

June 2013

# dental**lab**products

INNOVATIONS ADVANCING PRODUCTIVITY, PROFICIENCY, AND PROFITABILITY

Vol. 38 No. 06

[dlpmagazine.com](http://dlpmagazine.com)

## UNPACKING ZIRCONIA

We go in-depth with the superhero of dental lab materials.

## CUSTOM SHADING

Luke Kahng shows how to shade match a color gradation.

## MICROWAVE CURING

Tom Zaleske demonstrates how this technique can be useful in any lab.

## REVISITING REMOVABLES

The 7 reasons you should take a look at removables.

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## NEW TECHNIQUE VIDEOS

Check out the brand-new video articles available on [dlpmagazine.com](http://dlpmagazine.com).



### PRIMOTEC

New diamond-coated burs provide excellence in zirconia milling.  
*More on p.4...*



### ZIRKONZAHN

The M1 milling unit provides milling from virtually any direction.  
*More on p.4...*



### VIDENT

The Bleachedguide 3D-Master has gotten enhanced with ADA shades.  
*More on p.4...*

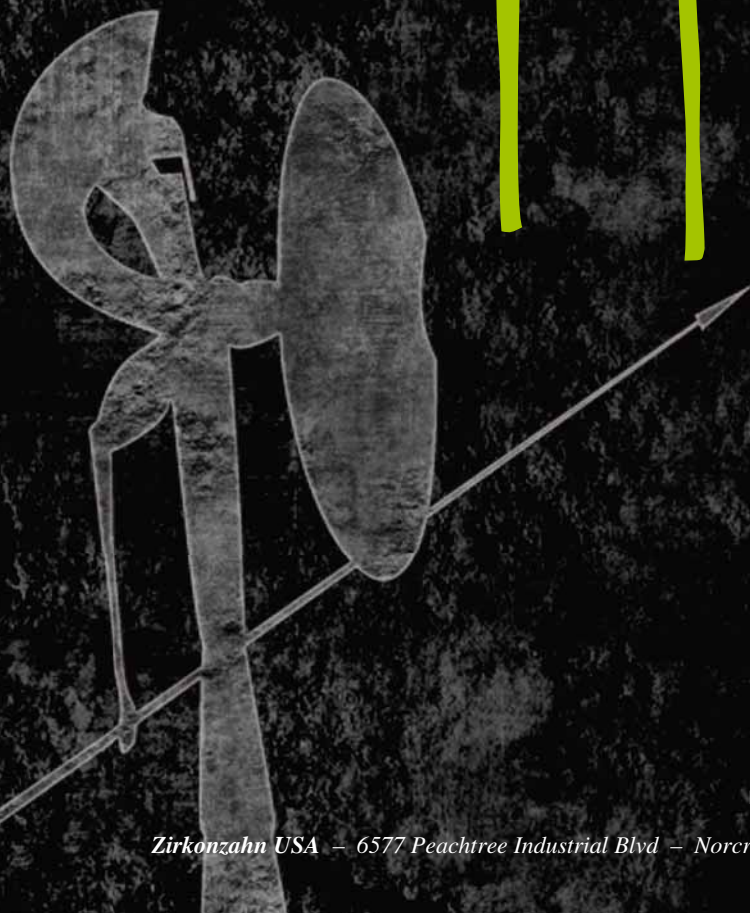
### EVIDENT

Cloud-based software to help you stay organized and connected.  
*More on p.4...*



# MILLING UNIT

MM



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**10 QUESTIONS:** RITA ACQUAFREDDA, VICE PRESIDENT AT ZAHN DENTAL

# dental**lab**products

June 2013

INNOVATIONS ADVANCING PRODUCTIVITY, PROFICIENCY, AND PROFITABILITY

Vol. 38 No. 06

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**PRODUCTS**  
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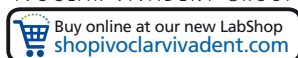
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## ZIRCONIA MILLING BURS

### **a** Primotec Diamond Coated Burs

Made in Germany, the recently launched **zirconia diamond coated milling burs** are specially designed for zirconia milling, plus offer 50% more cutting surface than average burs. The zirconia milling burs are available in a wide range of sizes and are reportedly compatible with most open milling machines.

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**a**



**c**

## SHADING GUIDE

### **c** Enhanced VITA Bleachedguide 3D-Master

The enhanced **VITA Bleachedguide 3D-Master** now integrates the 29 shade levels defined by the ADA and also offers additional numerical designations said to support clear communication between dentists and patients. The numerical designations are based on the brightness levels defined by the ADA, which allows dentists to discuss desired results of the tooth bleaching procedure with their patients prior to treatment.

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## MILLING UNIT

### **b** Milling Unit M1

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**b**



**d**

## CLOUD-BASED SOFTWARE SOLUTION

### **d** Evident Software

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new products

mixing trays, disc brushes, clasps, barcode scanners and more.

## MIXING TRAYS

### Tinto Mixing

The Tinto mixing tray's compact, ergonomic design allows laboratories to easily store and safely protect pre-mixed products like stains or paste-opaques.

