602. It exhibits excellent resistance to chemical attack, pitting corrosion, crevice corrosion and stress corrosion cracking. The high chromium and molybdenum content in MetcoAdd 6022A offer improved oxidation and chloride attack resistance compared to other nickel-based superalloys and stainless steels.

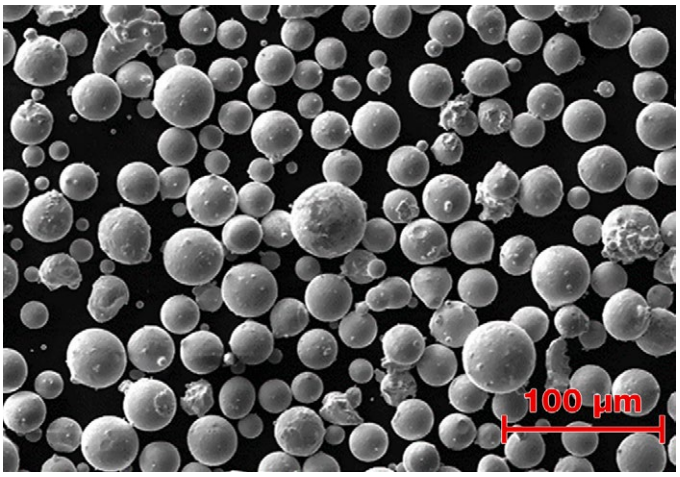
Some relevant applications are:

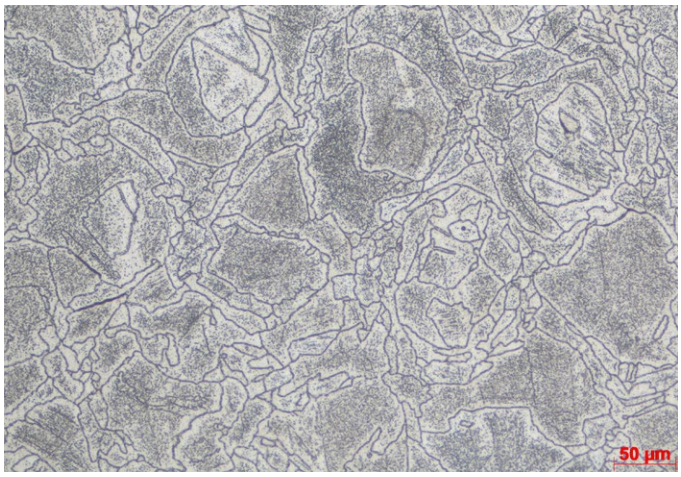
- Oil and gas equipment
- Industrial processing equipment
- Chemical processing equipment
- Pharmaceutical and biotech processing equipment
- Personal and home care processing equipment (e.g., soaps, detergents, cleaners)
- Foodstuff processing equipment

Product	MetcoAdd 6022A
Nominal Chemistry	Ni 22Cr 14Mo 3Fe 3W 2.4Co 0.5Mn
Nominal Size (µm)	-53 +20
Process	LB-PBF

Similar To:
UNS N06022
DIN 2.4602

MetcoAdd H23X





A nickel-based powder product with chemistry similar to AMS 5891 and Haynes® H230® bar material. The material is optimized for producing additive manufactured components using Laser Powder Bed Fusion (LPBF).

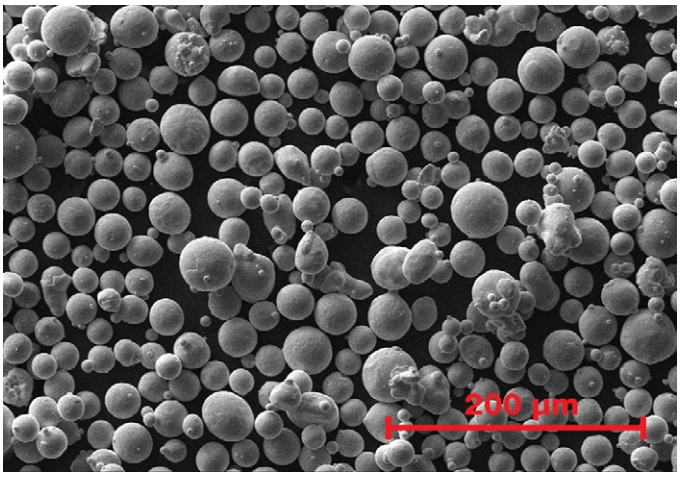
Some relevant applications are:

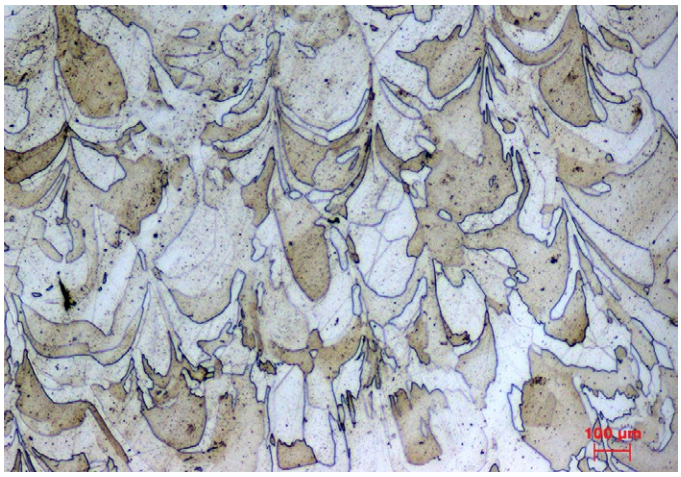
- Aerospace gas turbine engine components
- Power generation gas turbine components
- Industrial components requiring high temperature corrosion resistance for chemical, metallurgical and mineral processing industries

Product	MetcoAdd H23X-A
Nominal Chemistry	Ni 22Cr 2Mo 14W 0.35Al 0.03La
Nominal Size (µm)	-45 +15
Process	LB-PBF

Similar To:
UNS N06230
AMS 5891
Haynes® H230®

MetcoAdd NiCP-A





A pure element nickel powder with chemistry similar to Nickel 201. Room temperature static properties of LB-PBF processed and heat treated material coupons have been shown to be comparable to those of Nickel 201.

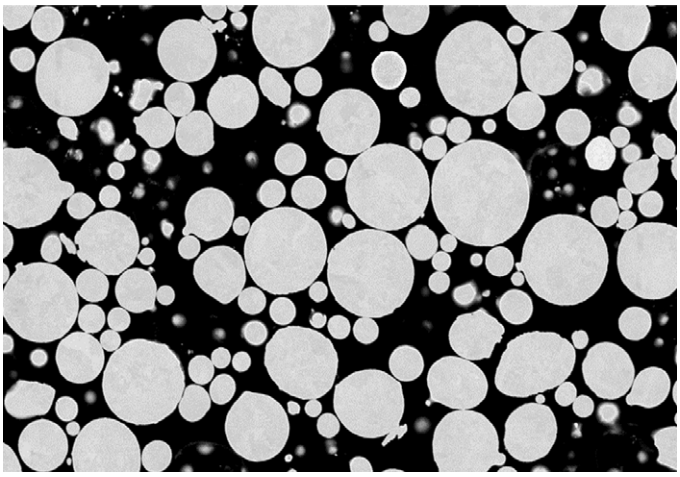
Some relevant applications are:

- Semiconductor

Product	MetcoAdd NiCP-A
Nominal Chemistry	Ni 99,6+
Nominal Size (µm)	-53 +15
Process	LB-PBF, CSAM

Similar To:
Ni99
UNS N02201

MetcoAdd 75/76 Series



Cobalt-chromium-based, gas atomized alloy powders similar to ASTM F75, ISO 5832-4 and UNS R31538. They have been designed for use in laser powder bed fusion (LB-PBF) additive manufacturing processes.

