Mediloy® S-CO AND Mediloy® RPD

Non-precious alloy powders for the manufacture of dental restorations using Selective Laser Melting

Partners in Progress

BEGO

Mediloy® S-Co

The non-precious alloy for the production of dental restorations

Product properties

- Mediloy® S-Co is a type 5 cobalt-based dental alloy – Composition of cobalt, chrome, wolfram and molybdenum – especially developed for the SLM production process
- The alloy is suitable for the production of dental restorations from metal powders
- Mediloy® S-Co is supplied as a powder for the SLM process and offers the highest quality for a reliable production process
- Wide range of indications:
  - Crowns & bridges (including metal ceramic)
  - Partial denture frameworks
  - Implant prosthesis
  - Orthodontic applications

Images and illustrations are examples. Colors, symbols, designs, and information on the depicted labels and/or packaging may differ from reality.

Benefits for you

- **Optimal, reproducible production results** thanks to the special development of the metal powder for the additive production of crown and bridge frameworks
- **Excellent flow properties during the production process** with its homogeneous particle shape and distribution
- **High level of patient safety and legal security for the laboratory and/or production centre** afforded by the approval as a class IIb* medical device
- **Smooth and cavity-free framework surface** thanks to the homogeneous, pore-free structure
- **The required material parameters are achieved** thanks to specially adjusted heat treatment
- **Extremely stable construction even in long-span bridges** with its high proof- and tensile strength
- **Very comfortable for the patient to wear** thanks to low heat conductivity (sensitivity to heat/cold)
- **Economical and effective approach in the dental laboratory** due to normal cooling after ceramic firing – thanks to the coefficient of thermal expansion (CTE) of 14.0 (25–500 °C, 10-6 K-1)
- **Best possible allergy safety** with its biocompatible and corrosion resistant materials– free from nickel, cadmium and beryllium

Product details

Composition in % by mass

Co 63.9 · Cr 24.7 · W 5.4 · Mo 5.0 · Si 1.0

Availability	Contents	REF
Mediloy® S-Co	5 kg bottle	50551

Large-span bridge and two-part abutment made of Mediloy® S-Co

* Class IIb medical device according to Council Directive "Medical Devices Directive" 93/42/EEC
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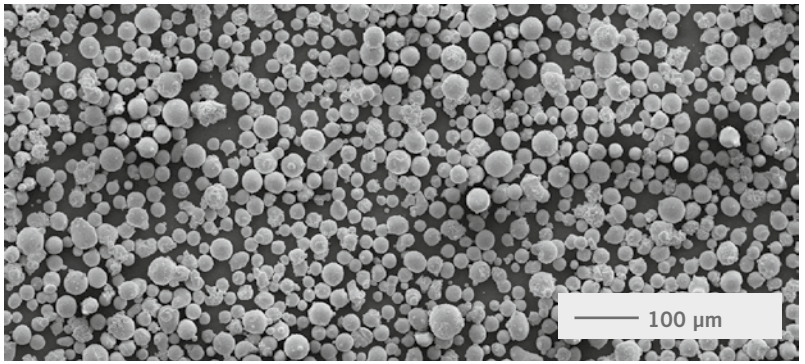
Selective Laser Melting (SLM)

The additive procedure for the manufacturing of crown-, bridge and partial denture frameworks and implant prosthetics

The SLM procedure, co-invented and patented by BEGO offers unparalleled quality in the production of individual, complex metal frameworks. A laser is used to fuse the material together to form a virtually pore-free structure with the best material properties.

The process guides a laser based on your CAD data. Based on the indication, the laser builds the framework layer by layer from the select metal powder (Mediloy® S-Co or Mediloy® RPD) in an additive process.

BEGO has been using this technology for more than 20 years to manufacture crowns and bridge frameworks from Wirobond® C+, dispatch and process them in the dental laboratory where they are veneered with ceramic.



