

# ZIRCONIA IN ITS FINEST STRUCTURE

Premium Zirconia for all CAD/CAM Systems



# Zirkonzahn History – A specialist at the service of specialists

Zirkonzahn was established in the Alps of South Tyrol by Enrico Steger, the founder of the manual milling system for zirconia. Steger and his team have committed themselves to the goal of manufacturing innovative products by a dental technician for dental technicians, fairly calculating prices and enabling every laboratory in the world to work with zirconia. Furthermore, they put a great value on quality, user-friendliness and precision.

Zirkonzahn is one of only a few companies in the world to produce its own zirconia. Other in-house productions include the manual and computer

aided milling system, burs, color liquids, ceramics and stains. In contrast to distributors and other zirconia sellers, Zirkonzahn has a 100% influence on the offered products and can guarantee their quality. By now, Zirkonzahn has obtained the trust of customers in over 80 countries. In the field of dental treatment, it is known as an innovator that cares for its customers in a truly special way. This is why the transfer and exchange of know-how and know-ledge are of primary importance at international conventions and lectures held around the world specifically for clients and other interested persons.



# The inventor and founder of Zirkonzahn

Dental laboratory technician Enrico Steger is considered to be the inventor of the copy milling unit for producing restorations made of zirconia. After years of energetic apprenticeship all over Europe and after having set up his own laboratory in 1981, he soon revealed his great inventive talents by creating articles and materials for dental use, in cooperation with prestigious companies. These articles included items such as waxes, milling burs and ceramics. Driven by the idea of revolutionizing the range of products used by dentists and by the determination to process zirconia manually, he founded the company Zirkonzahn in 2003. Subsequently, Enrico Steger registered eight patents in Europe, Canada, Brazil, Japan, Korea and the USA. With his infinite passion for challenges in the dental field, he has become a veritable icon who is very much in demand for lectures. His expertise in working with zirconia is recognized all around the world.

"I cordially invite you to discover our "world of Zirkonzahn". Experience how it all began and gain insight into our production. Find out about the heart of the zirconia, about our ambitions and priorities when working for you and with you."







# "In the beginning, there were dreams and passion

Allow me to recap the history of Zirkonzahn and the manual milling system. 27 years ago, as I pottered about, in my very first laboratory in the basement of my parents' house, I couldn't imagine in my wildest dreams that my profession as a dental technician would lead me into running my own company someday.

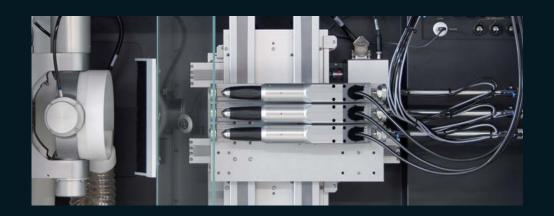
What always fascinated me from the very beginning and still does today, is the possibility to create something personal, to turn a vision only existing in your own mind into reality. I have always associated the realization of my own ideas with a feeling of freedom. I think that nothing is more exciting than succeeding in moving and changing the world with our own hands. In my company I place a great importance on values like good organization, diligence and perseverance. These values should go hand in hand with innovation, creativity and development. I believe they make the difference between victory and defeat."



# We believe that routine is the enemy of progression

We persist in exploring and testing zirconia as a material in our in-house research laboratory which is located close to our premises and connected to a network of international zirconia experts and universities worldwide. With them we constantly try to explore and to overcome the limits of zirconia as a material. We care very much about providing you, our customers, with the finest materials and equipment and enabling you to employ the best application techniques, so you can complete your projects exactly the way you want.

Our findings, knowledge and spirit are shared in our education centers worldwide. Hungry for knowledge and eager to work on patient case studies, our team of skilled dental technicians is always at your disposal with practical advice until even the last challenge is mastered. We want to be your reliable partner and assist you in your work, so that your customers – and obviously, their patients – will be highly satisfied with their restorations made of zirconia.