Page **10**



## SHADE READERS

### Easyshade Advance

VITA's Easyshade Advance 4.0 digital shade matching system provides optimal determination, advanced measurement technology and sturdy LED components.

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## CLASPS

### Itsoclear Clasps

Made from thermoplastic nylon, Lincoln Dental's Itsoclear clasp is said to be easily adjustable and non-abrasive, while also remaining completely clear.

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## INFECTION CONTROL SOLUTIONS

### Monarch Infection Control

Air Techniques recently unveiled this line of infection control products for surfaces, instruments, equipment, skin and hands.

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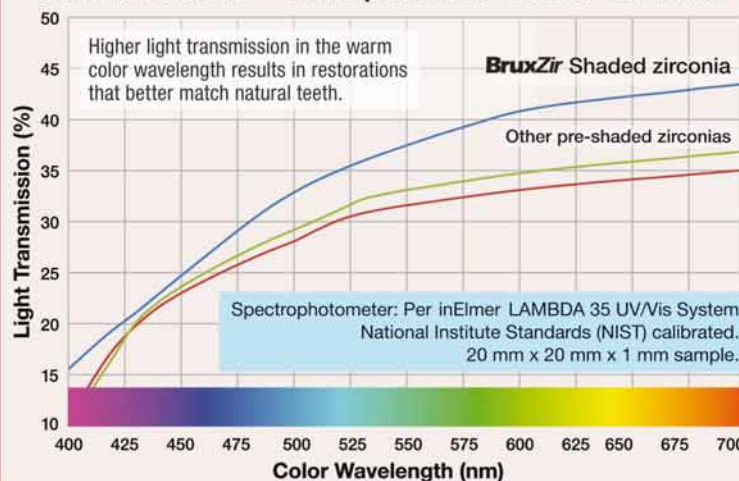
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**RYAN HAMM**  
rhamm@advanstar.com

## In praise of artistry

### One of the first things I came to respect

about the dental laboratory industry is the level of artistry involved. Whether the project is a restoration, a removable or something else entirely, it nearly always involves a lab technician working with painstaking focus.

It seems like the creativity in the laboratory industry often gets overshadowed by the more scientific or engineering-related aspects of the final restoration. To be sure, each time a lab takes on a project, there are plenty of engineering and scientific decisions made that are essential to proper fit and function. But the work required to make something esthetically pleasing cannot be overlooked. You make sure the restoration is the perfect shade. You place each tooth in a removable, moving it a millimeter this

way or that to achieve optimal esthetics. Each day you do your work, you're *creating* something beautiful.

Here at *Dental Lab Products*, we want to honor and recognize that. That's why we're excited to announce we're opening nominations for the Lab Artistry Show-down 2013. All you have to do is submit your nomination by e-mailing me (rhamm@advanstar.com) a photo of the final restoration or removable with a short paragraph explaining the process. We and a panel of expert judges will choose the 10 we feel exhibit the most artistry and then those will be featured in our October issue. The due date for submissions is Aug. 1. So get your nominations in, and we'll help bring more recognition to the artistry exhibited every day in the dental lab world. **lab**

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**Dental Lab Products** provides dental laboratory owners and managers with unbiased, clear, and concise insights into optimal uses and best applications of new products. Integrating original research, continuing education, and international industry trends, we support laboratory decision-makers in their commitment to deliver optimum patient care through advancing their proficiency, productivity and profitability.

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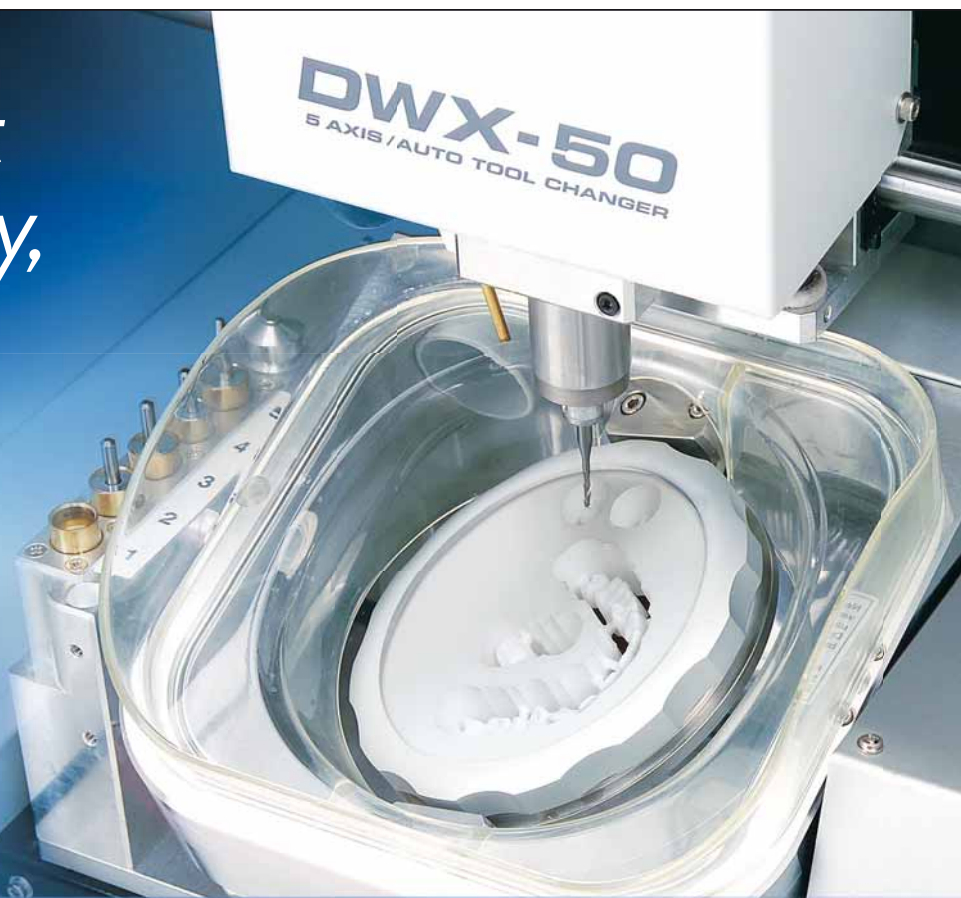
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Starting earlier this year we added the reader service card with numbers that correspond to advertisements. Additionally, you'll find numbers with each of the products that appear as editorial in this issue of DLP.

