

remanium® 

THE ALLOY

A success story since 1935*



remanium® 

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Details

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Printed in Germany

01/15

* The brand name remanium® was given 30 years after the non-precious metal alloy remanit was introduced into the market.

THE ALLOY

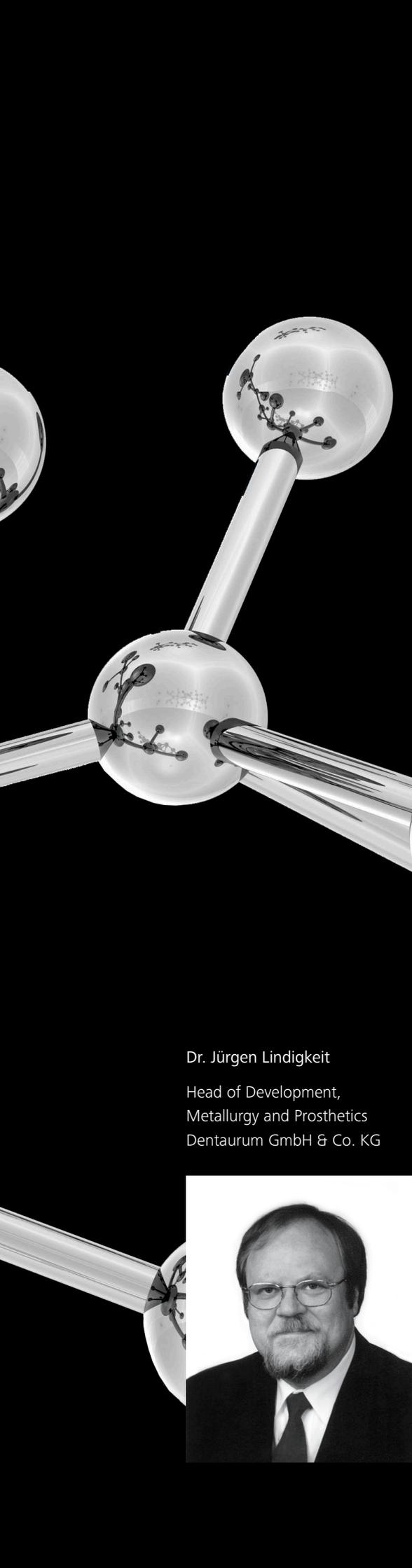


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1



Dr. Jürgen Lindigkeit
Head of Development,
Metallurgy and Prosthetics
Dentaurum GmbH & Co. KG



FOREWORD

Dear Reader,

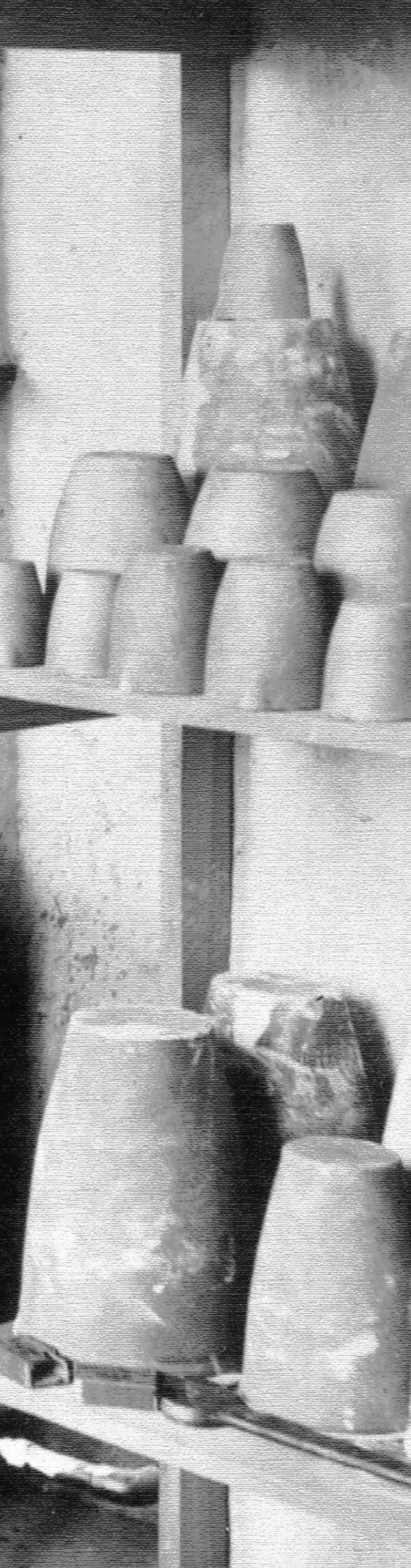
Metals are indispensable in dental prosthetics: They are one of the most durable prosthetic materials and have been well proven over many years. The remanium® alloys have formed an integral part of dental prosthetics for 80 years. As an engineer and materials expert, I have been convinced of this alloy for many years. I am therefore all the more delighted to see this commitment confirmed through the ever increasing importance of non-precious metal alloys today. At the same time, the challenge of making the remanium® alloy fit for a future in prosthetics for our customers remains. This remanium® Compendium provides you with easy-to-read, valuable information and presents the services offered by Dentaurum surrounding this metal alloy family. We hope that you will make use of this offer and continue to support our efforts.

Your Dr. Jürgen Lindigkeit

2



The Arnold Biber Foundry around 1900



HISTORY

2



HISTORY

2

Arnold Biber, Pforzheim ✕ ✕ (Baden)

Fabrikation zahntechnischer Utensilien.

Fugenlose Goldkronen

Preise: Halbene 22 Karat *fl.* 2,00, 20 Karat *fl.* 3,40,
Vierstücker 22 *fl.* 4,40, 20 *fl.* 5,40.

Fugenlose Helvetia-Kronen

per Stück *fl.* 1,80, 20 Stück sortirt im Kistl *fl.* 72,—.

Viereckige u. runde fugenlose Hülsen

in Platina und Dental-Alloy

mit passenden Stiften, zur Herstellung von abstrakturen
Stiften und Brücken; vier verschiedene Größen mit
massiven Stiften und Doppelfeder-Stiften.

Vorzügliche Gebissfedern in Gold und Helvetiametall.

Doppelschutzplatten

(Patent von Zahnart. Schmid, Zürich)

abnehmbare Porzellanfronten

aus gewöhnlichen Crampen-Zähnen bei feststehenden Brücken
und Stützplätzen, in Gold, Platina, Dental-Alloy u. Helvetia.

Technische Adhäsions-Metalle

in Gold und Triple
System des Herrn Professor Jang.

Arnold Biber, Pforzheim ✕ ✕ (Baden)

liefert stets prompt

für zahntechnische Zwecke

Feingold

Feingold mit Platina einlegirt

(mit hohem Schmelzpunkt für Brückenarbeiten).

Platina-Feingold elektrolytische Platina, anodische
Feingold für Brücken
und Kronen sowie zum Überbeschichten.

Goldblech in 22 und 30 Karat.

Goldblech u. Draht in 16, 14 u. 12 Karat.

Feinsilber in Blech und Draht.

Reines Platina in Blech und Draht.

Platin-Silber (Dental-Alloy)

Triplé. Einzig richtiger Ersatz für Gold in Blech
und Draht.

Alle unechten zahntechnischen Metalle

in Gold und Platina-Farbe.

Goldlöte in allen Karaten

Groß- und Feinlötlöte.

Anerkennungsschreiben hervorragender Fachmänner.



The founder, Arnold Biber



Advertisement from the company Arnold Biber in the year 1891

Dentaurum's product range has changed many times over the last 129 years of company history. Not many dental products have managed to successfully maintain their position in the market over so many decades. remanium® is a product that has continued to advance and develop and has adapted to the technical progress in dental technology. Today the remanium® alloys are amongst the best known dental products in the dental field and look back at a long product history.

The origins of Dentaurum

1886

The origins of Dentaurum date back to the 19th century. In 1886 Arnold Biber founded a dental laboratory in Pforzheim, which ultimately became the Biber Dental Company. An advertisement from the year 1891 shows the company's product range. It includes some innovative semi-finished products and prefabricated parts but also an impressive array of dental metals manufactured by the company itself. Apart from precious metals, it listed a range of "false dental metals". This was a first indication of the non-precious metal materials which were to play such a significant role in the company's future.



A success story since 1935



The production of instrument cabinets and dental furnishings in Pforzheim in 1920



Dental laboratory, Arnold Biber, The Gold Department, Pforzheim in 1920

1908 In 1908 Fritz Winkelstroeter took over the Biber Company and expanded the product range, at the same time taking care to maintain the high Biber quality expectations.

1912 At this time, researchers from the material sector were developing a stainless steel metal. In 1912 it was introduced to the market under the brand name V2A and within a few years was being used in a wide variety of technical fields.

Back then, the situation in dental prosthetics was similar to today. The market price for gold and platinum was high and the search was on for alternatives to these precious metals. It had to be a material resistant to corrosion, suitable for use in the mouth and considerably lower in cost.

With this knowledge, a castable steel alloy was developed. Using this metal it was possible to create partial restorations for the partially edentulous jaw. By adding further constituents the hardness of this alloy was reduced, so that its range of indications was not only limited to protective plates, bridges, crown caps, etc. This ultimately led to the introduction of the cobalt-chrome alloy.

Tamman was involved with cobalt-chrome alloys even before the first world war. It was the Austenal laboratories such as Erdle and Prange who carried out new experiments in 1929 and subsequently introduced the CoCr alloy into dentistry in 1932. These alloys were very similar to the later developed CoCrNi alloys; they contained almost no iron and were therefore not specified as steel.

1929

1932

At this time, as a result of the poor economic situation and the gold scarcity, Dentaurum turned to the new non-precious alloys which became known as Remanit.

HISTORY

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Remanit

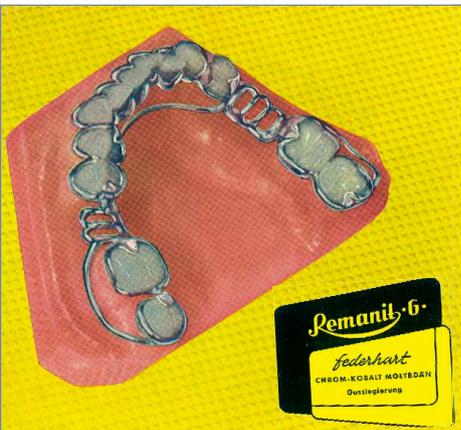


Remanit G soft, CrNi, D&B

R A G

Arbeitsgemeinschaft

M O D E L L G U S S



Model with Remanit G – spring-hard



Advertising poster Remanit G



Remanit G spring-hard, CrCoMo

1935 **T**he cobalt-chrome alloy named Remanit, which was introduced into the market in 1935, already had the characteristics and alloy components that can still be found today in the high quality cast partial denture alloys under the name of remanium® (since 1964).

1962 Bonding alloys have been available in German laboratories since 1962. For the first metal-ceramic combination, a gold-platinum based metal was used. By the end of the '60s and in the early '70s the first bonding alloys were used that did not contain any precious metal constituents. In the early '70s these non-precious metal alloys became popular due to the steep rise of the gold price and the fact that these alloys were not just cheap alternatives, but instead had material specific properties that provided a wide range of advantages over precious metals.

The first non-precious alloys were nickel-chrome alloys with up to 2% beryllium. Due to strong qualms concerning the biological safety of the beryllium content with regards to toxicity and carcinogenicity, alloys containing beryllium did not succeed on the German and European markets.

In the early '80s, the cobalt-chrome cast partial denture alloys were modified so they could be used as crown and bridge alloys as well as bonding alloys. One example of this development is the alloy remanium® CD. Dentaurem started producing this alloy in 1982 using investment casting methods in the new vacuum melting and casting system.

1982

HISTORY

2

remanium[®]

Co Cr Modellguß-
legierungen
in neuer Form und
Ausführung

Superhart für starre
Konstruktionen.
Federnd bei graziler
Klammergestaltung.
Dünflüssige Schmelze,
leichte Bearbeitung.
Brillanter Glanz,
mundbeständig,
gewebefreundlich.
Preisgünstig.



DENTAURUM

Tel. 072 31/803-0
7530 Pforzheim
Postfach 440

Advertising poster remanium[®] 1984

remanium, nickelfreie Feingußlegierung mit mikrofeiner Kornstruktur für beste, weit über
der DIN-Norm liegende physikalische Eigenschaften.