# Cooperation with universities

We believe it is important to approach our innovations from a scientific point of view. Thanks to cooperation with major universities in the United States, Germany, Switzerland and Finland (such as those in North Carolina, Pennsylvania, Munich, Basel, Zurich and Turku), studies have been (and are still being) conducted and actual cases are being reproduced, which are highly stimulating and instructive for all involved. Studies conducted on abrasion and biocompatibility are only examples and report indisputable facts, leaving no room for skepticism. The scientific principles, research

activities and goals of the universities associated with this work are the ideal complement to the spontaneous, pragmatic, result-oriented modus operandi of our company. As far as specific themes are concerned, we like exchanging information and experiences even with professors and students of other subjects, so we can put into practice or improve interdisciplinary solutions and ideas for our systems and products. When we develop new products or materials we always give great weight to the opinions of dental technicians and dentists whose needs and desires inspire our work.



# The sound of milling and progress

Come visit our Education Center in Atlanta and let our manual and computerized zirconia milling technology convince you. You will be able to see new techniques and applications that will make your daily job much easier. All our expert dentists and specialists in zirconia have completed training programs at our company headquarters in South Tyrol, Italy and are always updated about new developments and innovations. This helps us to keep the range of courses we offer up-to-date and revised so they can express the current state-of-the-art technology. You can choose between introductory and advanced courses, courses on manual milling, CAD/CAM courses and specialization courses on processing the extraordinary Prettau® Zirconia. Specialization courses are a rarity in the dental laboratory field, so you can only forego them in good conscience if you're on a "learning diet" or simply not interested in advancing in this field. Our lecturers and experts are at your disposal not only at the courses they teach but also to help you individually with their professional advice.





# Zirconia Zirconia in its finest structure

# Not all zirconia is the same: Premium quality zirconia

Zirconia is the oldest and most abundant element in the earth's crust and it is the base for zirconium dioxide (yttrium oxide stabilized zirconium oxide). This first-class-performance material has been successfully used for more than 20 years – for example in hip surgery. Due to its excellent health-friendly characteristics, zirconia is nowadays the preferred material of modern dental restorations among dental ceramic materials available today.

When evaluating the quality of zirconia, consideration must be given to flexural and compression strength, hardness, Weibull-modules, dimensional characteristics and coloration. Drawing on our own state-of-the-art refinement technologies we are one of the few companies worldwide producing zirconia blocks for dental prostheses. They are partially stabilised with Yttrium and enriched with aluminium. This results in positive features such as flexural strength (1,400 Mpa\*), hardness (1,200 HV\*) and a Weibull-module of 15.84\* (\* Zirkonzahn ICE Zirkon data).

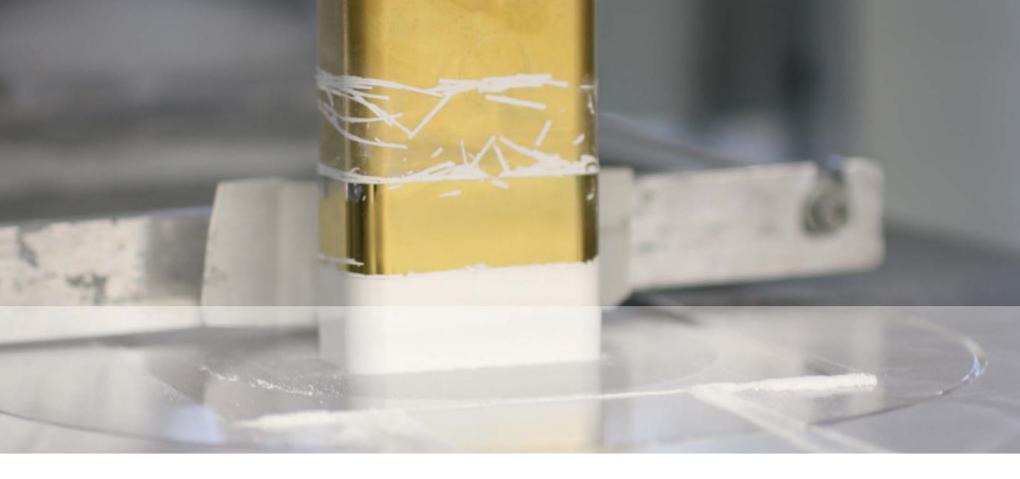
# The Advantages

- High translucency
- Possibility to color the frame structures individually in the patient's tooth color
- No black margins
- Absolutely metal-free
- Excellent health compatibility
- Extreme solidity
- Longevity
- FDA registered

