Precious metal-free alloy

CADtools Titanium 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 Titanium Dental Alloy is a titanium alloy according to ISO standard 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 titanium. 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 titanium alloys or with suitable cutting discs.

Further processing
The elaboration and finishing of the frameworks and their surface should be done using clean milling tools suitable for titanium.
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. 2 - 3 bar. The cleaning is to be carried out with steam.
If necessary, degrease with ethyl alcohol. Never use hydrofluoric acid!
The workpiece should no longer be touched.

Firing
CADtools Titanium Dental Alloy can be veneered with all commercially available titanium ceramic materials with a suitable CTE.

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
Metal dust and vapors are hazardous to health. A suitable aspiration system should be used when milling. Titanium powder can ignite in the presence of oxygen. It is therefore advisable to mill the metal with a water-based cooling lubricant and a suitable fire protection system.

Intolerance symptoms with non-precious metal alloys are extremely rare if the manufacturing process is followed 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.

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 sold is not sterile.

Technical data sheet for CADtools Titanium Dental Alloy

CADtools Titanium Dental Alloy is manufactured in accordance with ASTM F136.
Dental alloy based on titanium for CAD/CAM milling, type 4

Chemical composition	Concentration
Ti	90 %
Al	6 %
V	4 %
Fe	traces

Material data	
Colour	white
Density	4,4 g / cm^3
Melting interval	1605 - 1660 °C
Melting temperature	1710 °C
Upper yield point (Rp 0.2)	880 MPa
Percentage elongation at break	14 %
Modulus of elasticity	114 GPa
Vickers hardness	312 HV10
Coefficient of thermal expansion 25 - 600 °C	$10{,}0 \cdot 10^{-6}\ K^{-1}$
Cytotoxicity test according to the ISO standard 10993-5	Biological assessment test