Legiert, abgegossen und geprüft im Hause Dentaurum.



remanium® GM 380, CrCoMo 1964



remanium® CD, CoCrMo, 1982

- | | | | |
|------|---|------|--|
| 1984 | remanium® CS, another non-precious alloy, followed in 1984. | | |
| 1985 | The melting plant was expanded in 1985 and enabled the alloys to be produced using the strand casting method under vacuum and protective gas. The alloys remanium® GM 380, remanium® GM 700 and remanium® G soft were produced in this plant. The initial casting capacity of 30 kg was gradually increased to 400 kg per day. | | |
| | The new CoCr non-precious alloys for fixed dental restorations aroused great interest in the dental world, but at the same time, they sparked some fierce opposition. | | |
| 1989 | An extremely well attended, neutral discussion forum took place on October 14, 1989 in Pforzheim. The symposium organized by Dentaaurum was titled "Dental Super Alloys". Under the scientific leadership of the Swiss dentist Prof. J. Wirz, a series of experts presented their independent opinion on non-precious alloys. | | |
| | The introduction of the Medical Device Act in 1995 meant that dental alloys had new legal requirements and specifications, similar to the German Drugs Act. Proof of fulfillment of the requirements was the CE mark, as it is still today. All Dentaaurum alloys have had this certificate of conformity since March 1, 1995. | 1995 | |
| | The casting alloy remanium® GM 900 was an innovation for dental technology. The titanium and carbon-free casting alloy was characterized by excellent laser melting properties. | 2000 | |
| | The crown and bridge alloys were now being produced using the strand casting method. At this time, the new alloy remanium® star was introduced to the product range, a CoCr alloy with a particularly low degree of hardness. | 2003 | |
| | In 2005 came remanium® segura, an extremely reliable and user-friendly CoCr alloy. In the same year remanium® LFC was introduced into the Dentaaurum product range, an alloy that had a thermal expansion equivalent to the high gold content "biocompatible" alloys and could be veneered with the same special ceramic materials. | 2005 | |



HISTORY

2



Process for the
production of
milling blanks

Today, high-tech processing has become reality for the production of dental restorations in Europe. In Germany, CoCr prosthetics are increasingly produced in specialized manufacturing centers using milling and laser melting techniques. This marks a paradigm shift in production techniques, but it also emphasizes the importance of a close collaboration between the system provider and material supplier, to enable the safe, reliable processing of a clinically proven metal alloy using state-of-the-art production methods.

Dentaurum has developed a successful method for producing dental alloy milling blanks with distinctly improved mechanical properties in comparison to the objects produced via casting methods. The structure of an alloy produced using this method is much finer and absolutely free from pores and cavities, whilst it still has the same chemical composition. The advantage is the improved mechanical properties. The time required for milling and possible fine manual finishing by the technician is greatly reduced due to the improved machinability.



Casting procedures

It is essential that the alloy used has previously been processed in the laboratory via conventional casting methods, so that the biological compatibility and clinical experience can be trusted and guaranteed.

Dentaurum provides an optimal basis for the production of economical and yet high quality prosthetic restorations, with a safe alloy, well proven for many years, and state-of-the-art manufacturing methods using first-rate machine technology.

The most recent technology for the computer aided manufacture of dental restorations is based on powder metallurgy. In contrast to milling, the material is not ground from a solid blank, but instead built-up, layer by layer with a metal powder. The software "slices" the pattern virtually into thin layers. This method is known as selective laser melting (SLM).

SLM technology – powder laser melting

The special equipment required for this process originates from the industrial field of mold construction and rapid prototyping, and has been adapted for use in the dental field. The advantage of this technology is the extremely economical use of material. The fact that the material is built-up means only as much powder is melted as is necessary for the production.

At the moment, this method is only used for CoCr alloys and titanium. Apart from the machines used, the quality of a prosthetic structure depends on the type of metal powder used: Composition, type of powder, grain size and grain distribution, all determine the quality and precision of the fabricated parts.

Manufacturers such as Dentaurum have extensive proficiency and know-how in producing powders due to their long-term experience in the orthodontic sector.

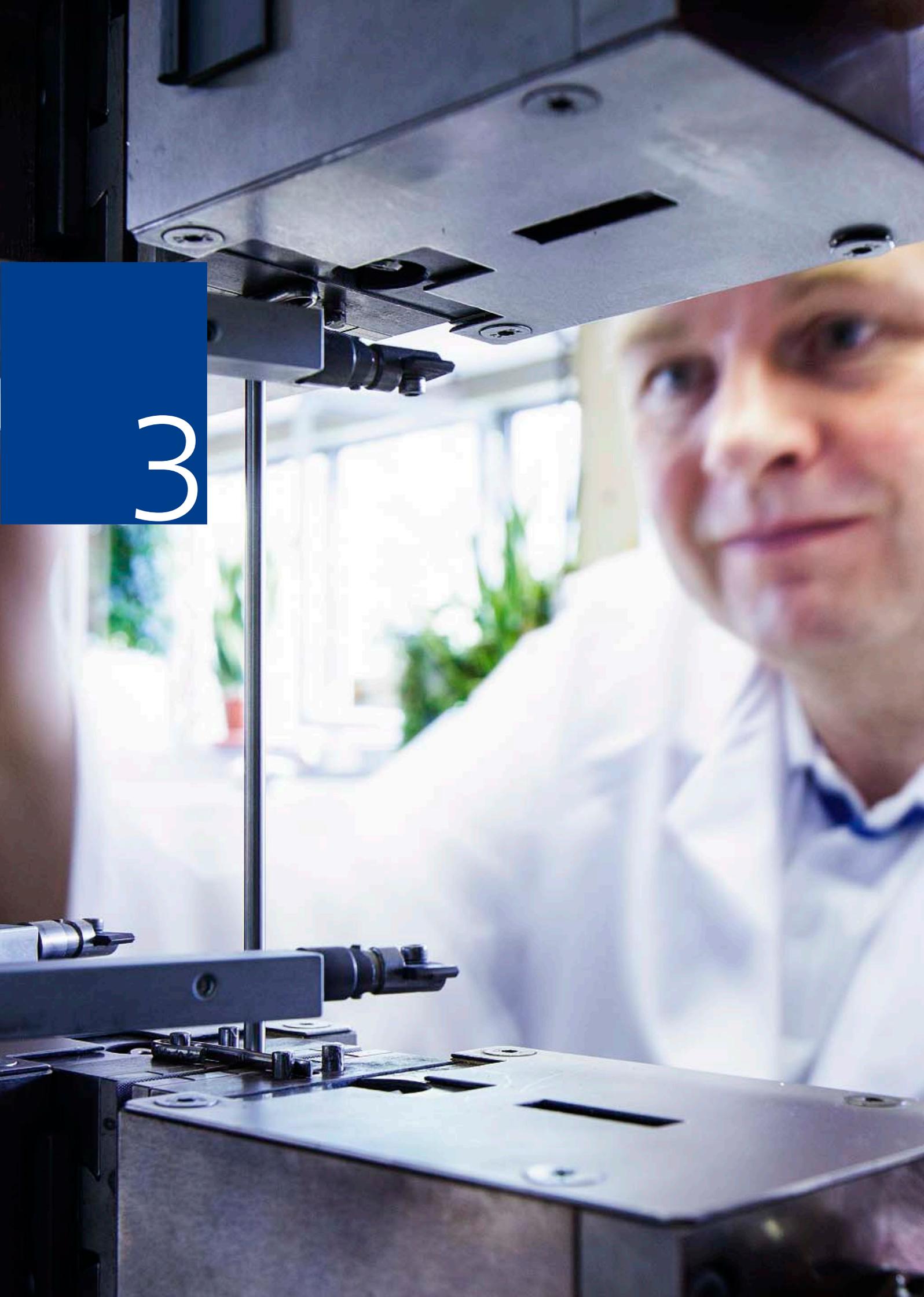
The remanium® non-precious dental alloys by Dentaurum symbolize quality in the prosthetic field and are used a million times over in laboratories.

In order for these new technologies to achieve optimal results, it is essential to implement clinically proven alloys. The long-term, clinically proven CoCr casting alloy remanium® star is available for all three techniques in identical quality: in form of the well known casting ingots used for dental precision casting, the milling blanks available since 2008 and the micro powder for the SLM technique available since 2010.

2008

2010

3



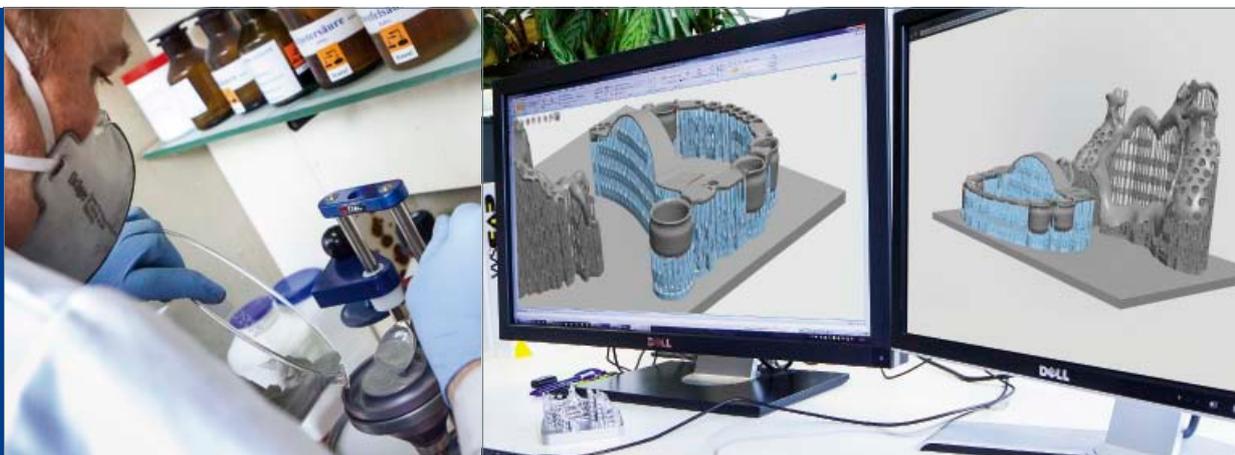


RESEARCH
DEVELOPMENT
MANUFACTURE

3

RESEARCH

3



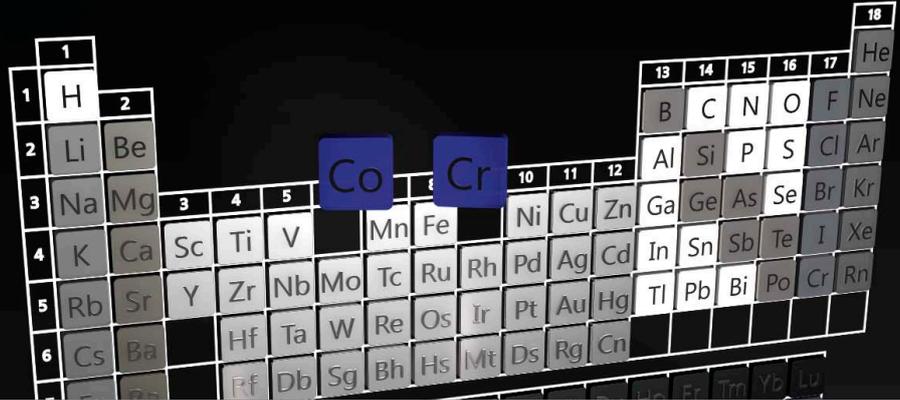
The remanium® non-precious dental alloys by Dentaaurum symbolize quality in the prosthetic field and are used a million times over in laboratories. In some areas, metal frameworks are struggling against an increasing number of ceramic solutions; however, ceramic frameworks offer only a limited range of indications compared to metal frameworks. Metal prosthetic materials, in particular the non-precious CoCr alloys, will therefore remain the basis of well proven prosthetic concepts in the future. Dentaaurum regards proven materials for crown and bridge frameworks as the key to high quality dental restorations and a high degree of patient satisfaction. Our alloys guarantee maximum quality. Numerous employees at Dentaaurum are committed to constantly improve our development, production and quality assurance, to guarantee and maintain the recognized and well proven high quality of remanium® alloys.





RESEARCH

3



Alloy elements and their effects

In Europe, CoCr alloys are by far the most popular non-precious dental alloys in use. They are more successful than the NiCr alloys due to the risk of sensitization to nickel.

COBALT

Element symbol	Density	Melting point
Co	8.9 g/cm ³	1495 °C/2723 °F



In CoCr alloys, cobalt is the main constituent. This element essentially determines the mechanical properties of the alloy (e.g. modulus of elasticity) and in casting alloys the thin flowing properties of the molten metal (good castability).

CHROME

Element symbol	Density	Melting point
Cr	7.2 g/cm ³	1890 °C/3434 °F



Chrome gives the alloy its resistance to corrosion. In bonding alloys it is responsible for the bonding oxide which creates the excellent metal-ceramic bond strength.



MOLYBDENUM



Element symbol	Density	Melting point
Mo	10.22 g/cm ³	2610 °C/4730 °F

Molybdenum increases the flexibility and the chemical resistance. Its high melting point contributes to the finely grained metal structure. In addition to this, it protects the alloy from undesirable carburization.

TUNGSTEN



Element symbol	Density	Melting point
W	19.2 g/cm ³	3410 °C/6170 °F

Tungsten has a similar effect to molybdenum. In contrast to Mo, W creates a lower thermal expansion (CTE).

TANTALUM



Element symbol	Density	Melting point
Ta	16.6 g/cm ³	2996 °C/5425 °F

Tantalum increases the mechanical strength and resistance to corrosion. In contrast to carbon, it does not form carbides.



RESEARCH

3



SILICON

Element symbol	Density	Melting point
----------------	---------	---------------

Si	2.33 g/cm ³	1410 °C/2570 °F
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Silicon is mainly used to influence the flow of the metal. In addition to Co it increases the easy flow properties of the molten metal and enables finely detailed parts to cast completely.

Further elements < 1 %

Apart from these, there are other elements which are often added to the alloy in tiny quantities (smaller than 1%), but which are nonetheless important:

MANGANESE

Element symbol	Density	Melting point
----------------	---------	---------------

Mn	7.43 g/cm ³	1245 °C/2273 °F
----	------------------------	-----------------



Manganese acts as a deoxidizing medium during melting. It combines with oxygen to form oxides, which rise to the surface of the molten pool. This so-called slag is then removed and so the melt is cleaned.