		ICE Zirkon Translucent	Prettau® Zirconia
ZrO <sub>2</sub>	_	specifications	specifications
$Y_2O_3$	%	4-6	4 – 6
$Al_2O_3$	%	< 1	< 1
SiO <sub>2</sub>	%	max. 0.02	max. 0.02
Fe <sub>2</sub> O <sub>3</sub>	%	max. 0.01	max. 0.01
Na <sub>2</sub> O	%	max. 0.04	max. 0.04
Density (g/cm³)	g/cm³	~ 6,0	~ 6,0
Flexural strength	MPa	1200 - 1400	1000 - 1200
Hardness (HV10)	HV10	1250	1250
Weibull-modules	_	~ 15	~ 15
CTE (coefficient of thermal expansion)	10 <sup>-6</sup> K <sup>-1</sup>	~ 10,0	~ 10,0







# Pressing process

The raw material is mixed with additives and through various processes a so-called "green body" is produced. When iso-statically, uni-axially pressed or manufactured by cold casting, the green zirconia blanks show no change in quality after sintering in terms of dimensional stability, hardness or crystalline structure. We use biaxial pressing which ensures consistent pressure throughout the block. For special applications we also use iso-static pressing.

Thanks to our continuous aspiration for perfecting the pressing technique, we can now produce zirconia blanks in heights of 30, 40 and 50 mm. If needed, and upon request, we can also come up with special solutions to meet your specific needs. We are expecting your proposals and will be happy to help you in realizing them.

Zirkonzahn ICE Zirkon Translucent

Zirkonzahn Prettau® Zirconia

IPS e.max® Press

IPS e.max® CAD

0 200 400 600 800 1000 1200 1400

MPa of dental restoration materials

Source: Manufacturers' homepage or publication

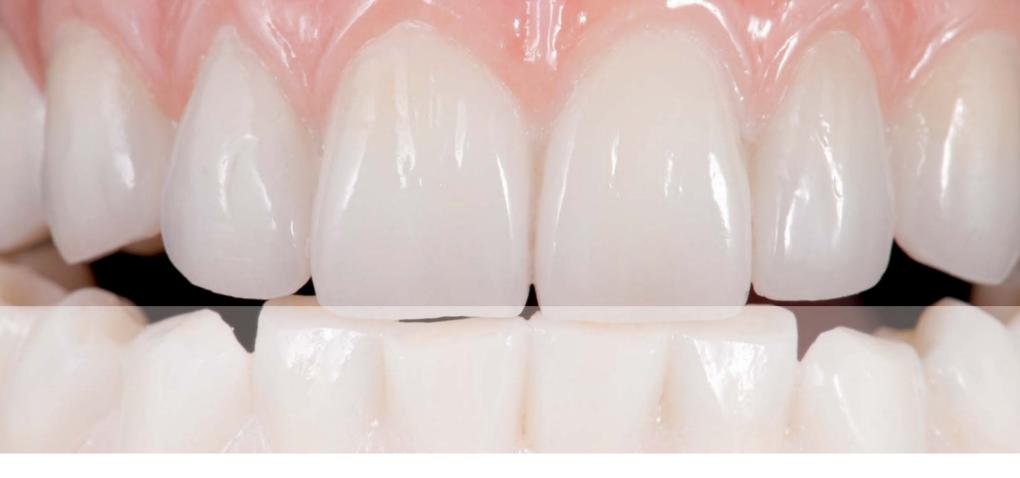
# Consistent shrinkage

With our advanced processing technology we are able to guarantee a consistent shrinkage factor, which again forms the basis for the greatest precision possible. Offering flexural strength of up to 1,570 MPa (University of Munich study, Dr. Beuer, Feb 2007), our zirconia not only differentiates from traditional dental replacement materials but is also known as one of the firmest materials available.