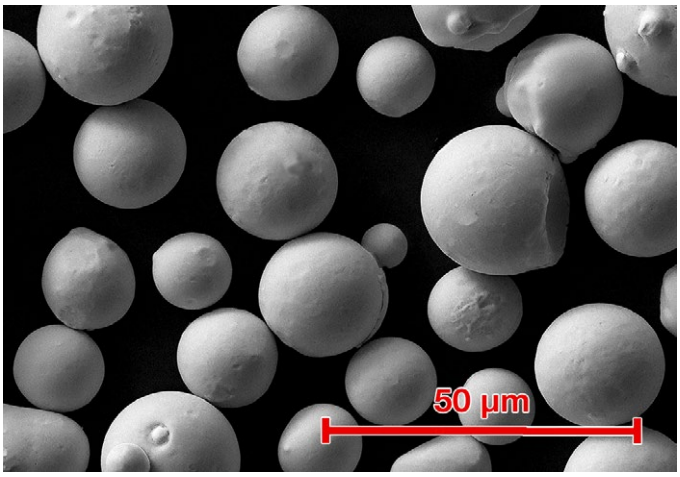
Some relevant applications are:

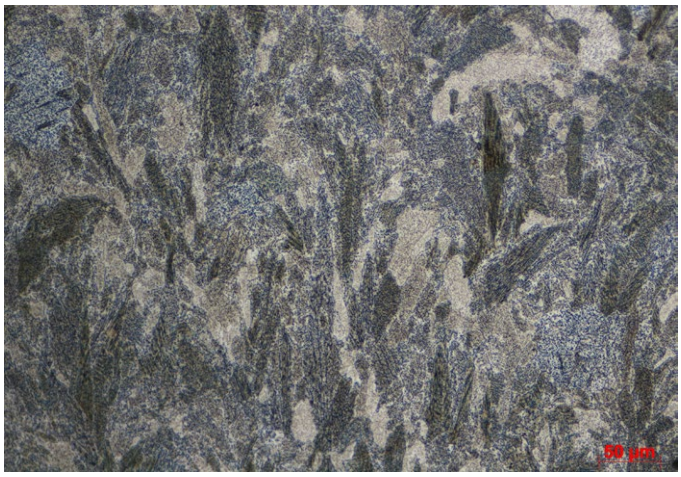
- Aerospace: gas turbine components
- Power Generation: gas turbine components
- Medical: orthopedic and dental implants
- Industrial: various

Product	MetcoAdd 75A	MetcoAdd 76A-1
Nominal Chemistry	Co 28Cr 6Mo	
Nominal Size (µm)	-45 +10	-45 +15
Process	LB-PBF	

Similar To:
UNS R31538
ISO 5832-4

MetcoAdd MM509





A CoNiCrWTa superalloy powder with a chemistry similar to Mar-M-509. The material is optimized for producing additive manufactured components using Laser Powder Bed Fusion (LB-PBF).

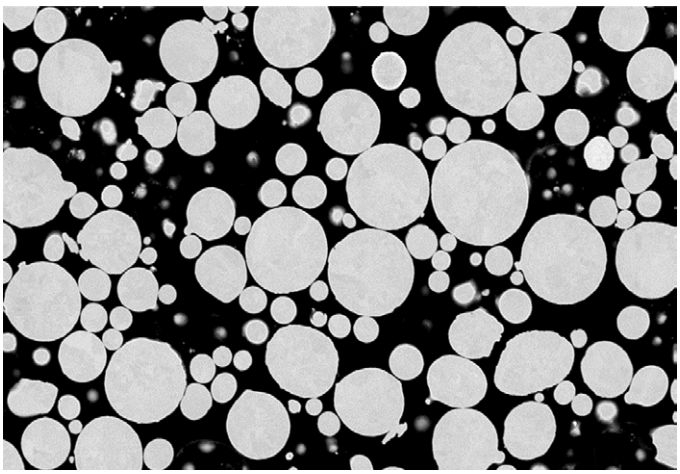
Some relevant applications are:

- Aerospace and Power Generation applications: blades, vanes, nozzle guide vanes, carrier rings

Product	MetcoAdd 509-A
Nominal Chemistry	Co 10Ni 24Cr 7W
Nominal Size (µm)	-45 +15
Process	LB-PBF

Similar To:
Mar-M-509

MetcoMed CoCr F75-A



A CoCrMo superalloy powder with a chemistry similar to ISO 5832-4 and UNS R31538. The material is optimized for producing additive manufactured components using Laser Powder Bed Fusion (LB-PBF).