CARBON



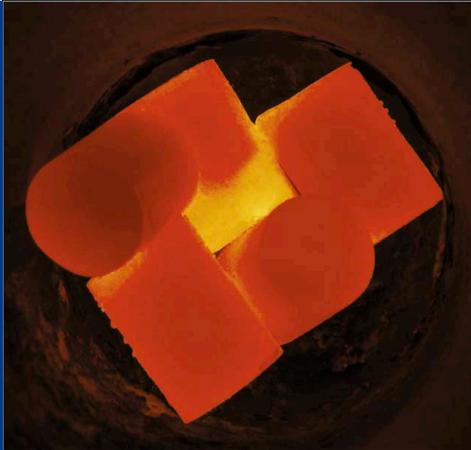
Element symbol	Density	Melting point
C	3.51 g/cm ³	3547 °C/6417 °F

Carbon is a carbide former (chromium carbides) and is important for strength and hardness. If the content of C is too high (approx. > 0.2%) laser welding becomes more difficult. Carbonaceous alloys are only very limitedly suited for the SLM technique.

NITROGEN

Element symbol	Density	Melting point
N	3.51 g/cm ³	-210 °C/-346 °F

Nitrogen gives high strength and at the same time good ductility. Nitrogen is a gas so the quantities to be used are limited or require special metallurgic measures.



Together, the departments “Metallurgic Development” and “QM Metals” prepare the supply specifications for the relevant raw materials. For only the best materials achieve the best outcomes.

Cast partial denture alloys

Apart from the main constituent cobalt and about 27–32% chrome, high quality CoCr cast partial denture alloys also contain approx. 5% Molybdenum, up to 1% each manganese and silicon and up to 0.5% carbon. This produces excellent melting and casting characteristics with a high strength, resistance to corrosion and physiological compatibility. Good CoCr alloys are also free from nickel.

Crown and bridge alloys

In contrast to cast partial denture alloys, CoCr alloys for fixed restorations are usually free from carbon. Not only does this reduce the hardness but the thermal stability of the structure is also increased. Within the last few years this factor has become more advanced and an alloy such as remanium® star now has a much lower degree of hardness at 280 HV. The thermal expansion must be compatible with the dental ceramic. Today, there are CoCr alloys available for use in the conventional CTE range as well as for high expansion ceramics. Typical alloys contain approx. 50–70% Co, 20–30% Cr and 5–6% Mo. Molybdenum can be either partially or completely substituted by tungsten. Other alloy elements could be niobium, manganese and silicon. Precious metals such as gold and platinum are not eligible for CoCr alloys. High quality CoCr alloys are also free from indium, gallium, nickel and iron. When a CoCr bridge framework is milled, it is important to ensure that no coarsely grained casting blocks are used, instead finely grained microstructures are required.



DEVELOPMENT

3





The department “Metallurgy Development” deals with the development, examination and testing of the metallic raw materials and products within Dentaaurum’s product range, long before they reach the market.

A special vacuum casting unit is used for melting and casting small amounts of metal (max. 1 kg). This means that trial batches can be created before the real production begins.

In the metal laboratory there is equipment available for metallographic examination, testing, light microscopy and digital documentation. The analysis is carried out on a spectrometer. There is also equipment for testing mechanical properties, measuring the degree of hardness and carrying out electrochemical corrosion tests. Other tests and examinations are carried out by external institutes, universities and service providers.

Numerous patents in the alloy sector have been achieved thanks to the innovative strength of the “Metallurgy Department” in this field.

In order for us to keep up with developments and trends in the dental trade, it was essential to adapt our materials so that they are not exclusively classical casting alloys but are also optimally suited for modern processing methods for dental restorations, such as milling and laser melting.

Our patented, clinically proven, non-precious alloy remanium® star has been available in the form of a milling blank since 2008. These milling blanks are characterized by their strength, homogenous structure and the fact that they are completely free from pores. They are made using complex procedures such as hot isostatic pressing technology (HIP), which we carry out in collaboration with our partner companies. Recently, we also introduced a second line of milling blanks, which due to their lower manufacturing expenses, are an interesting alternative in terms of price. We call these two types of blanks remanium® star MDI and remanium® star MDII.

Dentaurum & Concept Laser

Synergies between the leading supplier of clinically proven non-precious alloys and the pioneer in the sector of generative metal laser melting technology (LaserCUSING® process).

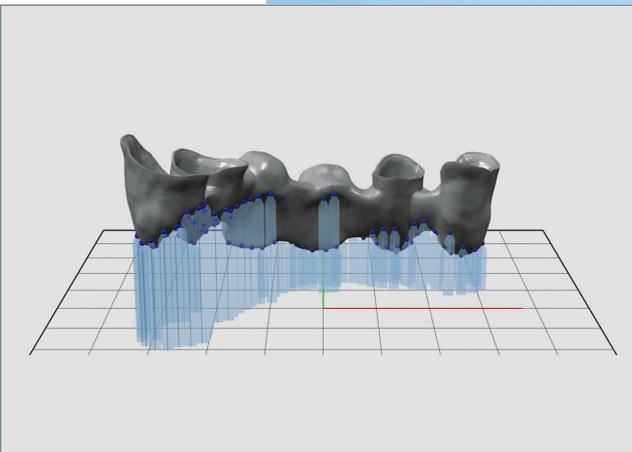
**Laser melting technology**

Concept Laser, a company based in Lichtenfels, Bavaria, is specialized in generative metal laser melting, a highly modern procedure that originated from rapid prototyping. During the laser melting procedure, a fine metal powder is melted locally with a laser beam. Following setting, the material solidifies. The contour of the component is produced by directing the laser beam using a mirror deflecting unit (scanner). The component is built up layer by layer (at a layer thickness of 20–50 µm), by lowering the bottom of the installation space, applying more powder and melting again.

Laser melting is an extremely cost efficient process for producing copings and bridge frameworks from an alloy powder. The finished product complies with the high specifications in the Medical Devices Act.

Concept Laser and Dentaurum have been working together in close collaboration for many years to produce remanium® star CL, the laser melting alloy powder.

CONCEPTLASER
hofmann innovation group





MANUFACTURE

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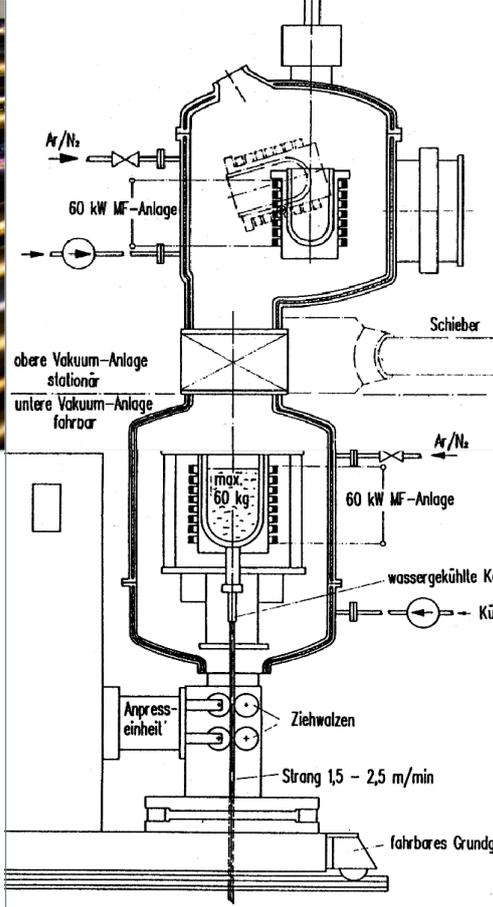
Dentaurum is one of the few companies where development, manufacture and sales are all under one roof. The dental casting alloys are produced in our own casting facilities.

After the raw materials have been weighed, they are melted in a vacuum induction furnace. This melting unit is similar to open induction furnaces, but is equipped with a vent duct and a vacuum pump that create a vacuum.

The material is melted in the melting crucible as follows:

The metal is subjected to an electromagnetic alternating field. An electrical current is induced within the metal which heats the metal causing it to eventually melt.

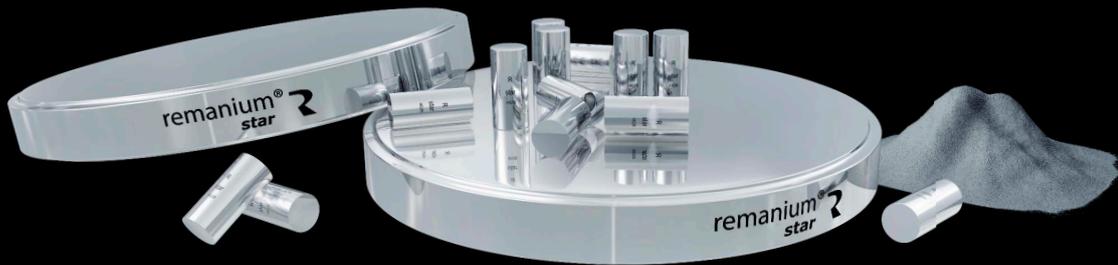
The advantage of vacuum metallurgy in comparison to the open melting methods is the fact that the reduced pressure over the liquid metal creates a protective gas atmosphere.



Strand casting system

Dentatum uses the strand casting method to shape its casting ingots. The vacuum strand casting system was specially developed for alloys containing cobalt and nickel. The equipment stands in a vertical position, and consists of two vacuum induction melting units, one on top of the other. The strands are automatically produced in 5 m lengths and cut to 16 mm segments for further use in the dental field.

Manufacturing methods



Standard milling blanks

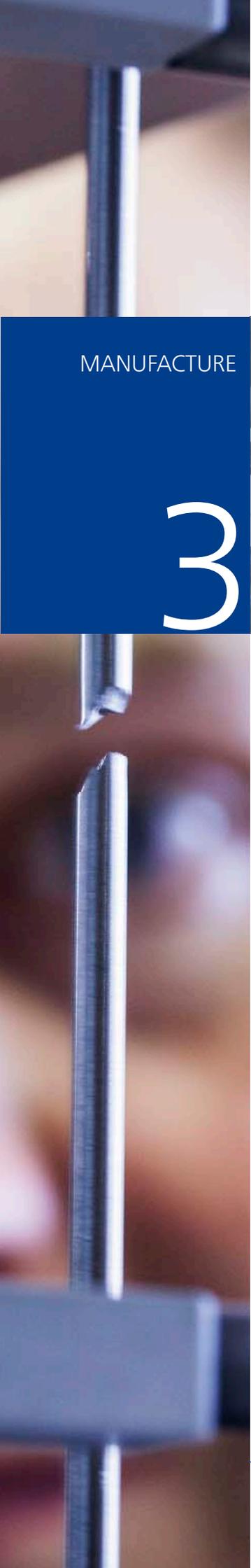
Standard milling blanks are produced by Dentaureum in a special investment casting method, where the molten metal is poured into a ceramic form to solidify.

Premium milling blanks

The premium milling blanks are produced using the powder metallurgy method. First the metal with the required alloy constituents is melted. This molten mass is atomized under a protective gas using an annular gap nozzle. The powder is then differentiated into grain sizes by a classifier and sieves. The powder with the required granularity is then compressed and sintered with strong pressure and at a high temperature in the HIP process (hot isotonic pressing). The result of this complex process is an extremely finely grained, 100 % homogenous milling blank with outstanding mechanical properties.

Powder for the SLM process

The powder for the SLM process is produced in a similar way to the manufacturing methods previously described. However, its requirements are even stricter. In order to achieve absolute accuracy using the SLM process, the finest powder with a very narrow grain size distribution is required.



MANUFACTURE

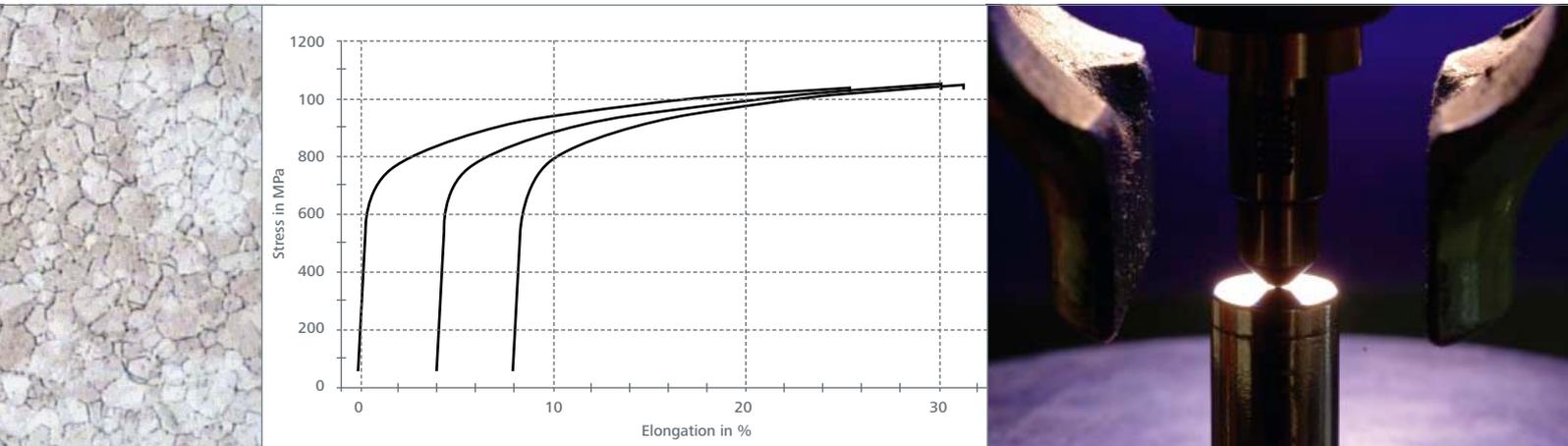
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QM – Quality management

The entire manufacturing process is monitored by a quality management system (QM system). Dentaurem complies with the QM system in accordance with ISO 9001 for development and production, and in addition to this the ISO 13485, which is specifically for medical products. All processes are described in the QM system and compliance is monitored and documented. This starts with the specification of raw materials: 100 % pure metals do not exist, so requirements, such as degree of purity and permissible impurities, must be defined – e.g. cobalt, which is the main constituent of the Dentaurem alloy, must have a purity level of at least 99.8 %.