# Prettau® Zirconia

As far as (full-anatomical-contour) solid zirconia restorations are concerned, we all agree that a special translucent zirconia material is needed first. For this reason we have developed the highly translucent Prettau® Zirconia which is used in conjunction with a specialized coloring technique that eliminates the use of veneer ceramics entirely. In this way esthetically pleasing full-zirconia (FZ) restorations, i.e. the 'Prettau® Bridge' can be realized.





### Is Prettau<sup>®</sup> Zirconia too hard and abrasive?

As we know from nature, elephants starve to death at the age of 50 - 60 years because their dentition at that stage is too abraded to process food.

In dentistry, the term "abrasion" (from the Latin abrasio, which means "scraping") refers to eliminating hard tissues by rubbing. Hard tissues include enamel and dentin. Since it is a new technology used to make bridges entirely in zirconia without the use of ceramic, Prettau® Zirconia has sometimes been regarded critically for its abrasiveness. Studies now show

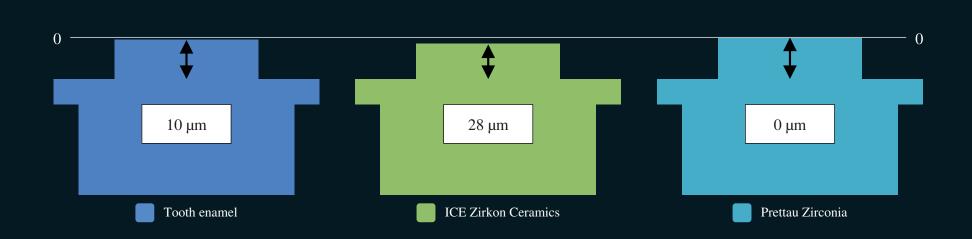
that these misgivings are unfounded and scientifically not supported. One study in particular proves that polished Prettau® Zirconia causes virtually no abrasion on the body it rubs against. This is due to the remarkable properties of the polished surface of Prettau® Zirconia components. The study shows that both a ceramic and a natural tooth caused greater wear than polished Prettau® Zirconia (see figure next page).



This phenomenon can be illustrated by a practical example. If you rub wood against a smooth glass pane, nothing will happen. But rub wood against wood and it will splinter. As two materials of the same kind meet (tooth against tooth), the natural dentition will also inevitably wear. The complete results of the study, which agree with those obtained by independent research institutes, can be downloaded from www.zirkonzahn.com.

Martin Rosentritt, an engineer at the University of Regensburg, has completed a study on the abrasiveness of various materials. The study reveals how the crystal structure of classic ceramic makes this material several times more abrasive on natural enamel.

The effect is similar to that of sandpaper. After a procedure such as smoothing, an initial abrasion or even a rubbing of the glaze paste, the crystal structure breaks through to the surface. Generally speaking, it can be assumed that natural enamel rubbing against natural enamel generates much greater abrasion than polished Prettau® Zirconia.





# Prettau® Zirconia – the application

Especially in the field of implant dentistry, in cases of limited available space or restorations with tissue flanges, Prettau® Zirconia comes into a world of its own. One of the many advantages is the complete elimination of posterior occlusal chipping because only the labial or buccal surfaces are porcelain veneered; all functional areas are made of solid Prettau® Zirconia.