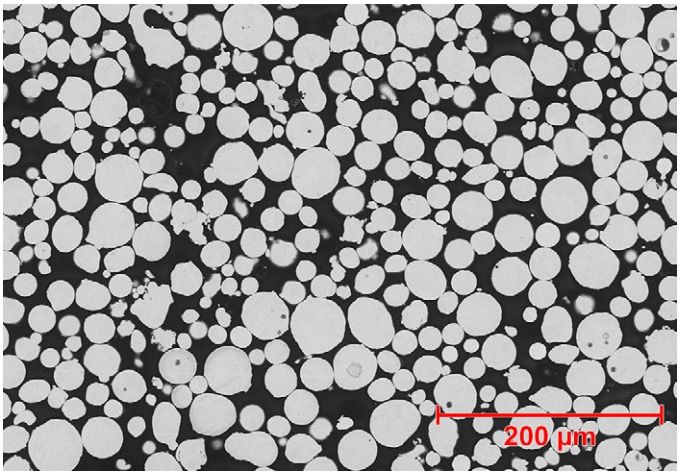
Some relevant applications are:

- Medical: Orthopedic implants

Product	MetcoMed CoCr F75-A
Nominal Chemistry	Co 28Cr 6Mo
Nominal Size (µm)	-45 +15
Process	LB-PBF

Similar To:
ISO 5832-4
UNS R31538

MetcoAdd 316L Series



A family of austenitic powders that are similar in chemistry to EN 1.4404 and UNS S316603. These materials are designed for processing in Laser Powder Bed Fusion (LB-PBF), Electron Beam Powder Bed Fusion (EB-PBF) or Directed Energy Deposition (DED) additive manufacturing systems. MetcoAdd 316L series products have been rigorously engineered specifically to meet the demanding requirements for additive manufacturing.

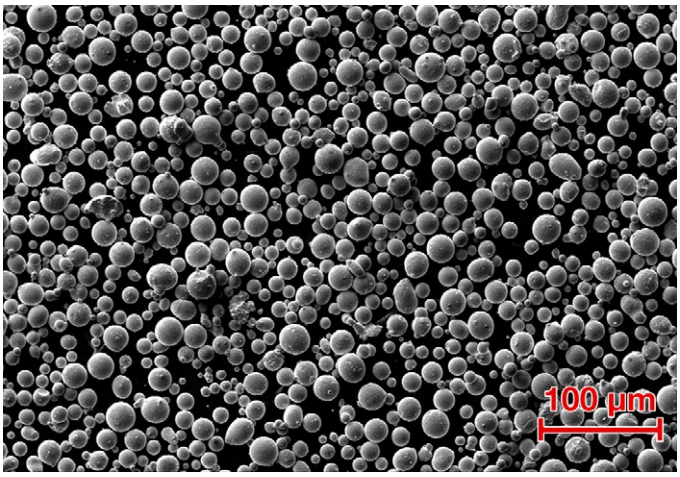
Some relevant applications are:

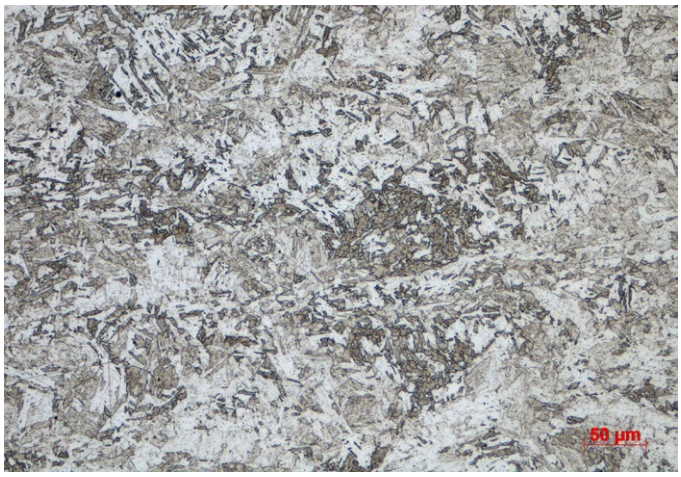
- Aerospace: Clamping elements and heat exchangers
- Medical: Surgical tools and orthopedic implants
- Transport: Maritime components
- Tooling: Pressure injection dies and molds
- Consumer: Jewelry and watch components

Product	MetcoAdd 316L-A	MetcoAdd 316L-D
Nominal Chemistry	Fe 18Cr 12Ni 2Mo 0.02C	
Nominal Size (µm)	-45 +15	-106 +45
Process	LB-PBF, EB-PBF, DED, EHLA	

Similar To:
UNS S316603
EN 1.4404
AMS 5424

MetcoAdd 17-4PH Series





A family of martensitic, precipitation-hardening stainless steel powders with chemistry similar to AMS 5643. Room temperature static properties of LB-PBF processed and heat treated material coupons have been shown to be comparable to those of AMS 5643 in the H900 state.