According to the majority of standards today (ISO 1562, ISO 22674), beryllium, lead and cadmium are prohibited for use in alloys. An alloy with a nickel content of more than 0.1 % may not be described as nickel free. The sourcing of raw materials is strictly controlled by the QM. The permissible level of fluctuation within the alloy constituents is predefined by external specifications.



It takes more than a whole day to produce a casting alloy, during which time the molten metal is checked up to 30 times. Due to this close monitoring, it is possible to correct the composition immediately, which means that fluctuations can be held at a minimum. The chemical composition is controlled by a spectrometer (to be exact, with an optical emission spectrometer – OES).

Its functional principle is based on the physical effects of excitation: The input of energy can raise the electrons into a higher state of energy. When this state is concluded, energy is exuded in the form of specific wave lengths characteristic for each individual substance. These wavelengths are analyzed to give information on the type and amount of substances present.

In this type of analysis, a material sample is “excited” using an electric arc. Small amounts of the material evaporate. The wavelengths of each individual material substance are analyzed and the results show the percentage of each element contained within the material sample. Before testing, the spectrometer is calibrated and set to the values of an exactly analyzed reference material.

The tensile strength test is a standardized destructive test procedure. Test samples with a specifically defined diameter are stretched until breaking point. This determines the material parameters, modulus of elasticity, yield strength, tensile strength and breaking elongation.

4





PRODUCTS

4

PRODUCTS

4





Quality and purity – Made in Germany!

- Development, manufacture and testing by Dentaaurum in Ispringen
- Only the purest raw materials used for all remanium® products
- Highest resistance to corrosion and scientifically proven biocompatibility
- Excellent bonding qualities with ceramic (e.g. ceraMotion® Me)
- Absolutely guaranteed safety and easy processing through decades of experience

The remanium® product family

Traditionally, all alloys are based on the continuously improved cast partial denture alloys. In addition to this, the remanium® wires or wire components have had a very good reputation amongst numerous satisfied users for many decades.

The remanium® alloys for the crown and bridge technique are amongst the top products in a steadily growing market for this group of alloys. They all share the same measurable advantages that stand for the remanium® brand.

An example of this can be seen in the complaint statistics for remanium® alloys:

Within the last 5 years, after strict compliance with a stringent quality management system, only 0.2% of all sold alloys were dealt with as complaints.

remanium® *star*

Characteristics

Modern bonding alloy, type 5, with excellent processing properties and a low degree of hardness. Suitable for all types of processing methods.

remanium® *secura*

Characteristics

CoCr bonding alloy type 5, highly reliable processing characteristics. Excellent casting qualities, including the vacuum pressure casting technique.

remanium® alloys with a CoCr basis

Advantages

- Extremely easy to work with, especially when milling and polishing, due to exceptionally low hardness.
- For all types of processing methods, such as casting, milling, laser melting
- Excellent veneering qualities due to the low coefficient of thermal expansion
- No oxide firing required
- Slow cooling is only recommended for large spanned bridges
- Especially suitable for telescope restorations
- Suitable for laser welding as it is free of carbon

Delivery form

50 g	REF 102-621-00
250 g	REF 102-622-00
1000 g	REF 102-620-00

Advantages

- Excellent melting and casting qualities, especially with the vacuum pressure casting technique due to the short melting time.
- Small ingots (4 g) allow exact dosage of metal alloy: optimal and efficient use of the crucible.
- No danger of spattering or increased slagging
- High mechanical strength due to tantalum-based crystal structure reinforcement
- Optimized veneering qualities due to low oxide formation

Delivery form

50 g	REF 102-631-00
250 g	REF 102-632-00
1000 g	REF 102-630-00



Crown and bridge alloys



Characteristics

Proven long-term clinical results
CoCr bonding alloy, type 5, with a low CTE value.



Characteristics

CoCr bonding alloy,
type 5, very cost effective.
Easy processing properties.



Characteristics

CoCr bonding alloy, type 5, with a high CTE value, for low-fusing, high-expansion veneering ceramics.

A wide spectrum of indications and the highest biocompatibility!

Advantages

- Proven long-term clinical results
- Excellent flow characteristics
- Flexible use: can be cast using high frequency induction casting techniques, also ideally suited for torch melting, due to the fact that it doesn't spatter
- No oxide firing required
- Suitable for laser welding as it is free of carbon

Delivery form

50 g	REF 102-601-10
250 g	REF 102-602-10
1000 g	REF 102-600-10

Advantages

- Very cost effective
- Excellent flow characteristics
- Flexible use: can be cast using high frequency induction casting techniques, also ideally suited for torch melting, due to the fact that it doesn't spatter
- Quick processing:
no oxide firing required
- Suitable for laser welding,
as it is free of carbon

Delivery form

50 g	REF 102-600-02
1000 g	REF 102-600-01

Advantages

- Especially suited for bonding with low-fusing ceramic within the compatible CTE range (LFC)
- Excellent melting and casting qualities using all types of melting and casting techniques
- Easy trimming and polishing
- Free from nickel and beryllium
- High mechanical strength

Delivery form

50 g	REF 102-641-00
250 g	REF 102-642-00
1000 g	REF 102-640-00

Safety due to certified quality

The best biocompatibility:

Laboratory tests prove the outstanding resistance to corrosion; the biological compatibility is confirmed by cytotoxicity tests carried out by independent institutes. Please request our certificates. All CoCr crown and bridge alloys are free from beryllium, iron (except remanium® LFC), nickel, gallium, indium and copper.

remanium®
CS+ 

Characteristics

NiCr bonding alloy, type 3, with an outstanding ceramic bond. Very user-friendly, square casting ingots for quick, reliable casting.

remanium®
CSe 

Characteristics

NiCr bonding alloy, type 3, very easy to use.

remanium® alloys with a NiCr basis

Advantages

- Excellent ceramic bond – even after multiple firings
- No slow cooling required for ceramic firings
- Free from beryllium, biocompatible
- Excellent melting and casting qualities
- High resistance to corrosion

Delivery form

50 g	REF 102-401-00
250 g	REF 102-402-00
1000 g	REF 102-403-00

Advantages

- Especially easy to process due to reduced hardness
- No slow cooling required for ceramic firings
- Free from beryllium, biocompatible
- Quick and easy melting

Delivery form

50 g	REF 102-401-05
1000 g	REF 102-403-05

Crown and bridge alloys



Characteristics

Well proven NiCr alloy, type 3,
for crown and bridge work and
composite veneering.

A wide spectrum of indications and the highest biocompatibility!

Advantages

- Excellent melting and casting characteristics
- Easy to polish and achieve a high gloss
- High corrosion resistance
- High strength for delicate structures
- Especially suitable for melting by torch

Delivery form

1000 g REF 100-001-00

Safety due to certified quality

The best biocompatibility:

Laboratory tests prove the outstanding resistance to corrosion; the biological compatibility is confirmed by cytotoxicity tests carried out by independent institutes. Please request our certificates. All NiCr crown and bridge alloys are free from beryllium, gallium, indium and copper.

remanium® 
GM 800+

Characteristics

Extra spring-hard universal alloy with a high yield strength for all types of cast partial denture work. Type 5.

remanium® 
GM 380+

Characteristics

Well proven, spring-hard alloy for all types of cast partial denture work. Type 5.

State-of-the-art technology and excellent properties!

Advantages

- Fracture resistant due to excellent physical properties
- High modulus of elasticity allows delicate, yet rigid constructions
- Even less risk of clasp fractures due to increased yield strength
- The right moment for casting is shown when the melt has a mirror-like shine
- Highly brilliant surface after electrolytic polishing

Delivery form

1000 g REF 102-200-10

Advantages

- Further development of the time-tested remanium® GM380
- The right moment for casting is shown when the melt has a mirror-like shine
- Reduced surface hardness
- Easy finishing and polishing
- The high elongation at break value promotes activation

Delivery form

1000 g REF 102-001-10

Cast partial denture alloys



Characteristics

Extra spring-hard, modern alloy for all types of cast partial denture work. Excellent laser welding properties, as it is carbon free. Type 5.



Characteristics

Spring-hard, an alloy which is easy to trim, for all types of cast partial denture work. The high value of elongation at break means clasps can be activated without risk of breakage.

Advantages

- Harmoniously matched, highly mechanical parameters
- Easily trimmed and polished due to the reduced surface hardness
- The right moment for casting is shown when the melt has a mirror-like shine. No overheating of melt results in smooth and clean castings
- Patented composition based on CoCrMoTa

Delivery form

1000 g REF 102-250-00

Advantages

- Easily trimmed and polished due to reduced hardness
- Clasps can be easily activated
- No risk of clasp breakage
- The right moment for casting is shown when the melt has a mirror-like shine
- Excellent laser welding properties, as it is carbon free

Delivery form

60 g REF 102-280-10
1000 g REF 102-280-00

Safety due to certified quality

The best biocompatibility:

Laboratory tests prove the outstanding resistance to corrosion; the biological compatibility is confirmed by cytotoxicity tests carried out by independent institutes. Please request our certificates. All cast partial denture alloys are free from beryllium, iron, nickel, indium, gallium and copper.



PRODUCTS

4

remanium® wires

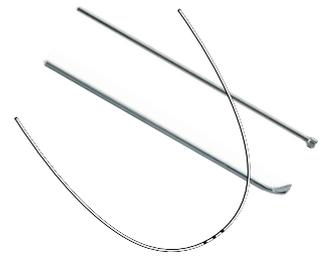
remanium® rod wires



remanium® lab rolls



remanium® wire elements



Outstanding mechanical properties!

Material: Stainless steel

Hardness class:

Spring-hard · 1800 – 2000 N/mm²

Diameter: 0,4 – 1,0 mm

Material: Stainless steel

Hardness class:

Hard · 1400 – 1600 N/mm²

Spring-hard · 1800 – 2000 N/mm²

Ball retainer clasp, arrow head
clasp and arch

Material: Stainless steel

Hardness class:

Hard · 1400 – 1600 N/mm²

5





PROCESSING
TECHNOLOGIES

5

A close-up photograph of industrial machinery, likely a cable extrusion or processing machine. The scene is dominated by four large, light-colored rollers arranged in a 2x2 grid. A bright red cable is being processed, running vertically through the center of the rollers. The machinery is painted a dark blue color. The lighting is dramatic, with strong highlights on the rollers and the red cable, and deep shadows in the surrounding machinery.

PROCESSING
TECHNOLOGIES

5

One alloy.
Three processing technologies.
One premium quality.



Casting

- Excellent melting and flow properties
- Easily recognizable point of casting when using HF melting techniques
- Extremely good working properties, milling and polishing are easy due to the exceptionally low level of hardness

Milling

- Two premium qualities: powder metallurgic or optimized casting structure
- Very high strength
- Low hardness, therefore good milling qualities

Laser melting

- The finest powder creates an homogenous structure
- Dense structure
- Consistent material qualities

*Learn more about this
from our specialized
partner for laser melting
technology!*



CONCEPTLASER

hoffmann innovation group



Casting methods

The most tried and tested method for transforming an object into metal, e.g. a waxed pattern, is the casting technique. This process is the oldest forming method and has been around since the bronze age. The procedure whereby the casting mold is destroyed after casting is known as the lost wax technique, or to be more exact, the lost model technique. The remanium® alloys can be melted and cast using various techniques.

■ High frequency casting

In this technique, the metal is melted via induction in a crucible surrounded by water-cooled copper rings. The temperature required to melt the metal can be controlled well with this method. The casting mold is filled using centrifugal force.

■ Vacuum pressure casting

The metal is melted and cast in a tightly sealed chamber under vacuum, usually using high frequency. The air is removed via a vacuum pump. The mold to be filled is also under vacuum, which means that the molten metal can flow into the cavity without air resistance, slower and with less turbulence than with the centrifugal casting method.

■ Electrical arc casting

This type of casting method is similar to the vacuum pressure casting technique. The energy from an electrical arc is used to melt the metal. Heat (up to 3500 °C/6332 °F) is transferred by radiation from the arc, between the tip of the electrode and the alloy, which causes it to melt.



The three processing technologies



Milling

The highest level of precision for crowns, bridges and implant structures is achieved using the milling technique. At this moment in time, there is no other manufacturing method which produces this level of accuracy. Dentaureum's product range includes two types of milling blanks. The remanium® star MDI milling blank is produced using a complex sintering process and is absolutely homogenous in its metal structure. The remanium® star MDII milling blank is produced via casting methods and can contain casting pores, something which can occur in all cast milling blanks. It is not cost effective to mill a partial denture framework from a full metal blank. It is however possible to mill a partial denture framework from acrylic or wax, which can be subsequently cast (see CAD/Cast).