Homogeneous particle size distribution and ideal spherical shape 10–45 µm

With the BEGO powder alloys Mediloy® S-Co and Mediloy® RPD, BEGO offers two alloy powders for the production of high quality dental restorations in SLM systems in the dental laboratory or production centre.

Mediloy® S-Co and Mediloy® RPD were developed based on the long-established and trusted BEGO cast alloys and optimised for the SLM production process.

SLM partial denture framework made of Mediloy® RPD and bridge framework made of Mediloy® S-Co

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Mediloy® RPD

The non-precious alloy for the additive production of partial denture frameworks

Benefits for you

- **High level of patient safety** provided by applying decades of casting alloy innovations to additive manufacturing powder alloys
- **Ideal material properties of the manufactured framework** thanks to the custom development of Mediloy® RPD specifically for additive production of partial denture frameworks
- **Reproducible production** due to homogeneous particle shape and distribution
- **Excellent flow properties during production** afforded by the ideal spherical particle shape
- **High level of patient safety and legal security for the laboratory and/or production centre** due to the approval as a class IIa* medical device
- **Excellent fit even in complex situation** ensured by the specially adjusted heat treatment
- **Optimal activation of the clasps** thanks to the high ductility of the material
- **High fatigue strength** thanks to the homogeneous and pore-free material structure
- **Excellent economic efficiency** through digital CAD design and CAM production

Product features

- Developed based on BEGO tried and true partial denture casting alloys used millions of times globally, Mediloy® RPD offers outstanding product safety
- Mediloy® RPD also meets the requirements of the US standard ASTM F-75 for surgical implants
- Mediloy® RPD CAD/CAM frameworks produced by laser melting have a virtually pore-free microstructure, while the heat treatment adjusted to the alloy allows a precision fit
- The downstream processing and final polish are comparable to conventional production, making it easy for the dental laboratory to create a smooth and high gloss partial dental framework
- The laser melting process is extremely economical and allows great freedom of design

Mediloy® RPD partial denture frameworks – polished and blasted

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Product details

Composition in % by mass

Co 66.2 · Cr 28.2 · Mo 5.5 · N <1

Availability	Contents	REF
Mediloy® RPD	5 kg bottle	50532

Mediloy® RPD partial denture frameworks for upper jaw – polished and blasted

* Class IIa medical device according to Council Directive "Medical Devices Directive" 93/42/EEC

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Physical material data

Alloy features	Mediloy® S-Co	Mediloy® RPD	Requirements ASTM F-75
Standards	ISO 22674 and ISO 9693	ISO 22674	ASTM F-75
Particle size [µm]	10–45	10–45	10–45
Particle shape	round/spherical	round/spherical	round/spherical
Type acc. to ISO 22674	5*	5*	–
Solidus-/liquidus temperature [°C]	1,390 °C/1,425 °C	1,380/1,420 °C	–
Density [g/cm³]	8.6*	8.5*	–
Modulus of elasticity [GPa]	228/238*	235*	–
0.2 % proof strength [MPa]	1,000/755*	800*	> 450
Elongation at fracture A_5 [%]	8/5*	13*	> 8
Hardness [HV10]	470/425*	395*	–
Colours	white**	white**	white**
CTE 25–500 °C, 10-6 K-1	14.0/13.7*	–	–
Composition in % by mass			
Co	63.9	66.2	Balance
Cr	24.7	28.2	27–30
Mo	5	5.5	5–7
W	5.4	–	< 0.2
Si	1	–	< 1
S	–	< 0.1	< 0.25

* simulated ceramic firings/stress relieving 800 °C
** BEGO colour code

Accessories

Form of delivery	Contents	REF
Laser wire, Wiroweld		
• Ø 0.35 mm; 2.0 m – 1.5 g	1 unit	50003
• Ø 0.50 mm; 1.5 m – 2.0 g	1 unit	50005
Lot, Cobalt chrome solder	1 unit	52520
Flux, e.g. minoxyd	1 unit	52530

Information on compatible devices for additive production is available on request

Additive production

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