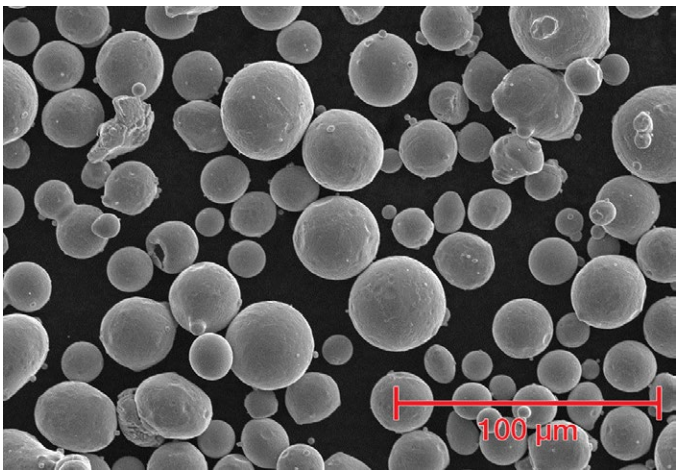
Some relevant applications are:

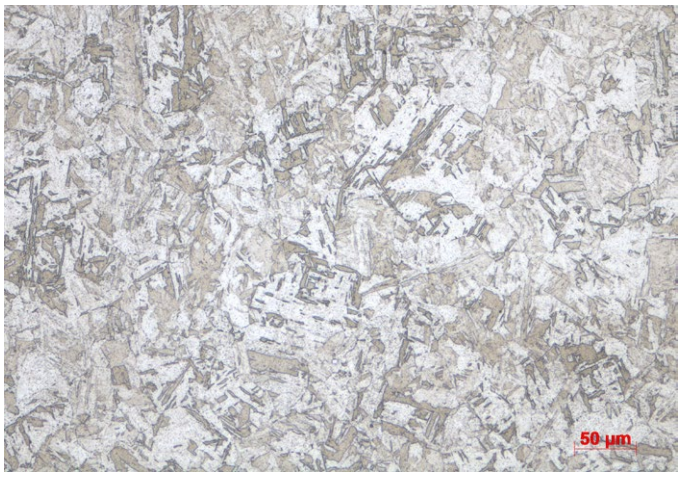
- Aerospace
- Chemical processing
- Nuclear and oil / petrochemical refining
- General metalworking
- Surgical parts

Product	MetcoAdd 17-4PH-A	MetcoAdd 17-4PH-D
Nominal Chemistry	Fe 17Cr 4.5Ni 4Cu 0.3(Nb+Ta) 0.07C	
Nominal Size (µm)	-45 +15	-106 +45
Process	LB-PBF, EB-PBF, DED	

Similar To:
UNS S17400
AMS 5643

MetcoAdd 15-5PH Series





A family of martensitic, precipitation-hardening stainless steel alloy products with chemistry similar to AMS 5659. Room temperature static properties of LB-PBF processed and heat treated material coupons have been shown to be comparable to those of AMS 5659 in the H900 state.

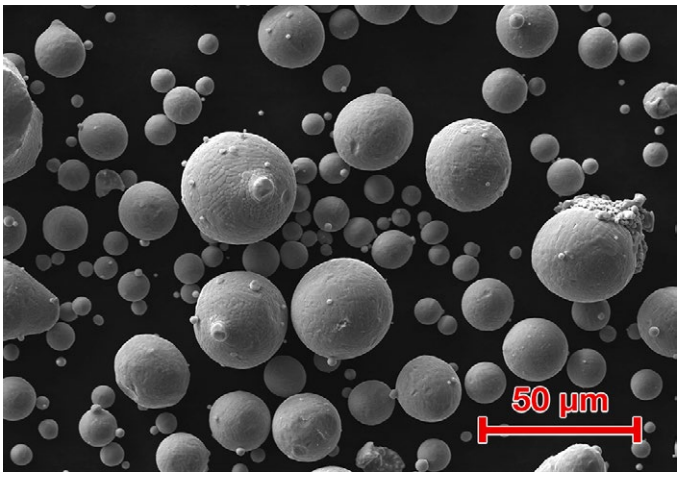
Some relevant applications are:

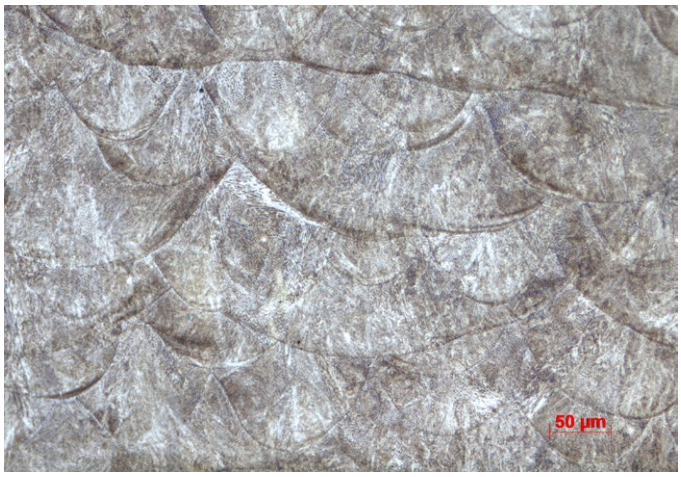
- Tools and dies
- Plastic injection molds
- Aerospace applications
- Chemical processing equipment
- Nuclear applications
- Oil and petrochemical refining equipment
- Food processing equipment
- Surgical parts

Product	MetcoAdd 15-5PH-A	MetcoAdd 15-5PH-B
Nominal Chemistry	Fe 15Cr 4.5Ni 3.5Cu 0.3Nb 0.07C	
Nominal Size (µm)	-45 +15	-90 +45
Process	LB-PBF	DED

Similar To:
UNS S15500
AMS 5659

MetcoAdd C300





A FeNiCo-based powder similar to 18 Ni maraging steel (M300 type). The chemical composition is similar to that of AMS 6514, Werkstoff Nr. 1.2709 / X3NiCoMoTi 18-9-5 and UNS K93120. The material is optimized for producing additive manufactured components using Laser Powder Bed Fusion (LB-PBF).

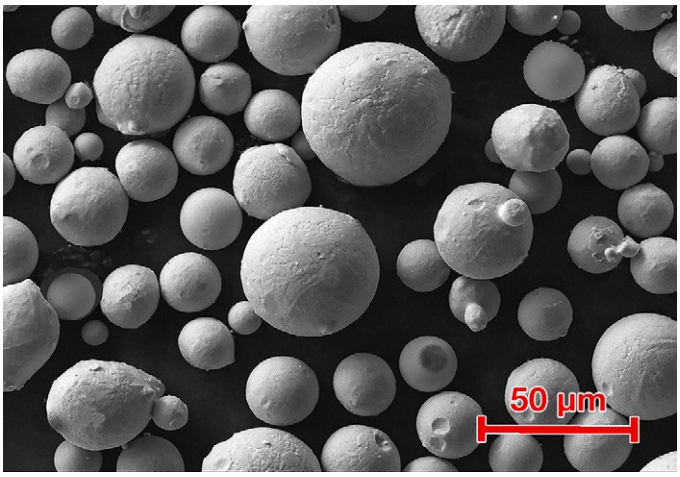
Some relevant applications are:

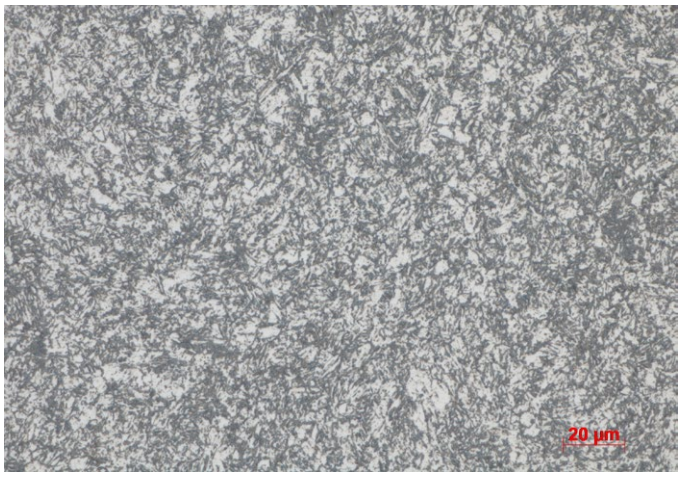
- Tools and dies
- Plastic injection molds
- Light metal and pressure die casting
- Cold extrusion tooling