The flexural strength of Prettau $^{\circ}$  Zirconia lays 10 % below regular zirconia, but this shortfall is more than compensated by the extra frame dimension

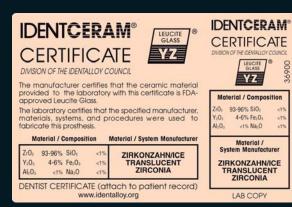
(full contour!): No need to maintain space for veneer porcelain! Therefore actual flexural strength increases by up to 200%. If it is colored with the technique developed by Zirkonzahn, using the special colour liquids, Prettau® Zirconia can be milled with both manual and CAD/CAM milling systems. Before using the material for the first time, we recommend taking a specialization course or watching the DVD course on Prettau® Zirconia.



# Certification

Our worldwide presence and our uncompromising quality approach guarantee that all Zirkonzahn products meet international quality standards and respective guidelines. Zirkonzahn has been ISO 9001 and ISO 13485:2003/CMDCAS certified since 2006. Our various testing methods ensure flawless quality control.

The CE mark shows that our products comply with applicable European directives on product safety. Of course, our high-quality zirconia also meets the requirements of the Food and Drug Administration (FDA) and is registered in the USA. Voluntary registration - that is, the IdentAlloy/IdentCeram certificate - promotes the quality, integrity and value of dental materials for the benefit of patients, dentists and labs alike. This certificate, which is attached to every order for Zirkonzahn ICE Zirkon Translucent or Zirkonzahn Prettau® Zirconia, guarantees the proven quality of the material.



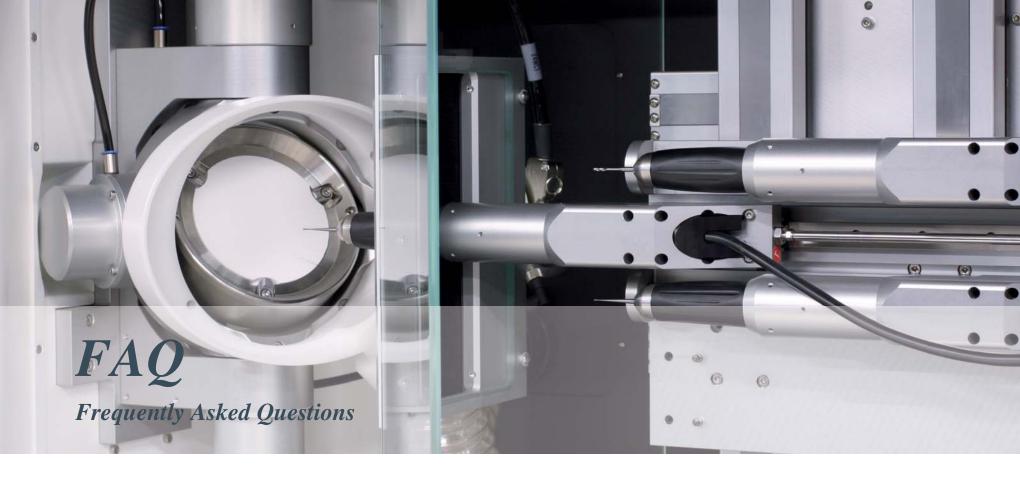
YZ.

<1% Na<sub>2</sub>O

Material /







# Essential information for your decision!

To help you choose YOUR OWN zirconia with full knowledge of the facts and after responsible consideration, we are listing below the major issues as Frequently Asked Questions.

### Which milling systems are compatible with our zirconia?

In principle, our zirconia can be processed with Sirona®, KaVo® and Wieland™ milling systems as long as these are open systems.