You'll also find opportunities to go directly to landing pages that allow you to fill in your information to receive new product materials, QR tags that get you there directly from your phone, and in some cases, text (or SMS) codes that provide yet another way to get the information you want.

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### Competitive Edge

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An interview with Avi Cohen, Director of Global Dental at Stratasys Ltd., about the development process of this second generation 3D printing material.

#### 32 Real Time ROI with DENTSPLY's Cercon Solutions

DJ Zanon of Nu-Art Dental Laboratory Inc. explains how using DENTSPLY's Cercon zirconia and milling system has helped the lab grow and become more efficient.

#### 34 Real Time ROI with Core3dcentres

How this digital outsourcing solution helped Clark Dental Lab improve its cost efficiency and ability to help clients.

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Naomi Cooper on why hiring the right vendors to help with marketing leads to better results and ROI.



It's a Bird, It's a Plane,  
It's...  
**Zirconia**

**15** A roundup of the best zirconia products on the market.  
by Robert Elsenpeter

PHOTO: PEXMO/GETTY IMAGES

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Dental Creations' Wonderpeg provides stabilization during the firing cycle.

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Wieland Precision Technology uses Ivoclar Vivadent's world-class materials to offer laboratories a better choice in metal-free options—but they take their service even further thanks to education and customer assistance.



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## 3 most-read articles online

#### 01 EOS announces EOSINT M 270 laser sintering system

by DLP Editorial Team

#### 02 Top Denture Tooth Options

by DLP Editorial Team

#### 03 ClearCorrect: Using Stratasys' Objet 3D printers to increase business

by DLP Editorial Team

## CLICKS AND PICKS

What lab owners and technicians were searching for and savoring in April @ [dipmagazine.com](http://dipmagazine.com)

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# Top 7 >>

## WAYS TO REVISIT REMOVABLES



### 01 An increasing customer base

According to the U.S. Census Bureau, the 65+ population is expected to double by 2050. This is great news for denture-doing dentists and removable dental labs—as people get older, their need for removables also increases, meaning there could soon be an all-new revenue stream.<sup>1</sup>

### 02 Increase in quality means increase in choices and demand

The improvements and innovations over the past few decades offer so many choices in comfortable, esthetic removable appliances. A removable appliance does not have to be bulky and uncomfortable nor show metal. “With the increasing demand of implant overdentures and highly cosmetic full and partial dentures, the removable arena is wide open for dental laboratories and dentists to increase their business,” says Dennis Urban, CDT. “The quality and esthetics of denture teeth and denture base materials are unsurpassed compared to materials used in the past. The major problem that the dental laboratory industry is facing is a lack of experienced removable technicians.”<sup>2</sup>

### 03 More powerful communication options

“Establish a system of efficient removable case management, which is centered on quality two-way communication between the client’s office and the laboratory throughout the fabrication process, from design to delivery,” says Jim Collis for Shofu. That sort of strategy means you’re able to create removables that will make the dental practice and the patient happy the first time, saving time and money.<sup>3</sup>

### 04 The economic reality will drive demand

The recession that we recently experienced impacted the demand for high-cost restorative dentistry, causing people of all ages to re-think removable appliances as a viable option.<sup>4</sup>

### 05 Advances in implants means more need for removables

For patients that choose implants, removable dentures and/or partials are necessary during the healing period.<sup>5</sup>

### 06 Better technology increases ability

New materials including: teeth, acrylic and composites are improving the quality, function and esthetics of removables. Lab professionals also can learn how CAD/CAM is already being used for partial denture frameworks and implant bars for hybrid cases.<sup>6</sup>

### 07 The variety of removable options can help attract clients

Make your clients aware of unique removable services available through your laboratory such as: combination fixed and removable cases, overdenture attachment cases, or quick turnaround repairs and relines. Provide this information through your company website, emails, or as an attachment to your monthly billing statement.<sup>7</sup> ●

#### Information provided by:

1. Vident, TCS
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3. Shofu
4. TCS
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## VeroDentPlus MED690

**VeroDentPlus MED690** material for the Objet EdenV 3D printer reportedly allows laboratories to economically print highly accurate 3D dental models that offer the fine details and resolution found in a dental stone. Capable of use with all open intraoral impression and plaster scanners, the material is optimized for printing models of crowns, bridges, orthodontic appliances, and implants.