Product	MetcoAdd C300-A
Nominal Chemistry	Fe 18Ni 9Co 5Mo
Nominal Size (µm)	-45 +15
Process	LB-PBF

Similar To:
UNS K93120
AMS 6514
DIN 1.2709/X3Ni-CoMoTi 18-9-5

MetcoAdd H13 Series





Martensitic, iron-chromium, air-hardenable steel powder products with chemistries similar to AMS 6408, AISI H13, ASTM H13, SAE H-13 and Werkstoff No. 1.2344 / X40CrMoV 5-1-1. Room temperature static properties of LB-PBF processed and heat treated material coupons have been shown to be comparable to those of AMS 6408.

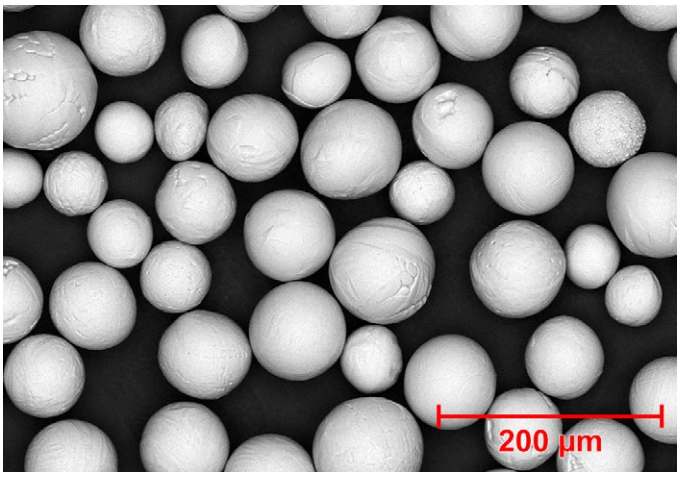
Some relevant applications are:

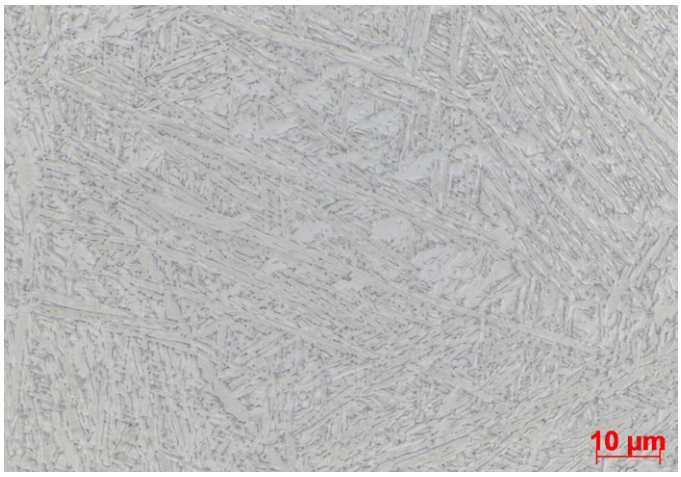
- Hot work dies for casting
- Casting dies for aluminum and magnesium
- Hot forging and stamping dies
- Hot shear blades
- Plastic injection molds

Product	MetcoAdd H13-A	MetcoAdd H13-B
Nominal Chemistry	Fe 5Cr 1Mo 1Si 1V 0.4C	
Nominal Size (µm)	-45 +15	-90 +15
Process	LB-PBF	DED

Similar To:
AISI H13
ASTM H13
SAE H-13
DIN 1.2344 / X40CrMoV 5-1-1

MetcoAdd Ti64 Series





MetcoAdd Ti64-G23A&C are designed for the manufacture of high-performance components using the Laser Powder Bed process. MetcoAdd Ti64-G23E is a coarser version designed for the manufacture of components using DED process or using the Electron Beam Melting (EBM) process. MetcoAdd Ti64 powders are field-proven to repeatedly and reliably produce densely printed parts. These products are characterized by high purity, excellent powder flowability and high packing density resulting in optimal and repeatable results for additive manufacturing.