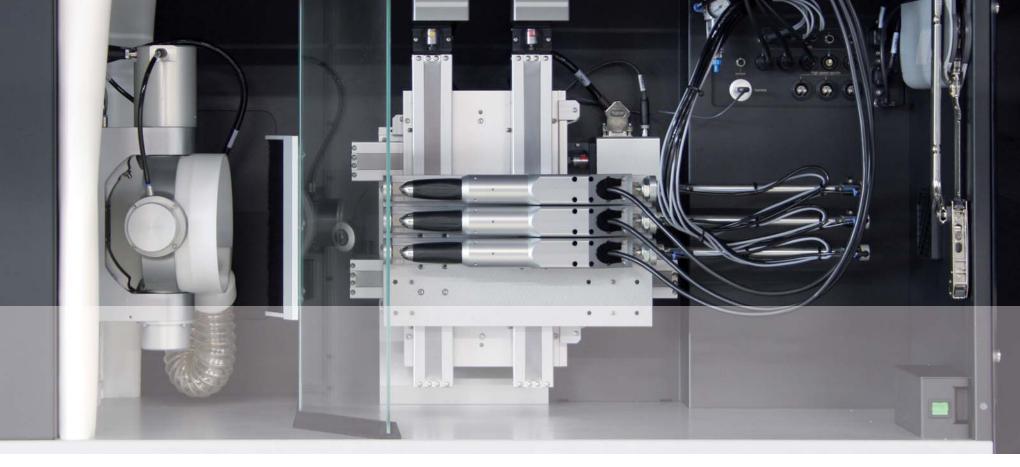
The dimensions indicated for the blanks can be used to gain further information on their compatibility.



### How is Zirkonzahn zirconia different from comparable materials?

- Across-the-board quality control thanks to direct production of zirconia by the company itself, without the involvement of intermediaries, and with international product certifications and registrations (CE, FDA, ISO, IdentCeram)
- The only zirconia with a constant shrinkage factor
- Extremely high flexural strength of approx. 1570 MPa
- Superior flexibility in adapting to different requirements, thanks to special production process and the fact that the company is the sole producer of Prettau® Zirconia
- Only Prettau® Zirconia with the special coloring techniques allow the realization of 100% full zirconia bridges, without the use of ceramic





### Does the milling system need to be adapted?

No, our zirconia blanks can be used without any problem after the code, clearly visible on the box, has been entered (picture).



# Does our zirconia have to be used with a specific type of ceramic material?

No, Zirkonzahn zirconia can be used with the ceramic you normally use. However, since all the components we offer match with each other perfectly, we recommend using Zirkonzahn ICE Zirkon Ceramics.



# If you need further details on the use of our products or the correct choice of zirconia blanks, please call:

Zirkonzahn USA: Tel: +1 6784419419

Zirkonzahn World Wide: Tel: +39 0474 066 680

### Addresses for customer assistance

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You will find a list of our international offices under establishments and partners on www.zirkonzahn.com





# Our product line

Our zirconia blanks are 100% compatible with milling systems from Sirona®, KaVo® and others. The individual articles of our product line are meticulously matched and complement each other perfectly to obtain high quality restorations to the complete satisfaction of dentists and patients.

Apart from high-quality zirconia blanks, our product line includes our own ceramic system, color liquids, stains and other products for the dental laboratory.

Our entire product line can be viewed at www.zirkonzahn.com.