**Stratasys Ltd.**  
877-489-9449 | [stratasys.com](http://stratasys.com)

**CIRCLE RS NO. 11**



## Tinto Mixing Tray

Constructed in a traditional concept of a dry tray, the **Tinto** mixing tray's compact, ergonomic design allows laboratories to easily store and safely protect pre-mixed products like stains or paste-opaques. Additionally, the stackable tray's lid is outfitted with a transparent window, allowing for easy recognition of its contents. Three designs are available, each featuring various wells of different sizes.

**Smile Line USA Inc.**  
877-755-6868 | [smilelineusa.com](http://smilelineusa.com)

**CIRCLE RS NO. 13**



## Hatho Habras Discs

These **Hatho Habras** disc brushes offer a flexible and abrasive bristle design that gives dental lab work a uniform finish. Reportedly, the discs are ideal for removing light oxide, heavy cleaning, semi-finishing, blending and more. The brushes come in three types (fine, medium and coarse) and are available in packages of four and 48.

**Keystone Industries**  
800-333-3131 | [keystoneind.com](http://keystoneind.com)

**CIRCLE RS NO. 12**



## Itsoclear Clasps

Made from thermoplastic nylon, **Itsoclear** clasps are said to be easily adjustable and non-abrasive, while also remaining completely clear without the noticeable metal parts found in other esthetic dentistry materials. Additionally, these clasps do not require the use of injection machines or hand-held injectors, taking less than four minutes to process and place. Well-suited for those with partial dentures, the clasps are available in packages of six molar caps and six universal clasps.

**Lincoln Dental**  
800-289-6678 | [lincolndental.com](http://lincolndental.com)

**CIRCLE RS NO. 14**

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**PRETTAU®** NEEDS HEROES

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*The visionary Enrico Steger has based progression on the virtues of discipline, innovation, trust, responsibility, will power and education. The mission is to form Zirconia heroes, and this focus is resembled through Zirkonzahn worldwide and unique educational HERO CAMPUS facilities. Because we love what we do we want to convey that same passion and knowledge and to provide the users the tools necessary to excel in the dental industry and become a true hero of Zirconia.*



