Precious metal-free alloy

CADtools Cobalt-Chrome Dental Alloy

Delivery forms
Blank diameter: 98.5 mm step
Heights: 10, 12, 13.5, 15, 18, 20 mm

Instructions for use
Please read the contents of this instruction manual carefully. For general and technical
questions we are at your disposal under the telephone number: +49 821 455252-0 .

Description
CADtools Cobalt-Chrome Dental Alloy is an alloy free of precious metals in accordance with
ISO standard 9693: 2012 and 22674: 2016 for the manufacture of medical devices using
subtractive manufacturing processes. The alloy is suitable for the production of crowns,
bridges and abutments manufactured using milling technology, in the form of fixed and
removable dentures as well as for metal-ceramic.

Design
The design must be crated in accordance with dental technology standards in order to meet
the necessary mechanical requirements.

Milling
The processing can be done with all milling machines suitable for CoCr. The supply of coolant
depends on the milling strategy used and the associated milling parameters. The milling cutters
to be used for the material should be agreed with the milling machine manufacturer beforehand.

Separation
The milled structures can be separated out of the blank with cross-cut hard metal burrs suitable
for CoCr alloys or with suitable cutting discs.

Further processing
The elaboration and finishing of the frameworks and their surface should be done using clean
hard metal burrs or ceramic-bonded grinding tools or diamond grinding tools. The post-processing
should only be done in one direction on the surface in order to avoid material overlapping.
Otherwise, these can lead to the formation of bubbles in the ceramic veneering. During the process,
pay attention to the maximum speed recommended by the manufacturer for rotating tools. After the
workpiece has been processed, it should be sandblasted with aluminum oxide (125 μm) at a pressure
of max. 3 - 4 bar. The cleaning is to be carried out with steam. The workpiece should no longer
be touched.

Oxidation

The oxidation takes place for 5 minutes without vacuum at the opaque firing temperature. Then blast and clean again as described above.

Firing

CADtools Cobalt-chrome Dental Alloy can be veneered with all commercially available ceramic materials with a suitable CTE. Unless otherwise specified by the ceramic manufacturer, slow cooling is recommended.

Soldering

If soldering is required, a solder suitable for the composition and melting range of the alloy to be soldered should be used.

Storage

The product properties are not affected by normal fluctuations in ambient conditions (e.g. temperature, pressure or light).

Disposal

The applicable national regulations and the relevant information in the safety data sheets must be observed.

Safety instructions

Intolerance symptoms with non-precious metal alloys are extremely rare if they are manufactured in accordance with the instructions for use. In the event of a proven allergy to a component of the alloy, it should not be used for safety reasons.

In individual cases, galvanic reactions can occur in the event of contact with other metallic elements and the use of different types of alloys in the same oral cavity.

During the mechanical processing of the alloy, metal dust can be generated. In addition, the machining leads to the development of heat and possibly to the formation of burrs. The processed material could therefore be hot and sharp-edged. When processing at temperatures above the solidus temperature, vapors can be generated. A suitable aspiration system or aeration and ventilation of the workplace must be provided. The use of protective gloves, protective clothing and goggles as well as respiratory protection is expressly recommended. The resulting dusts and vapors are hazardous to health. Individual alloy components can have a carcinogenic effect. Warning notices and safety data sheets must be observed.

Each product is identified with a batch number. For traceability purposes, it is recommended to enter this number on the patient's data sheet.

The product solid is not sterile.

Technical data sheet for CADtools Cobalt-Chrome Dental Alloy
Cobalt-based tooth alloy for ceramics, type 4*
* according to the ISO norm 22674:2016

Chemical composition	Concentration
Co	66 %
Cr	27 %
Mo	6 %
Si, Mn	traces

Material data	
Colour	white
Density	8,4 g / cm³
Melting interval	1307 - 1417 °C
Melting temperature	1470 °C
Upper yield point (Rp 0.2)	395 MPa
Percentage elongation at break	11 %
Modulus of elasticity	233 GPa
Vickers hardness	255 HV10
Coefficient of thermal expansion 25 - 500 °C	$14.3 \cdot 10^{-6}$ K^{-1}
Coefficient of thermal expansion 25 - 600 °C	$14.5 \cdot 10^{-6}$ K^{-1}
Highest firing temperature	980 °C
Cytotoxicity test according to the ISO standard 10993-5	Biological assessment test