## ICE Zirkon Translucent

# Prettau<sup>®</sup> Zirconia (Highly translucent Zirconia blanks)



Zirconia Translucent 98H10

Amount per package: 1 pc

Height: 10 mm

Item number: ZRAB0901



### Zirconia Translucent 98H14 with step

Amount per package: 1 pc

Height: 14 mm

Item number: ZRAB0911



### Zirconia Translucent 98H16 with step

Amount per package: 1 pc

Height: 16 mm

Item number: ZRAB0962



### Zirconia Translucent 98H18 with step

Amount per package: 1 pc

Height: 18 mm

Item number: ZRAB0921



### Zirconia Translucent 98H20 with step

Amount per package: 1 pc

Height: 20 mm

Item number: ZRAB0931



### Zirconia Translucent 98H23,5 with step

Amount per package: 1 pc

Height: 23,5 mm

Item number: ZRAB0951



### Zirconia Prettau® 98H10

Amount per package: 1 pc

Height: 10 mm

Item number: ZRAD0901



### Zirconia Prettau® 98H14 with step

Amount per package: 1 pc

Height: 14 mm

Item number: ZRAD0911



### Zirconia Prettau® 98H16 with step

Amount per package: 1 pc

Height: 16 mm

Item number: ZRAD0962



### Zirconia Prettau® 98H18 with step

Amount per package: 1 pc

Height: 18 mm

Item number: ZRAD0921



### Zirconia Prettau® 98H20 with step

Amount per package: 1 pc

Height: 20 mm

Item number: ZRAD0931



### Zirconia Prettau® 98H23,5 with step

Amount per package: 1 pc

Height: 23,5 mm

Item number: ZRAD0951

### ICE Zirkon Translucent



Zirconia Translucent with location bolt

Size: 15,5 x 18,75 x 14mm Amount per package: 6 pcs Item number: ZRAB2156



Zirconia Translucent with location bolt

Size: 15,5 x 18,75 x 20 mm Amount per package: 6 pcs Item number: ZRAB2116



### Zirconia Translucent with location bolt

Size: 15,5 x 39,8 x 14mm Amount per package: 3 pcs Item number: ZRAB2123



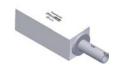
### Zirconia Translucent with location bolt

Size: 15,5 x 39,8 x 19 mm Amount per package: 3 pcs Item number: ZRAB2133



### Zirconia Translucent with big location bolt

Size: 15,5 x 55 x 19 mm Amount per package: 2 pcs Item number: ZRAB2146



### Zirconia Translucent with big location bolt

Size: 25,5 x 60 x 22 mm Amount per package: 1 pc Item number: ZRAB1757

# **Prettau**<sup>®</sup> **Zirkon** (Highly translucent Zirconia blanks)



### Prettau<sup>®</sup> Zirconia with location bolt

Size: 15,5 x 18,75 x 14 mm Amount per package: 6 pcs Item number: ZRAD2156



### Prettau® Zirconia with location bolt

Size: 15,5 x 18,75 x 20 mm Amount per package: 6 pcs

Item number: ZRAD2116



### Prettau® Zirconia with location bolt

Size: 15,5 x 39,8 x 14 mm Amount per package: 3 pcs

Item number: ZRAD2123



### Prettau® Zirconia with location bolt

Size: 15,5 x 39,8 x 19 mm Amount per package: 3 pcs

Item number: ZRAD2133



### Prettau® Zirconia with big location bolt

Size: 15,5 x 55 x 19 mm Amount per package: 2 pcs Item number: ZRAD2146



### Prettau<sup>®</sup> Zirconia with big location bolt

Size: 25,5 x 60 x 22 mm Amount per package: 1 pc Item number: ZRAD1757

	Sirona® InLab®	Sirona® InLab® MX CL
15/40/14	X	X
15/40/19	X	X
15/19/20	X	X
15/19/14		X
15/55/19		X
25/60/22		X

### Important: Instruction for the use of Sirona® blanks

To avoid stains, the work needs to be rinsed carefully after milling and completely dried. Further processing may only be done after this step.

(\* marked terms are registered brand names and trademarks of the companies WIELAND Dental + Technik GmbH & Co. KG, Sirona Dental Systems GmbH and KaVo Dental GmbH)

### ICE Zirkon Translucent



### Zirconia Translucent 16H16 Amount per package: 6 pcs

Height: 16 mm

Item number: ZRAB1036



### Zirconia Translucent 20H20

Amount per package: 6 pcs

Height: 20 mm

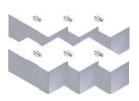
Item number: ZRAB1156



### Zirconia Translucent

Amount per package: 6 pcs Size: 20 x 42 x 16 mm

Item number: ZRAB1536



### Zirconia Translucent

Amount per package: 6 pcs Size: 20 x 42 x 20 mm

Item number: ZRAB1556



### Zirconia Translucent

Amount per package: 3 pcs Size: 25 x 60 x 16 mm

Item number: ZRAB1733



### Zirconia Translucent

Amount per package: 3 pcs Size: 25 x 60 x 20 mm

Item number: ZRAB1753

compatible with KaVo® Everest\*



### ICE Zirkon Ceramics

Modern ceramisation techniques do not have the sole objective of reproducing the colour of natural teeth, but also try to consider the complete tooth and perfectly duplicate the characteristic opacity of its individual layers, as well as its depth and its three-dimensional configuration.