*Face Hunter  
with Virtual Articulator*



*Scanner S600 ARTI*



*Zirconia Prettau®*



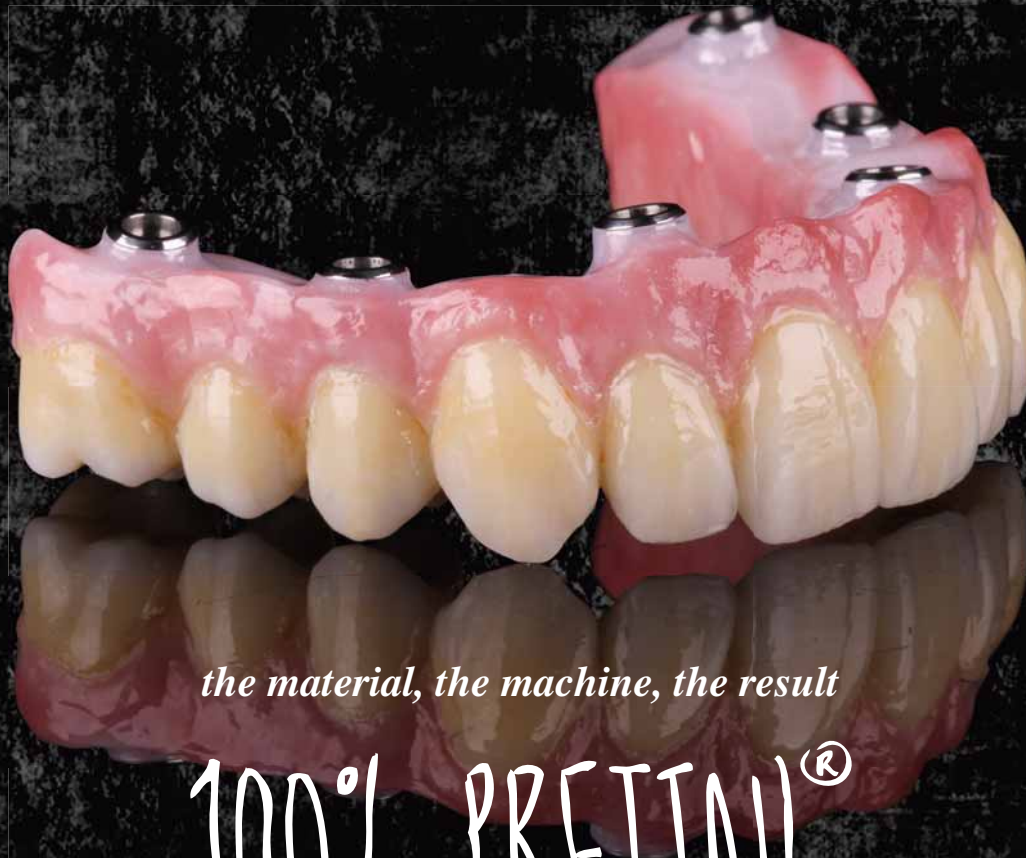
*Colour Liquids Prettau® Aquarell*



*Milling Unit M5*



*Sintering Furnace  
„Zirkonofen“ 700 Vakuum*



*the material, the machine, the result*

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## Monarch Infection Control

The **Monarch line of infection control** products is designed for surfaces, instruments, equipment, skin and hands. Billed as a safer, more powerful alternative to other infection control products, the product line includes Monarch Surface Disinfectant and Monarch Hand Hygiene. Each product is said to offer the fastest kill times and effective clinical performance, plus much more.

**Air Techniques**

888-247-8481 | [airtechniques.com](http://airtechniques.com)

**CIRCLE RS NO. 16**



## Easyshade Advance 4.0

VITA's **Easyshade Advance 4.0** digital shade matching system provides optimal determination, advanced measurement technology and sturdy LED components. When set to "average" mode, the Easyshade Advance 4.0 lets users size up to 30 shades on one tooth to arrive at a median shade, reportedly making the difficult determination of a base shade on anterior teeth much easier. Additionally, a shade measure button automatically measures when proper placement is achieved. By using Bluetooth technology, measurement information is sent wirelessly to VITA Assist communication software, which then displays results in international shade standards for VITA 3D-MASTER and VITA classical A1-D4.

**Vident**

800-828-3839 | [vident.com](http://vident.com)

**CIRCLE RS NO. 18**



## QB30 Barcode Scanner

Designed to be twice as fast as DENSO's QB20 models, the **QB30 2D** highspeed stationary barcode scanner scans moving objects, while its compact body allows it to be used in small spaces. Additionally, a wide-angle focusing lens allows scanned units to be scanned close to the unit, even as near as 1.6 inches away. Outfitted with IP54 dust and splash proof protection, the QB30 offers an extended operating temperature range of -4 to 122 degrees Fahrenheit, allowing it to perform in a wide range of environments and situations.

**DENSO**

888-693-3676 | [denso-adc.com](http://denso-adc.com)

**CIRCLE RS NO. 17**



## DWX-50 Mill Update

The **DWX-50** dental mill now comes with additional accessories and tools, including the Pin-Type Material Adapter which supports up to six different pin-type materials for dry milling in zirconia, resins and new nano ceramics; the 50 Main Clamp 2, a precise securing mechanism for indexing partially milled material stock; and tooling options designed for the production of dental models and restorations. The new tools and accessories are said to allow laboratories to work with a broader range of materials and address a larger number of applications.

**Roland DGA Corp.**

800-542-2307 | [rolanddga.com](http://rolanddga.com)

**CIRCLE RS NO. 19**

# Zirkonzahn®

*Human Zirconium Technology*

**NEW**



## TITANIUM SPECTRAL-COLOURING ANODIZER

*Coating of titanium constructions*





*Size (H x W x D)* 55.3 x 41.2 x 43.8 cm

*Weight* approx. 50 kg

*Housing* Sicurit glass hardened UNI ISO 12150

*Operating voltage* 230 V (120 V)

*Special features*

- Simple handling and maintenance
- Multiple parts can be coloured within a few seconds
- Easy-to-clean, removable porcelain inserts
- Gold-plated cable connections
- Visual display of the processing status with multi-coloured LED illumination
- Even better bio-compatibility and osseointegration of titanium due to oxide layer
- Also suitable for colour codification of working materials, e.g. analogue and implant screws

Lyndon F. Cooper DDS PhD – University of North Carolina  
Zirkonzahn Education Center Brunico, South Tyrol





# TITANIUM SPECTRAL-COLOURING ANODIZER

*Metallic primary constructions always slightly shine through zirconia bridges on titanium bars and individual zirconia abutments. This results to a high grey value of all works that is hard to minimise. Silver implant screws also cast a slight grey shadow onto the occlusal surface.*

*With the new Titanium Spectral-Colouring Anodizer, metal bases and screws can now be colourised in one's own laboratory in a multitude of colours, e.g. gold. This has the advantage that the metal bases shine through less due to the new colour.*

*The device is very easy to handle, which allows colourisation of multiple titanium elements without changing their bio-compatible properties and strengths. Scientific studies have even shown that the coloured oxide layer increases the bio-compatibility and osseointegration of titanium. In addition to the grey value reduction, the procedure can also be used for colour coding.*

*In this way, analogue screws can, for example, be marked with a certain colour and implant screws with a different colour. This has the advantage that screws can be separated from each other at first sight.*



***For bio-compatible, coloured coating of titanium constructions aiming at grey scale value reduction  
Various colours are possible***

*Inspired by Luis Macieira, Zirkonzahn Portugal*

*Item number: SYAA0700*



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It's a Bird,  
It's a Plane,  
It's...