SLM Laser melting technique

In the laser melting technique, the metal is in a powder form – such as remanium® star CL – and is melted using a laser beam. The grain size of the powder is between 10–40 µ. The restoration, which is constructed using CAD software, is built up layer by layer.

This method, also known as rapid prototyping, is similar to 3D printing or stereo-lithography manufacturing methods. This technique can produce crowns, bridges, metal denture frameworks and secondary dental structures economically and in a consistently high quality with a standardized manufacturing process. The main advantage lies in the additive production method, with an extremely low amount of material waste.

CAD/Cast

This manufacturing technique consists of a digitally constructed dental restoration, the conversion into an acrylic or wax pattern using a 3D printer, stereo-lithography or the milling technique and then casting into metal using conventional casting methods. There may be discrepancies in the fit of metal denture frameworks made using this production method, due metal contraction during casting. Dentaureum has the know-how and the products, such as Power Liquid, to achieve accurate results with remanium® casting alloys using this technique.

6

remanium® loves ceraMotion®



Photo: © Christian Ferrari®

SYNERGIES

6

SYNERGIES
VENEERING
CERAMIC

6

Veneering ceramic for remanium®



Photo: H & H Das Dentalstudio, Hubert Dieker / Waldemar Fritzier, Geeste®

In addition to the remanium® alloys, Dentaurem's extensive product range also comprises a large variety of compatible materials and devices that form an excellent symbiosis with the alloys and guarantee additional safety and economic efficiency. Here, representing hundreds of other available products, is an introduction to our bonding ceramic and laser unit.

„With ceraMotion®, we have made every effort to achieve a perfect system for all applications. The results are phenomenal. As a rule, we never introduce any product onto the market, unless we are one hundred percent behind it!“

Mark S. Pace, CEO Dentaurem





SYNERGIES
VENEERING
CERAMIC

6



The ceraMotion® concept unites both emotion and progress in one logically designed system. These products have been developed and produced in-house. The result is a uniformly structured ceramic system which comprises veneering as well as press ceramic materials.

One layering technique for all types of framework material

Whichever framework material is veneered, the layering technique is the same for all ceraMotion® lines. This makes the technician's job easier, more efficient and safe. The hybrid concept unites layering and press ceramics, both are compatible due to identical base components.

Veneering ceramic for remanium®



ceraMotion®
Me

The reliable partner for remanium® star

remanium® star is the no. 1 remanium® bonding alloy. Based on decades of experience in ceramic development within the Dentaaurum Group, ceraMotion® Me, a new generation of veneering ceramic for non-precious alloys, was created in close collaboration with an international team of experts in the field of ceramics.

Advantages

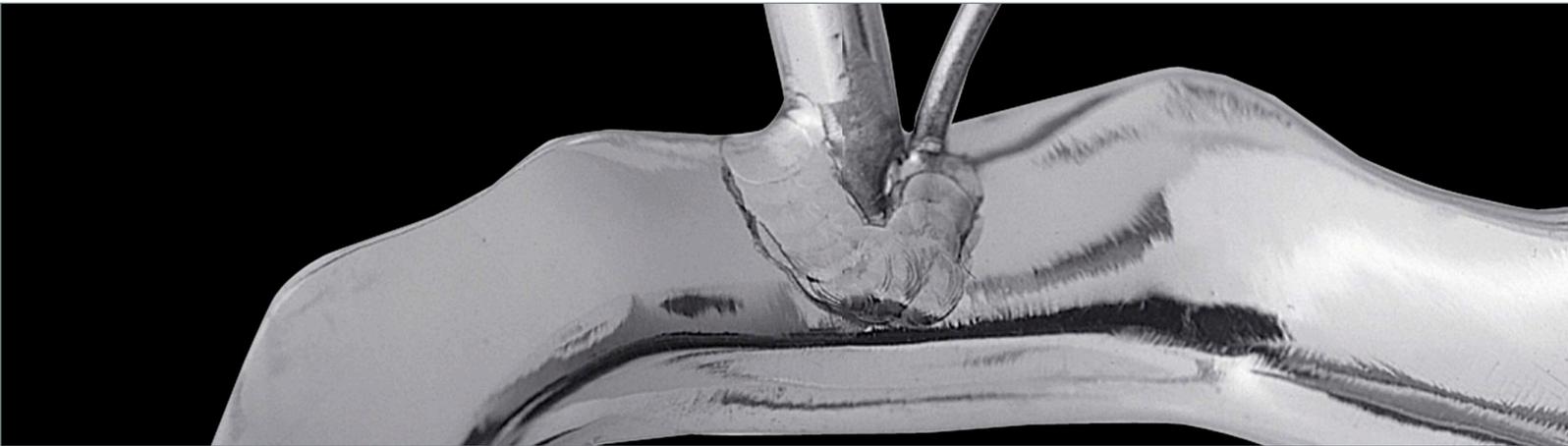
- Extremely high bonding properties due to the TRC connection (Tension Reducing Connection)
- No bonder
- No oxide firing
- No slow cooling
- Maintains shade vitality even after multiple firing
- Unlimited possibilities ranging from basic build-ups to highly aesthetic individualization

SYNERGIES
METAL JOINTS

6



Laser welding technology

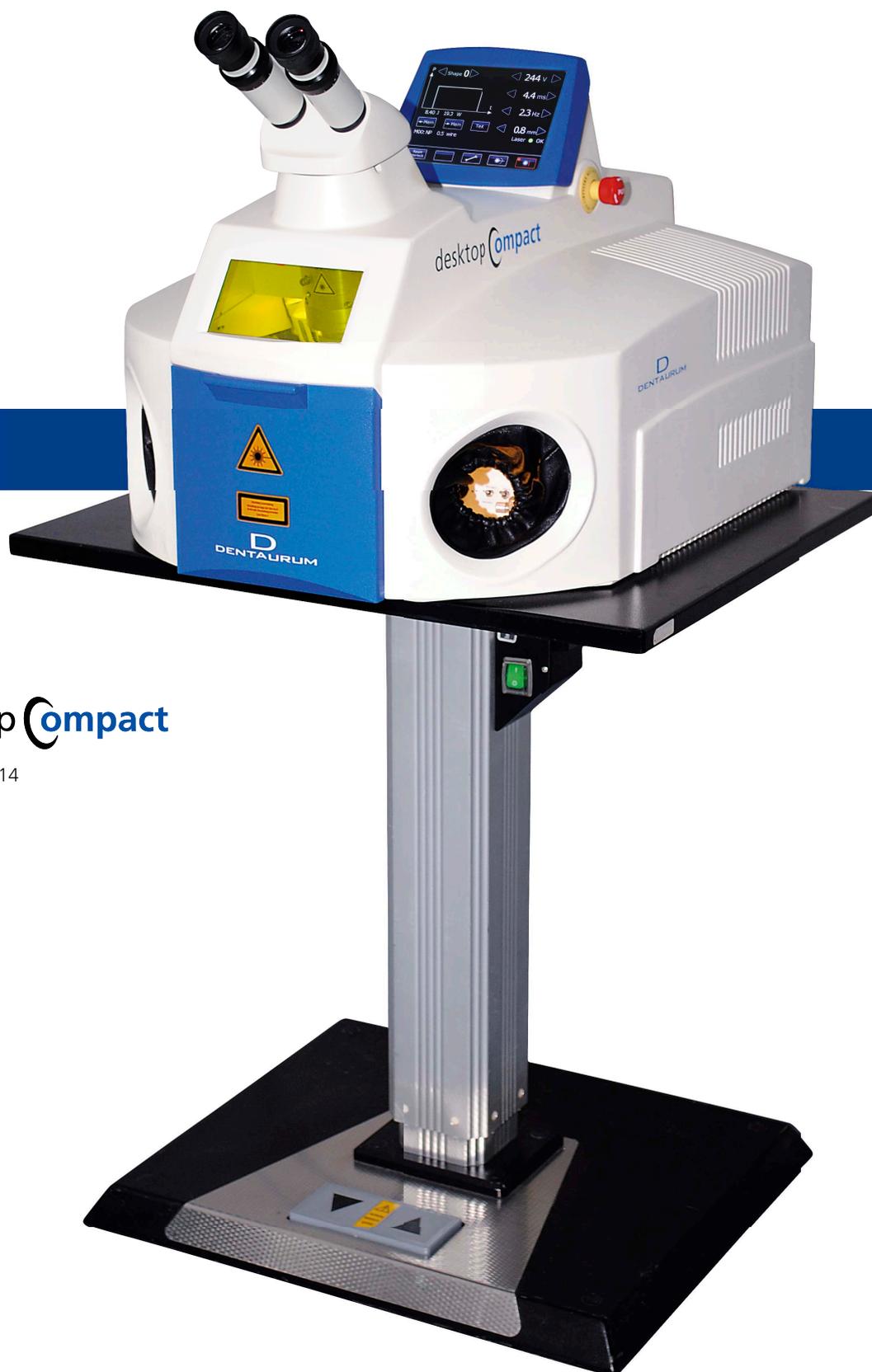


The remanium® alloys have been specially modified for this process. The carbon content has either been reduced or removed completely. Once again, the perfect symbiosis between modern technical equipment and the materials adapted to suit them.

remanium® alloys such as the casting alloy GM900 have been developed especially for this technique – free from carbon, until now a first for CoCr casting alloys.

SYNERGIES
METAL JOINTS

6



desktopCompact

Generation 2014

The desktop Compact dental laser



The different Dentaurum dental laser generations

Dentaurum has been involved in the research and development of laser technology for over 20 years now. Over this period of time, there have been many generations of continuously improved devices, and working has become increasingly easier.

The laser has become an indispensable piece of equipment for prosthetics as well as orthodontics. It produces an absolutely biocompatible connection, without involving solder. The cost-effectiveness is achieved from the enormous amount of time saved.

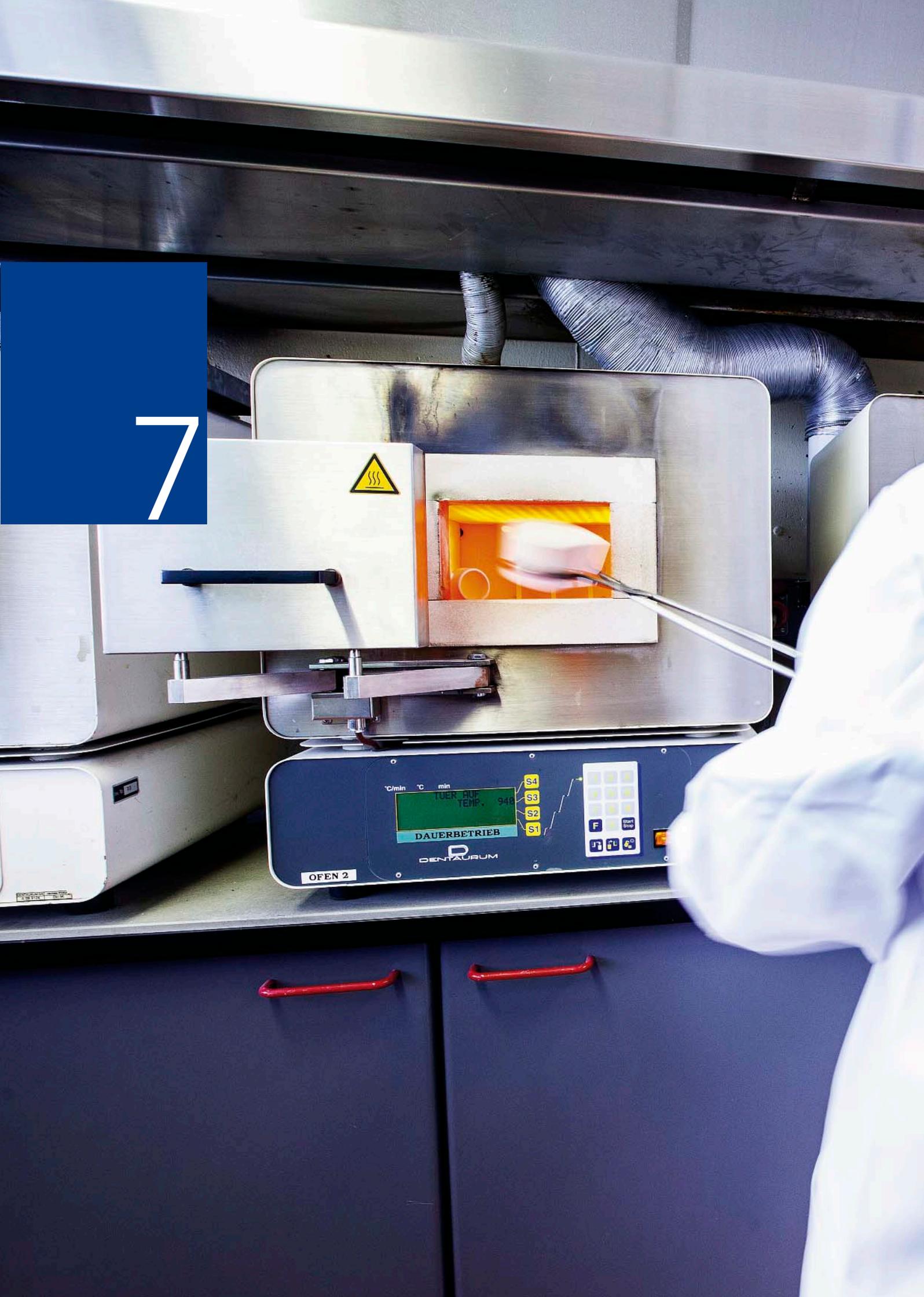
Users agree

I am very satisfied with the unit and the service. During the many years in which the unit has been in use, I have only had one problem, which was actually resolved over the telephone. It is the best and most profitable unit that I have ever purchased.