Obtaining perfection in the imitation of a natural model is always a demanding, yet exciting challenge. Our line of ceramic products includes

all the colors and products necessary for obtaining restorations as similar as possible to natural teeth with a pleasant appearance. The line also includes 16 Vita-colors, 6 different Ceramic Tissue types, 16 different Ceramic Dentines and 21 Ceramic Dynamik Dentines with intense colors.

# Colour Liquid and Colour Liquid for Prettau®

For the customized coloration of restorations, we offer 16 different color liquids and a set of intense colors that covers the entire Vita color scale.

Colour Liquid: 100 ml/50 ml	A1 – D4, Set
Colour Liquid Prettau®: 50 ml	A1 – D4, Set
	Brush for Colour Liquid Size 4
Colour Liquid Prettau® intensiv: 20 ml	Tissue A, Tissue B, Tissue C,
	Orange 1, Brown 2,
	Incisal grey, Incisal violet,
	Set, Fluoreszenz

# ICE Zirkon Stains and ICE Zirkon Stains Prettau®

The Zirkonzahn set of stains is consists of 10 different colors and includes the glaze paste and the required glazing liquid.

Stain Colours	Blue, Tissue, Orange, Orange 2, Brown, Beige, White, Khaki, Khaki 2, Black, Glaze	
Stain Colours Prettau®	A1 – A3,5, B1 – B4, C1 – C4, D2 – D4, Glaze Plus	



# 100 % Prettau® Zirconia

Worldwide network of Zirconia Experts - Patient cases made for 100% Prettau® Zirconia

Prettau® Zirconia - on elements milled manually or with a CAD/CAM system - has a virtually infinite number of uses and can accommodate both special local situations (such as particularly white restorations) and patients with special needs. In this way, we can satisfy not only dentists, but also particularly demanding patients.

On the next page we show a selection of Prettau® Zirconia works made by some of our international experts. Other impressive examples can be viewed on our homepage.

Interested? We are waiting to learn about your most successful projects.

The Prettau® Bridge – Made by CAD/CAM

Clinician: Dr. Fernando Rojas-Vizcaya, Spain

Technician: Georg Walcher – Zirkonzahn Education Center







# The Prettau® Bridge

Clinician: Dr. Ghadeer Thalji - University of North Carolina, Department of Prosthodontics, USA

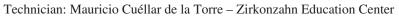
Technician: Georg Walcher – Zirkonzahn Education Center



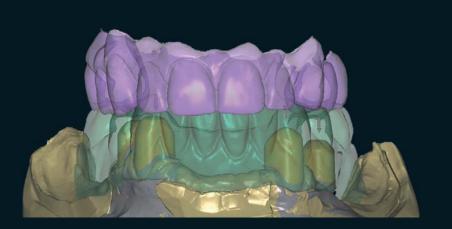


# The Prettau® Bridge – Made by CAD/CAM

Clinician: Dr. Nico Bühler - Clinic for Reconstructive Dentistry - University Basel/Switzerland









# 100% Tennessee oak – The wooden bridge – Made by CAD/CAM

Technician: Zirkonzahn Education Center, Italy





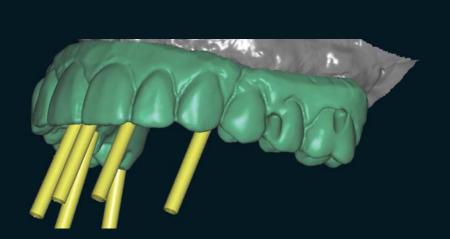


# The Prettau® Bridge – Made by CAD/CAM

Clinician: Dr. Thomas Suranyi and Lyndon F Cooper DDS PhD – University of North Carolina

Technician: Georg Walcher – Zirkonzahn Education Center









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