# Zirconia

An inside look at the material even Superman would choose, and a roundup of the best zirconia products on the market.

by Robert Elsenpeter

If Superman ever needed dental restorations, they'd likely be made out of zirconia. Colloquially known in dental laboratory circles as "White Steel," zirconia-based ceramics have been used in such industries as automotive, medical, aircraft and the military. It is ideal

for high-temperature applications, machined parts and armor—and it's a popular product for dental labs.

Zirconia has been used throughout the dental industry for more than 15 years, but the interest level has increased recently because of its versatility as well as the ever-increasing cost of noble alloys like gold.

## USES

Zirconia is a ceramic material used to create substructures in cosmetic dentistry, giving crowns and bridges a whiter, brighter, more translucent quality. Other zirconia applications include:

- Single crowns
- Primary crowns
- Three-unit bridges
- Four-unit bridges
- Five- and six-unit bridges
- Curved and long-span bridges
- Cantilever bridges
- Inlay/onlay bridges
- Implant abutments

Patients' physical reaction to zirconia is another plus. Zirconia is completely biocompatible—the body neither rejects nor reacts to it. Unlike alloys, the body accepts zirconia as a natural material, so there is no worry about allergies or adverse reactions. It is a preferred material for numerous medical applications, including long-lasting hip replacements.

## PHYSICAL PROPERTIES

Zirconia oxide is about twice as strong as aluminum oxide ceramics and five times stronger than glass ceramics. A more important consideration is its fracture toughness—the ability of a material to resist the spread of an internal crack. This is because of a property known as transformational toughening. Zirconia uses a tetragonal polycrystalline structure, and when a crack forms, a clamping effect occurs, stopping the crack from further expansion.

Zirconia is popular because of its translucency and luster. Translucency is important because crowns and bridges have traditionally been porcelain-fused-to-metal (PFM). These restorations are built on a dark metal alloy and tend to look opaque with a dark grayness at the gum line.

There are three different types of zirconia used in dental labs for the construction of restorations or other work. Though chemically identical, the three types have slightly different properties (including porosity, density, purity and strength), and which one is used depends on the lab's specific needs. The types of zirconia are:

*continued on page 16*

continued from page 15

- Fully sintered or hot isostatic pressing (HIP)
- Partially sintered zirconia
- Non-sintered or “green state” zirconia

Fully sintered zirconia is hardest, but the most difficult to mill. Partially and non-sintered zirconia are used in block form, coming from spray-dried zirconia powder that is then pressed and incompletely sintered. These types of zirconia are softer and easier to mill than HIP zirconia. For all types of zirconia, a computer scans the die, and then the CAD/CAM system guides the milling equipment.

Fully sintered zirconia is milled at full size, while partially and non-sintered zirconia is milled 20 to 30 percent larger than the final size, because of shrinkage caused by the final sintering process.

Once completed, a final layer of porcelain is applied by hand, giving the restoration its final shape and color. The metal-free composition of a zirconia restoration is an esthetic advantage over traditional ceramic restorations. Technicians must plan for the final shade, selecting an appropriate zirconia color which—when layered with various translucencies of porcelain—develops a restoration providing the best, most natural color.

Zirconia comes in blocks or discs that are used in milling machines. The sizes of blocks and discs vary, but typically are available in sizes (for blocks) from 20x15x15 mm to 65x20x20 mm and (for discs) from 98.5x10 mm up to 110x20 mm.

## QUALITY MATTERS

If the density of the zirconia block is not carefully checked for each batch, then a given block or disc will not shrink to the intended size, and the restoration will not fit. Also, if it is not uniformly dense, it is likely to warp. As such, it is important for labs to get their zirconia from quality distributors.

Differences among zirconia ceramics also can occur with the level of zirconia purity, the grain size, trace elements and stabilizing compounds. These differences can have a major effect on clinical outcomes, such as marginal fit, translucency, strength, and long-term stability.

Which type is best? Each category has its advantages and disadvantages.

Fully sintered HIP zirconia is denser and less porous than non-HIP zirconia, resulting in greater resistance to fracture. On the other hand, fully sintered HIP zirconia requires more intense grinding and heat during milling, which can lead to structural defects.

Zirconia is not a new material, but it is a very popular material with which to build restorations and, when coupled with a CAD/CAM solution, a very efficient, durable and esthetically pleasing option.



“My lab has three Lava systems and has been fabricating Lava zirconia restorations since 2003, so I know that the fit has always been there with Lava restorations. This certainly hasn’t changed with Lava Plus and I think 3M produces the best fitting substructures on the market by far.”