(Dentaurum laser, year of manufacture 1995)

DL Kölbl & Heinrici, Grafing/Munich

7



°C/min °C min

DAUERBETRIEB 943

DENTAURUM

OFEN 2

S4
S3
S2
S1





APPLICATIONS

7



APPLICATIONS

7



The remanium® alloys and wire elements have a variety of applications in the prosthetic field. Here are some of the main areas of use.

Crown and bridge techniques

remanium® crown and bridge alloys can be used for a wide range of indications. CoCr alloys in particular are playing an ever-increasing role worldwide as a framework material. Their strength makes them a well proven alternative to other metal framework materials such as NiCr alloys, precious alloys or titanium.

From a medical perspective, the fact that the framework can be made with a very thin wall thickness allows for a gentler approach to tooth preparation, whereby less tooth structure is removed. The thermal conductivity of a CoCr alloy is approximately factor 5 less than precious metal alloys. Patients appreciate the benefits of less temperature sensitivity.



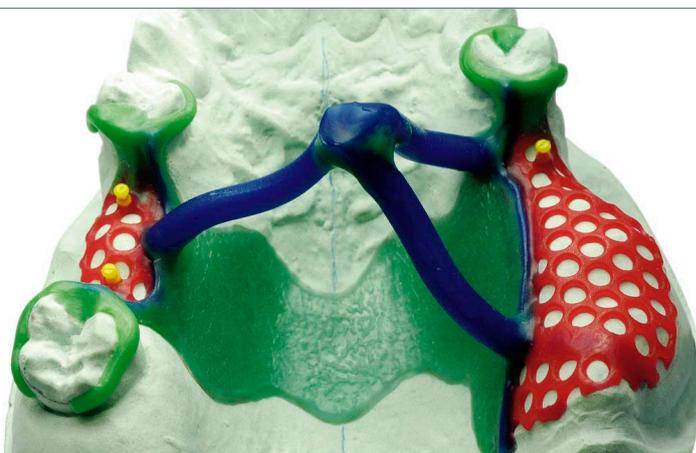
An example of the range of indications possible with the no. 1 remanium® alloy:

remanium®
star 

Indications

- Crown and bridge alloys
- Ceramic veneering
- Telescope crowns
- Implant supported supra-structures
- Adhesive bridges
- Secondary structures for cast partial dentures

It is not just the wide range of indications that makes remanium® star so special, but also the freedom of processing choice i.e. casting, milling or laser melting. The harmonious compatibility of the alloy constituents and the veneering ceramic, guarantee safety and assurance for the laboratory, the dentist and finally the patient. ceraMotion® is the ideal ceramic for this alloy.



Model casting techniques

Dentaurum has always been famous for its extensive range of products required for the fabrication of cast partial denture frameworks. The remanium[®] alloys have been developed to comprise a high degree of elasticity and they set standards with their great mechanical strength. This means that the cast denture frameworks made from remanium[®] can be designed with a thin and detailed structure.

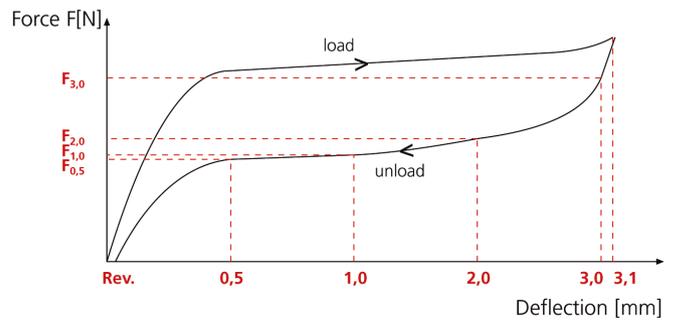
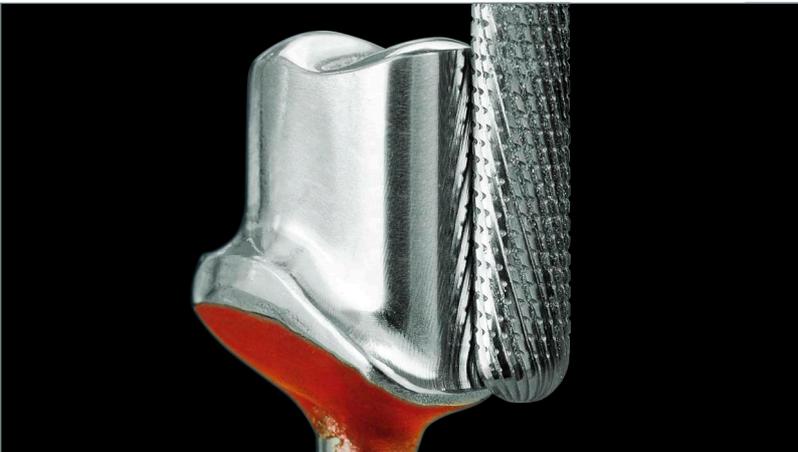
The measured values are 0.2 % yield strength and modulus of elasticity. The values measured for remanium[®] GM 800+, for example, are among the highest recorded values in comparison to other alloys available on the market.

Selected example:

remanium[®]
GM 800+ 

Indications

- Cast partial dentures and combined techniques for rigid constructions requiring a high degree of strength.



Fixed-removable dentures

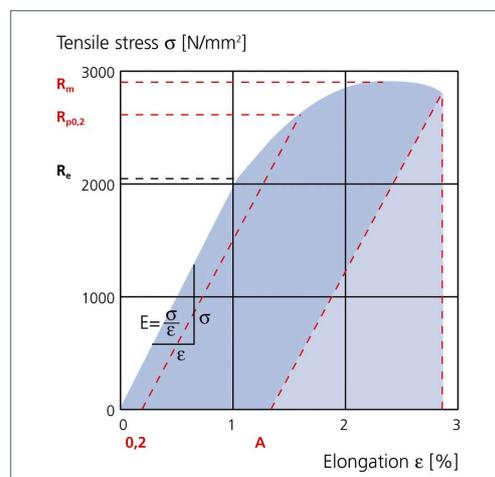
The combination of fixed and removable prostheses should be ideally made on the same basic framework material. By introducing attachments, bars or telescope crowns, the patient will receive a biocompatible solution with the relevant remanium® alloy.

Orthodontics and prosthetics with remanium® wires and wire elements

The ideal combination between cold forming and heat treatment gives the Dentaurem wires and arches their excellent mechanical properties.

remanium® wires are easy to shape and weld and are characterized by their smooth, low friction surface.

The remanium® wires are drawn with diamond tools to produce a uniformly smooth surface. This high quality ensures a low risk of corrosion and plaque deposits.



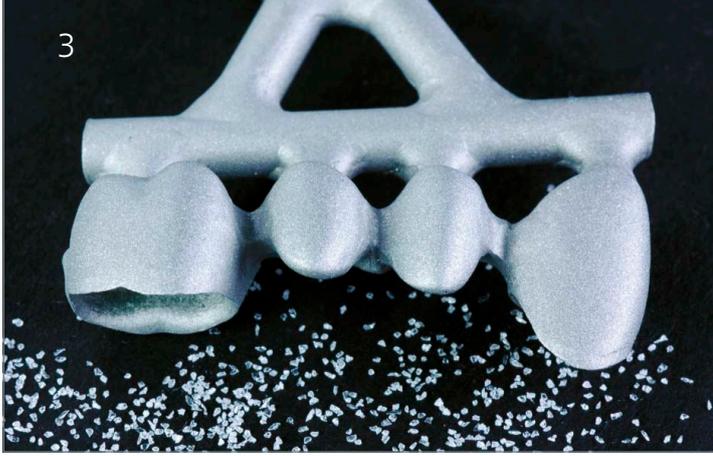


APPLICATIONS

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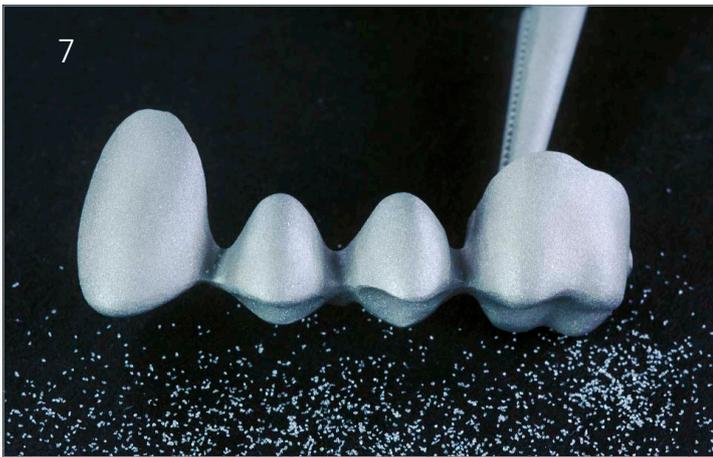
remanium® star is so easy to use





- 1 A four unit bridge designed in wax
- 2 Investing the bridge using Castorit all speed
- 3 Sandblasted cast metal
- 4 Trimmed metal framework
- 5 Bridge fitted onto model, palatial view
- 6 Bridge fitted onto model, buccal view

- 7 Bridge prepared for ceramic veneering
- 8 Bridge after the opaque firing
- 9 Bridge built-up with ceramic before correction firing
- 10 Finished bridge, molar
- 11 Finished bridge, palatial view, with metal margins
- 12 Finished bridge, buccal view

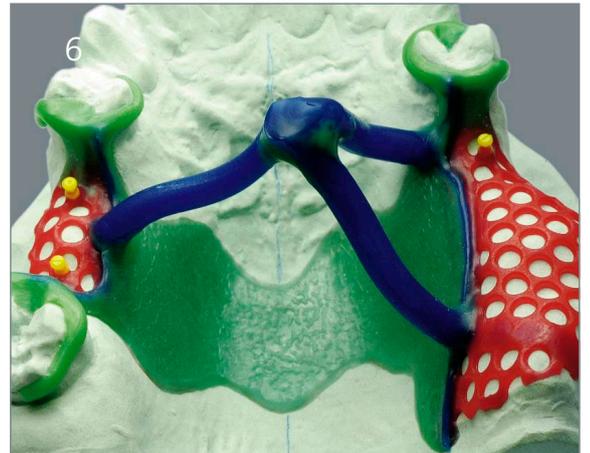
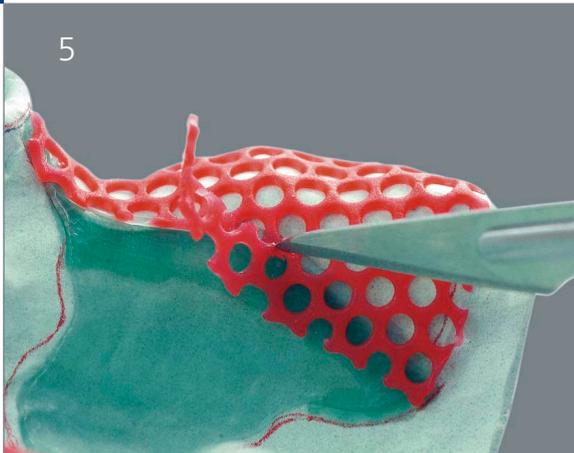




APPLICATIONS

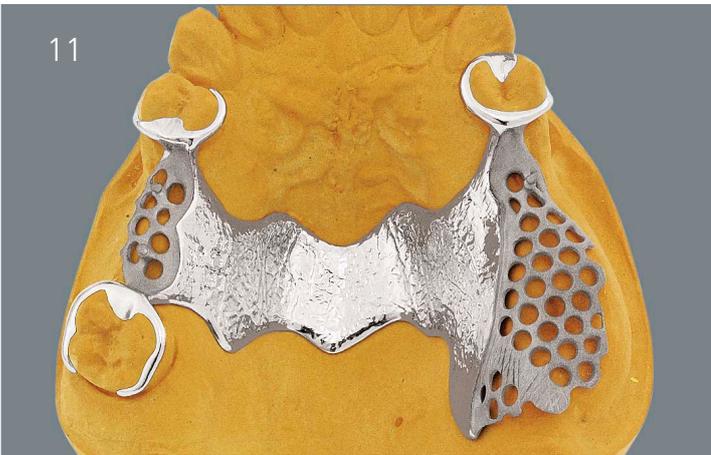
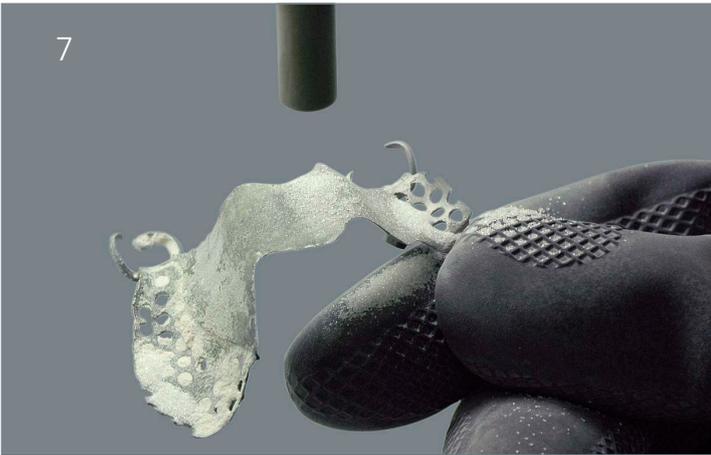
7

remanium® GM 800+ is so easy to use





- 1 Measuring the model
- 2 Measuring the premolar
- 3 Duplicating with rema® Sil pure silicone
- 4 Constructing the duplicate model with rema® dynamic S
- 5 Wax pattern on the duplicate model
- 6 Casting sprues on the wax pattern
- 7 Casting and sandblasting the framework
- 8 Trimming the framework
- 9 Fitting the framework onto the model
- 10 High gloss finish
- 11 Fitted and polished cast partial denture