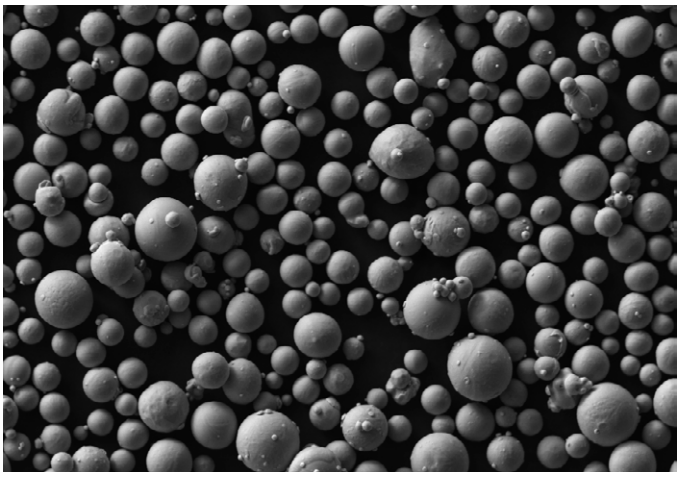
Some relevant applications are:

- Aerospace and defense
- Automotive and racing
- Medical and dental
- Maritime
- High-end sports equipment
- Jewelry and art

Product	MetcoAdd Ti64-G23-C	MetcoAdd Ti64-G23-E	MetcoAdd Ti64-G5-B
Nominal Chemistry	Ti 6Al 4V		
Nominal Size (µm)	-53 +15	-106 +45	-63 +20
Process	LB-PBF	DED, EB-PBF	LB-PBF

Similar To:
UNS R56401
ASTM B348

MetcoMed Ti-64 G23-C



A Ti-6Al-4V alpha-beta alloy powder with a chemistry similar to IASTM B348, F136, F3001; UNS R 56401. The material is optimized for producing additive manufactured components using Laser Powder Bed Fusion (LB-PBF).

Some relevant applications are:

- Medical: Orthopedic implants

Product	MetcoMed Ti-64 G23-C
Nominal Chemistry	Ti 6Al 4V
Nominal Size (µm)	-53+20
Process	LB-PBF

Similar To:
ASTM B348, F136, F3001;
UNS R 56401

Additive Manufacturing Materials

Advanced Technology Solutions and Services

Perfect solutions through optimum materials and innovative technologies

Oerlikon Metco is a global leader in surface engineering solutions and services offering:

- A broad range of thermal spray, equipment
- Integrated systems and materials
- Specialized coating and surface enhancement services
- Materials designed for thermal spray, additive manufacturing, conductive fillers and other critical, customer-driven needs
- Manufactured components for the turbine, automotive and other industries
- Customer support services

Oerlikon Metco provides a comprehensive manufacturing, distribution and service network, catering to aviation, power generation, automotive and other strategic growth industries.

To take control of your surface engineering and material challenges, contact your Oerlikon Metco sales office,
visit our web site at www.oerlikon.com/metco
or e-mail us at info.metco@oerlikon.com.

About Oerlikon Surface Solutions Division

Oerlikon is a leading global provider of surface and additive manufacturing solutions and services. The division offers an extensive portfolio of market-leading thin-film, thermal spray and additive manufacturing technologies, equipment, components and materials. Emission reduction in transportation, maximized longevity and performance of tools and components, increased efficiency and intelligent materials are hallmarks of its leadership. Pioneering technology for decades, the division serves customers with standardized and customized solutions across a worldwide network of more than 170 sites in 37 countries.

With its technology brands — Oerlikon Balzers, Oerlikon Metco and Oerlikon AM — Oerlikon's Surface Solutions division focuses on technologies and services that improve and maximize performance, function, design, reliability and sustainability, which are innovative, game-changing advantages for customers in the automotive, aviation, tooling, general industries, luxury, medical, semiconductors, power generation and oil & gas markets. The division is part of the publicly listed Oerlikon Group (SIX: OERL), headquar- tered in Switzerland.

Information is subject to change without prior notice.

BRO-0047.5 AM Product Portfolio

oerlikon metco

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info.metco@oerlikon.com