— Bob Williams, CDT, Owner of Synergy Ceramics

## 3M ESPE

### 3M™ ESPE™ LAVA™ PLUS HIGH TRANSLUCENCY ZIRCONIA

3M ESPE Lava™ Plus High Translucency Zirconia is a zirconia CAD/CAM system designed to deliver the esthetics of a layered restoration from all-zirconia that allows labs to create true restorative masterpieces. Its outstanding esthetics allow for natural colors to shine from the inside of dental crowns and bridges. Dentists are provided multiple options for custom shading, with 18 colors and eight Lava™ Plus Effect Shades, matching the VITA classical A1-D4 and bleached shades. The formula of the Lava Plus zirconia system provides very high translucency and beauty, without compromising strength. High strength allows tooth-preserving ≤0.5 mm minimum wall thickness—requiring 3X less occlusal preparation than lithium disilicate glass ceramic because of its 3X greater strength. Its versatility allows for the Lava Plus zirconia system to be used for almost any indication and requires minimal occlusal preparation. Created with special chemistry and processing, Lava Plus all-zirconia material resists chipping, and with its patented shading technology, the Lava Plus zirconia system enables highly esthetic all-zirconia or traditional layered restorations.

800-634-2249 | 3MESPE.com



## Aurident

### DELTA ZIRCONIA

Aurident’s Delta Yttria Stabilized Zirconia breaks the generally accepted viewpoint that equates low cost with lower quality. Delta Zirconia is manufactured under the strict guidelines required by the FDA and ISO 13485 Certifications. Delta Zirconia’s quality ensures a higher yield of units with fewer remakes and increased consistency in coloration not found in other low cost zirconia products. Delta Zirconia is available in either a high strength form (1400MPa) suitable for single copings to full roundhouses or a high translucent form (1200MPa) well suited for all forms of full contour restorations.

800-422-7373 | aurident.com

# Amann Girrbach America

## CERAMILL ZOLID

Ceramill Zolid is an advanced, non-veneered translucent zirconia with exceptional esthetics, strength and stability, making it well suited for full-contour, monolithic zirconia crowns and bridges. A crucial factor in developing the zirconia's exceptional translucency and optical depth effects is the sintering temperature. If the temperature is increased in favor of light permeability, excessive grain formation develops that can adversely affect long-term stability. Now for the first time, a sintering temperature of only 1450° C is all that is required to achieve the desired translucency. Sintering at this lower temperature prevents grain growth, making the finished Zolid restoration permanently stable.

Amann Girrbach's commitment to the development of both high quality materials and sophisticated computerized milling solutions provides the lab with an integrated digital solution designed to improve both clinical accuracy and esthetics.

800-851-3719

AmannGirrbachAmerica.com



“Since we've been using Ceramill Zolid zirconia for full-contour crowns and

bridges we've reached new levels of esthetics for our patients! Thank you Amann Girrbach for its beautiful translucency and strength!”

— Alex Lopez, production manager (left) and Klaus Lampmann, CDT (right), owner of Zahntechnik Dental Laboratory, Miami, Florida

DENTSPLY

cercon<sup>ht</sup>  
Full Contour Zirconia



Lab Smarter<sup>SM</sup>

## DENTSPLY

### CERCON HT FULL CONTOUR ZIRCONIA

Cercon<sup>ht</sup> Full Contour Zirconia is the next generation of DENTSPLY Cercon technology. Cercon<sup>ht</sup> provides optimal strength and esthetics, ideal for full contour posterior restorations. The monolithic crowns and bridges milled with Cercon<sup>ht</sup> full contour zirconia are 26% more translucent than conventional zirconia. Because of the material's high strength, very thin crowns and bridges can be created, which means that more of the patient's natural tooth can be preserved. With more than 10 years of clinical history and more than 6 million dental units placed, Cercon Zirconia provides confidence in material performance.

800-243-1942 | prosthetics.dentsply.com

## DAL DT Technologies

### BIOZ<sup>X2</sup> HIGH TRANSLUCENCY ZIRCONIA

BioZ<sup>X2</sup> High Translucency Zirconia from DAL DT Technologies is a new high strength, translucent zirconia for layered and full contour applications. Isostatically pressed from the highest quality grade zirconia (Tosoh from Japan) in an advanced facility in Germany, BioZ<sup>X2</sup> is designed to optimize the manufacturing process as well as the color result. Each disc is specifically weighed, measured and tested for exact shrinkage (as opposed to batch tested) to ensure maximum quality assurance. BioZ<sup>X2</sup> discs are fit for multiple milling systems and are available in seven different sizes, ranging from 98.5 mm x 10 mm to 98.5 mm x 25 mm. The discs are conveniently combined with a paint-on shading system that features enamel and body shades and a stain and glaze system that enhances and simulates layered and full contour appearance for maximum esthetics and consistent, accurate shades.

888-894-2148 | daltechsystems.com





**Espritdent**

## **FUSION-ONE ZIRCONIA**

Fusion-One Zirconia is a life-like internally shaded ceramic that is custom blended and isostatically pressed at Esprit Dental. Since 2004, Esprit Dental has improved the translucency of the material to its highest level via proprietary blending and sintering processes without sacrificing strength. Fusion-One comes in six shades and is well-suited to the Vita Classic shade guide. Life-like results are easily achieved using industry standard stain and glaze and polishing compounds.