APPLICATIONS

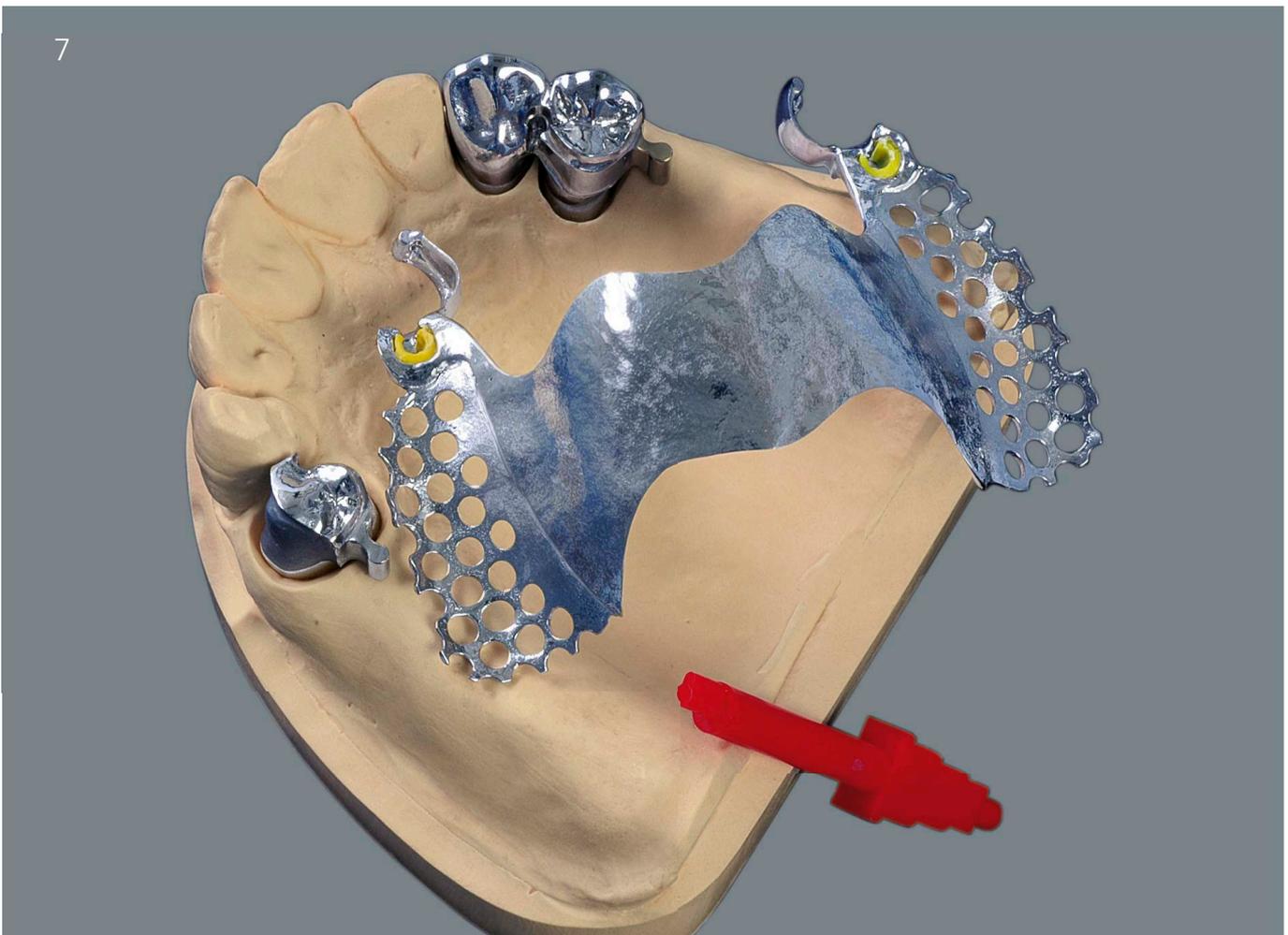
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remanium® GM 800+ and remanium® star are so easy to use for fixed-removable dentures

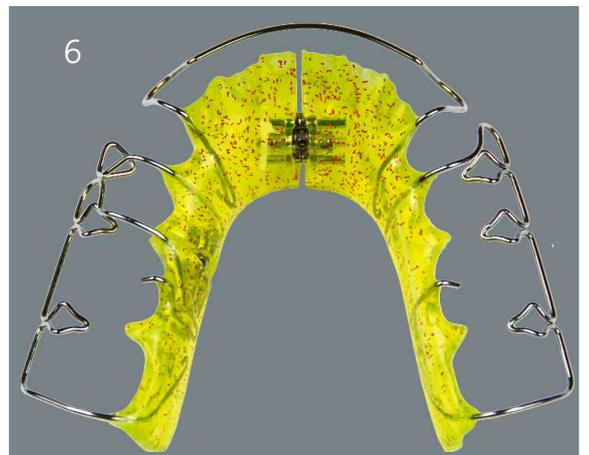
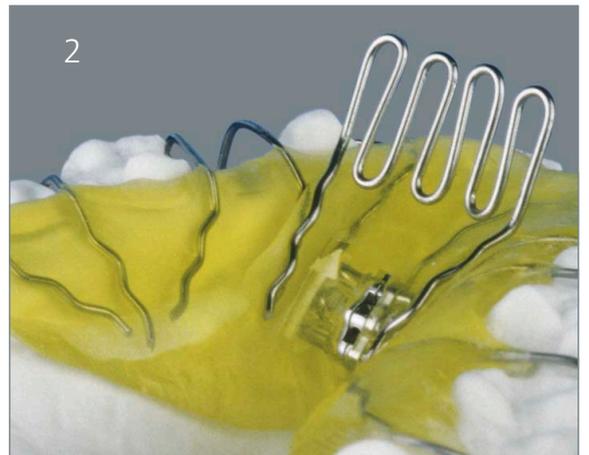
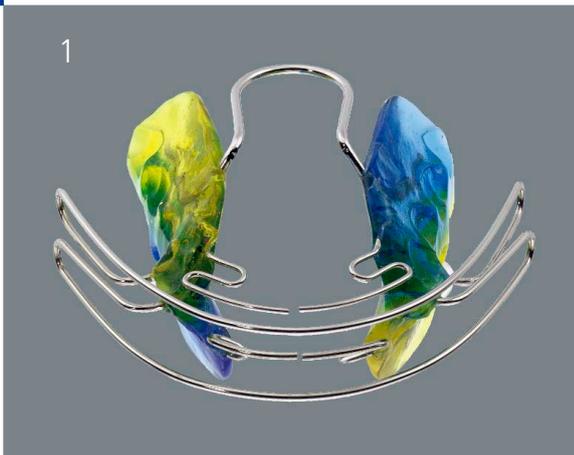




- 1 Milling a primary telescope crown
- 2 The accurate fit of a telescope crown
- 3 Telescope restoration, crowns welded to the cast partial denture
- 4 Milled retention for attachment work
- 5 The fit of the RS attachment – insertion
- 6 The fit of the RS attachment – in place
- 7 Fixed-removable dentures with “dent attach” attachments
- 8 Milled implant bar on Dentaurum Implants
- 9 Bar and secondary construction in place

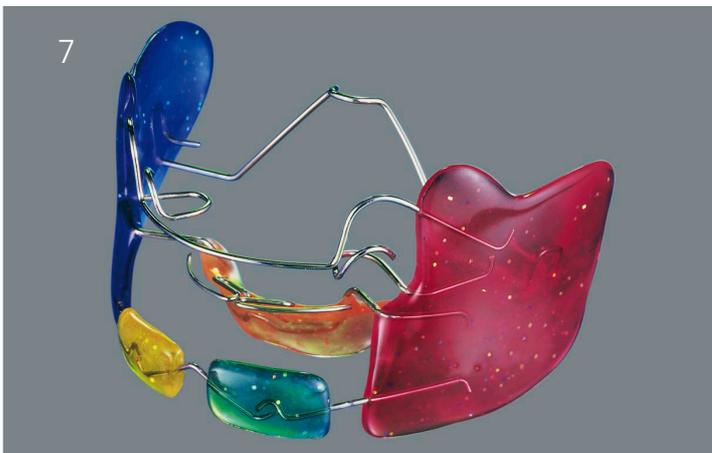


Working with remanium® wires and arches



- 1 Elastic open activator according to Klammt, palatal bow 1.2 mm remanium®, lip bow 0.9 mm remanium®
- 2 Simple shield 0.8–0.9 mm, spring-hard, other components as required
- 3 Labial arch 0.6 mm, spring-hard, Adams clasp 0.7 mm, hard
- 4 Torque spring 0.5 mm, spring-hard, coffin spring 1.2 mm, spring-hard

- 5 Model with brackets and remanium® arch wire
- 6 Lower jaw expansion plate with arrow clasps and labial arch made from 0.7 mm remanium® wire
- 7 Function regulator according to Fränkel with remanium® wire
- 8 Open protrusion spring with mesial arm made from 0.5 mm remanium® wire



8





SERVICE

8

SERVICE

8



"A company is only as good as the people behind it."



There are many great people working behind the scenes that look after the manufacture of our products and provide customer care. In a variety of difference areas they not only ensure that the correct products are developed and produced, but also that they are designed and controlled, so that there are no problems with their application. Just a few have been selected, to represent many others, whose daily commitment builds the trust that our many satisfied customers sense.

The people behind the brand!



The metallurgy department and the alloy production

All remanium® alloys are developed by specialists in our in-house metal laboratory and produced in the Dentaurum casting plant under strict quality regulations. The purity and quality of each individual production batch is controlled by material scientists and qualified chemical specialists. Skilled casting specialists guarantee uniform and outstandingly homogenous constituents in the remanium® alloys.



The medical device consultants and the dental technical application consultants

Our on-site medical device consultants are available to give information on all applications possible with our wide range of products. They provide support and advice regarding our dental products, even with complicated enquiries.

Our application consultants will give you tips for use in your daily work routine and are available to demonstrate practical advice on-site in your laboratory.



Customer support, service and courses

A team of qualified dental technicians are available, both nationally and internationally, to provide support when working with our products. The hotline, which is free of charge, provides direct contact with Dentaurum. Our customer service team looks after any questions which can be reliably processed in our quality management system. Our training courses in the communication center are characterized by their high level of practical relevance and intentionally small groups of participants.

SERVICE

8

We are able to provide support for our customers with the use of modern instruments. These include sophisticated logistics and the use of electronic media and printed products.



Dentaureum Website

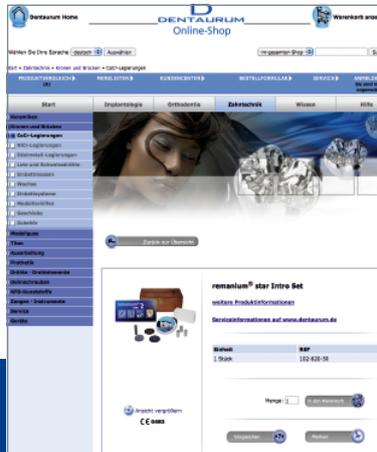
Our website www.dentaureum.de is easy to read and continuously updated to provide current information. Here you will find information on all the products and services that make Dentaureum so strong.

The service behind the brand!



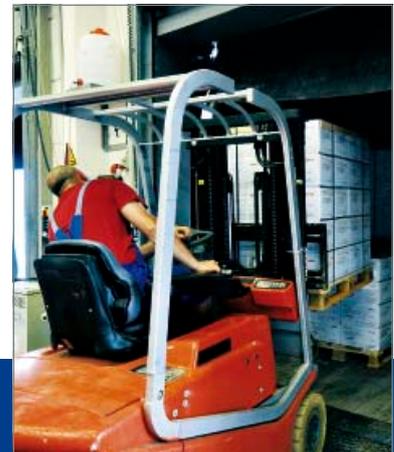
Microsite

A microsite specifically for remanium® where you can watch our films.



Online shop

Orders can be easily placed at any time during the day or night. After a simple registration, you can find special offers in the shop.



Delivery service

As direct supplier, we can guarantee delivery to almost 100 %. Once placed, your order takes approximately 10 minutes until it is packaged and ready for delivery.

SERVICE

8



Advertising material

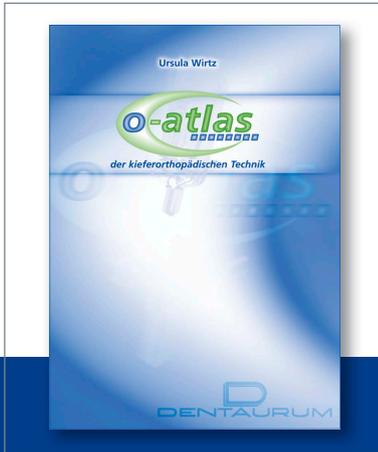
The prosthetics catalog contains the most important user information for each product. With the remanium® alloys, this not only includes all technical data but it also highlights the products' advantages and in particular their properties. Special features from important products are visually illustrated in extensive brochures. We are a globally active organization, so our in-house advertising department produces advertising material in multiple languages.

Compendium

There are three remanium® Compendium editions. The popular manuals include the following topics:

- Crown and bridge techniques
- Cast partial denture techniques
- Fixed-removable denture techniques

They provide an interesting insight into each individual working step. A "must" for every trainee.



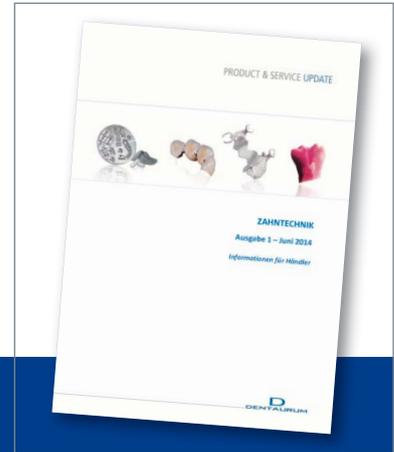
o-atlas

A unique reference book for removable appliances. remanium® wires play an important role in all areas of orthodontics.



Newsletter

Our newsletter publishes important news and gives information about our special courses on interesting topics from a wide range of areas.



Product & Service Update

This is an informative communication medium for our international dealers and subsidiaries.

Using the Product & Service Update, we are able to inform our business partners in regular intervals about Dentaorium's new products.

9





CASE EXAMPLE

9

CASE EXAMPLE

9



“All-on-4” restoration



“All-on-4” restoration

A highly aesthetic and cost-reduced alternative prosthetic restoration for an edentulous jaw on four tiologic® implants (from Dentaaurum Implants GmbH) with a framework made from milled remanium® star, veneered with ceraMotion®.

The bone situation in the anterior region made it possible to produce a fixed dental restoration on just 4 implants.



tiologic® ST



**remanium®
star**



ceraMotion®

1



2



CASE EXAMPLE

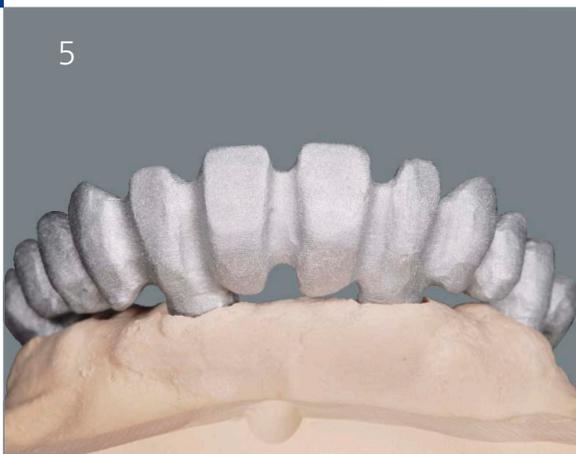
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Documentation of an "All-on-4" patient case

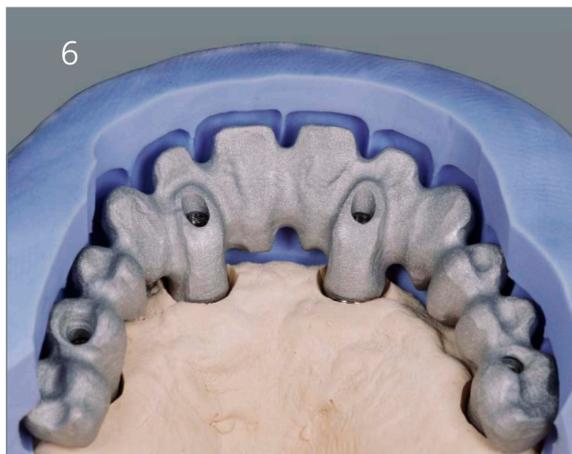
From tioLogic® implant through remanium® star framework to ceraMotion® ceramic.

Photos by courtesy of ZTM Waldemar Fritzer, H& Dental Studio GmbH, Geeste

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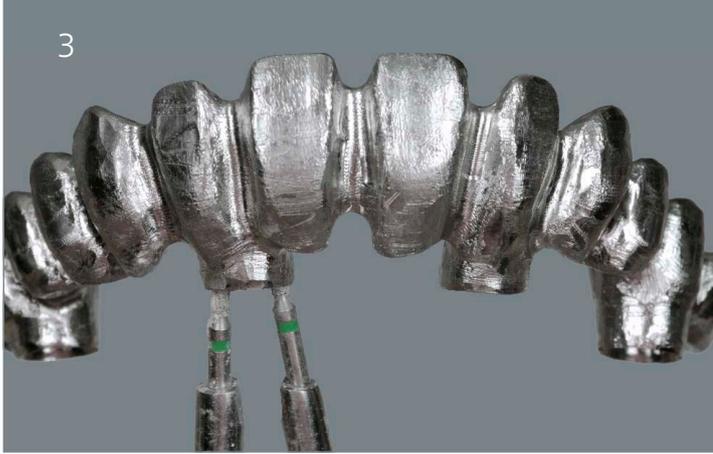


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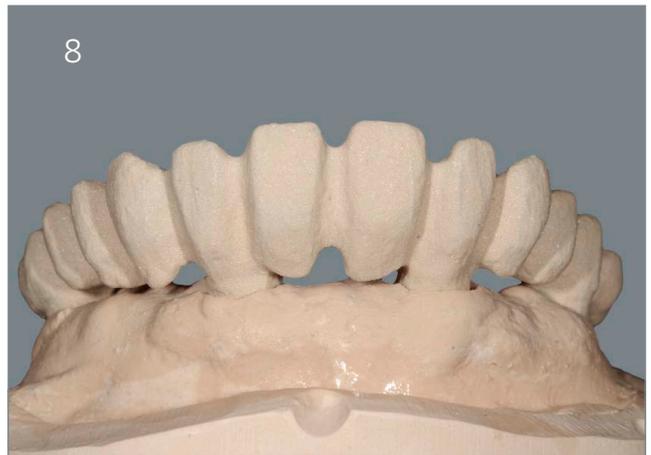
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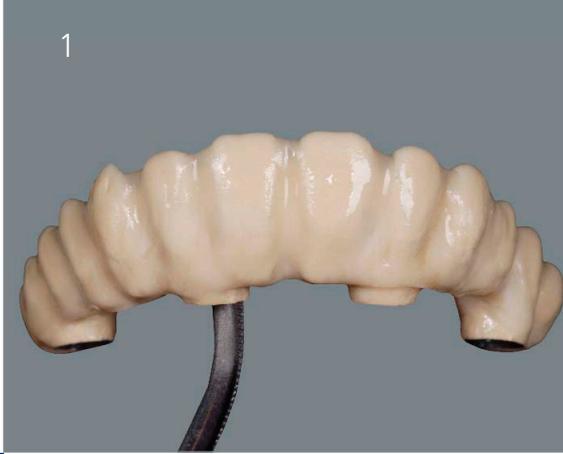




- 1 remanium® star milling blank
- 2 remanium® star milling blank in the milling machine
- 3 Milled framework structure made from remanium® star
- 4 Trial fit on the master model
- 5 Sandblasted framework
- 6 Reduced tooth shape with matrix

- 7 Ceramic build-up with ceraMotion® Me: The paste opaque and shoulder material scatter crystals
- 8 After firing: The framework completely covered with ceraMotion® paste opaque
- 9+10 Ceramic build-up with shoulder and dentine materials, in particular the basal areas
- 11+12 Dentine and incisal materials for the first build-up in the interdental spaces





CASE EXAMPLE

9

Documentation of an "All-on-4" patient case

From tioLogic® implant through remanium® star framework to ceraMotion® ceramic.

Photos by courtesy of ZTM Waldemar Fritzer, H& Dental Studio GmbH, Geeste





- 1 After the first base firing
- 2 Completing the dentine areas using the matrix
- 3 Dentine build-up from the matrix
- 4 Prepared bridge framework
- 5 + 6 Dentine and enamel build-up with effect and gingiva materials

- 7 + 8 Biscuit firing results
- 9 Ceramic built-up for the correction firing
- 10 Results after the correction firing
- 11 Surface structure made visible with gold powder
- 12 Natural tooth morphology





CASE EXAMPLE

9

Documentation of an "All-on-4" patient case

From tioLogic® implant through remanium® star framework to ceraMotion® ceramic.

Photos by courtesy of ZTM Waldemar Fritzer, H& Dental Studio GmbH, Geeste





- 1 Correction and glaze firing in one with Touch Up materials
- 2 Shade, shape and surface structure in perfect harmony
- 3 Red-white aesthetics with a natural looking gingival margin

- 4 + 5 Stress-free, adhesively fixed titanium sleeves
- 6 Bridge fitted onto the model, buccal view
- 7 + 8 "All-on-4" finished restoration on the model
- 9 + 10 In-situ, with a highly satisfied patient. High quality aesthetics, stability and biocompatibility with remanium® and ceraMotion®





DENTAURUM
QUALITY
WORLDWIDE
UNIQUE

What our customers around the world say:

"remanium® – the perfect material for our laboratory! Advantages for us: The high degree of stability allows us to create finely detailed constructions; the same material characteristics, whether for casting or laser melting; only one solder or laser wire required for the whole system (2000+/1800+/star/CL); highly durable telescope constructions without loss of friction; problem-free metal-ceramic processing; optimal bond between ceramic and metal."

Dentaltechnik Frey GmbH, Esslingen, Germany

"Reliable production results are essential in my line of work, and the remanium® alloys have always served me with a high degree of safety."

Laboratorio L.O.R.I. S.r.l., Noventa Padovana, Italy

"In our practice we aim for excellence, this starts with the product being used. We are extremely happy with the results achieved from using remanium® star. The ease of casting and handling separates remanium® star from other alloys."

Romio Youssef, Manager; Monz Dental Laboratory, Ontario, Canada

"I implemented the 'remanium® casting system' and began using 'remanium® GM380+' as the primary cobalt-chrome for all cast partials manufactured in my laboratory, and this continues to be the case in 2014. Over this time I have trained countless technicians, finding this system to be extremely user-friendly, to achieve and maintain a consistent and predictable outcome, regardless the level of skill."

Michael Standish, Standish Dental Laboratory, Perth WA, Australia

"I use remanium® GM800+ because I can always rely on the product for 800 %!"

Iwan Tjon, Dentique BV, Amsterdam, Holland

"The consistent high quality of the remanium® alloys have always allowed me to maintain my high standard of dental restorations."

Laboratorio Odontotecnico di protesi scheletrate di Massimo Durzu e C. s.a.s., Quartucciu, Italien

"Our customers appreciate the fact that we only use materials from renowned manufacturers. It goes without saying that Dentaaurum and the remanium® alloys are part of this!"

Singener Dental Labor Crass, Singen, Germany

"remanium® GM380+ – easy casting, precise, exceptional, flexible and a perfect gloss."

Lab mérite, St-Jérôme, Canada

"We have been using remanium® GM380+ for almost a year now. Our customers have never in 35 years of cast metal denture work ever noticed such a difference in the framework material after a material change. They praise the accuracy of fit and the beautiful polish achieved with remanium® GM380+. Thank you Dentaaurum, for making our work a little easier."

Gary Weiss, Bio-Dent Labs, Scarborough, Canada

"We use the remanium® alloys for our cast metal denture frameworks because of the high quality and excellent mechanical properties. In addition to this we are also able to trace precisely where the individual constituents originate. remanium® alloys can be used in many different areas of application: they give the metal framework its strength and thanks to their elasticity, the insertion is easy. The framework is stable in the mouth providing the patient with a high degree of comfort. We chose Dentaaurum as a partner, because of their great service. A document is supplied with every delivery of remanium® which guarantees the traceability of the material. This fact is entirely consistent with the quality standards of Laboratoire Pro'Met@I. This enables us to guarantee the safety and quality of our products."

Laboratoire Dentaire Pro'Met@I, France

"remanium® is an excellent product, high quality and is easy to use which is why we have trusted it for over 40 years."

Hans Raum GmbH, Zahntechnisches Labor, Schwarzenbruck, Germany

"As a long-standing and happy user of remanium® alloys it is a pleasure for me to report about my experience with your material. It goes without saying that these alloys are biocompatible. All are free from harmful constituents. The system offers a wide variety of metals which guarantee high quality processing. A wide spectrum of applications. Congratulations to the remanium® concept."

Philippe Pisseloup, Souvans, France

Dentaurum Group

Germany | Benelux | España | France | Italia | Switzerland | Australia | Canada | USA
and in more than 130 countries worldwide.



DENTAURUM
QUALITY
WORLDWIDE
UNIQUE

➔ For more information on our products and services, please visit www.dentaurum.de

Date of information: 01/15

Subject to modifications



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