877-832-0217  
espritdent.com



**GC Advanced Technologies Inc.**

## **AADVA**

GC Advanced Technologies Inc., a subsidiary of GC America, offers high quality zirconia custom CAD/CAM implant abutments that laboratories can be proud to offer their clinicians. GC's philosophy that "Customer Needs Define Quality" is incorporated in every aspect of GCAT's product offerings for milling centers. GCAT's brand of custom CAD/CAM implant abutments, called Aadva, is offered in an All-Zirconia and Blend (Hybrid) abutment style.

Both the Aadva All-Zirconia and Blend style abutments are offered in 10 different shades to assist the laboratories and clinicians in achieving an optimal esthetic result even for the most challenging cases and clinical situations. The Aadva Blend abutment comes with a gold anodized titanium base for added strength and tissue esthetics.

All of GCAT's implant abutments are available for most major implant systems. GCAT accepts 3Shape STL files, models and customer wax-ups.

866-925-4228  
gc-at.com

“Luxisse Dental Zirconia mills consistently for me every time. It is more translucent and accepts stains better than [other materials I've worked with]. As my all-ceramic business keeps growing, Luxisse Dental Zirconia will be my material of choice.”

—Steve Proctor, New Generation Restoration Dental Lab, St. Petersburg, Fla.



**Heany Industries**

## **LUXISSE™ DENTAL ZIRCONIA**

New York-based Heany Industries, a leader in wear-resistant ceramics and coatings since 1932, has made a strong entry into the dental zirconia business with their newest product, Luxisse. Made at their Scottsville, N.Y. plant under strict quality control measures, Luxisse is an all-ceramic material made of zirconium oxide that is manufactured specifically for use in dental restorations where fracture resistance is critical. Heany uses Tosoh Zirconia Powder for their formulations because of their high-ranking properties for purity and quality. Certified safe, effective and biocompatible for dental use, Luxisse is delivered to dental labs in pre-fired isostatically pressed blocks, cylinders and in 98, 99 and 100 mm discs that are easily milled to meet exacting custom specifications. Luxisse is available in pre-shaded standard translucent forms for copings and also in pre-shaded high translucent forms for full contour work.

585-889-2700 | luxissedental.com

**Glidewell Dental Labs**

**BRUXZIR SOLID ZIRCONIA**

BruxZir® Solid Zirconia is a monolithic zirconia material intended for the production of crowns, bridges, screw-retained implant crowns, inlays or onlays. Made without porcelain, BruxZir restorations are chip-resistant and exceed the flexural strength of typical zirconia (up to 1,465 MPa vs. 1,200+ MPa for typical zirconia). High impact resistance, durability and stability make them optimal for bruxers and grinders. Initially launched as an esthetic alternative to posterior metal occlusal PFMs or cast gold restorations, BruxZir Solid Zirconia restorations are now an excellent restorative option in the anterior as well. For even better results and homogenous shading, BruxZir™ Shaded Milling Blanks can be used with the BruxZir™ Milling System to produce crowns and bridges with increased



efficiency. BruxZir Shaded Milling Blanks are produced with a patent-pending colloidal process that ensures greater shade consistency, translucency and esthetics that mirror natural dentition.

800-854-7256 | [glidewelldental.com](http://glidewelldental.com)

**Ivoclar Vivadent Inc.**

**ZENOSTAR FULL CONTOUR ZIRCONIA**

Through its recent acquisition of Wieland Dental, Ivoclar Vivadent now offers Zenostar full-contour zirconia milling discs. Zenostar zirconia is used strictly in a laboratory environment, and its indications cover a range of restorations from single units to 14-unit bridges. The versatile material is available in six basic shades, which can then be easily characterized to accommodate most patients' esthetic needs. Zenostar demonstrates high flexural strength, is able to reproduce VITA 3D shades, and offers very high light transmission. It also is part of a coordinated system that includes the Zenostar Art Module, which consists of stains, glaze and one-layer ceramic to neatly individualize each restoration.

800-533-6825 | [ivoclarvivadent.com](http://ivoclarvivadent.com)



Innovations in CAD/CAM milling technology and materials, combined with an increasingly widespread use of a digital workflow, have made Zenostar and Zenotec all-ceramic restorative options a material of choice in the dental laboratory. The materials have an outstanding strength with full contour zirconia crowns and bridges without a ceramic veneer and can be conventionally cemented.

— Anthony Houle, General Manager, Wieland Precision Technology

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I see laboratory owners leading the industry in embracing new technologies. We're doing it to offer new superior products, premium quality and value to the clinical market we serve. We were early adopters of in-house

scanning, milling and printing. In fact, we couldn't live without it now! However, I'm continually amazed at how fast the conversion to CAD/CAM is happening in the laboratory industry.

My suggestion for other lab owners that are considering these purchases is to 1) do your homework and 2) only buy if your ROI (return on investment) will be 2-3 years. Focus on quality and ROI as you'll find that your needs and the restorative materials landscape will continue to change rapidly.

— Shaun Keating, CDT, owner of **Keating Dental Arts**



**Sagemax**  
**NEXXZR T**

NexxZr T by Sagemax combines high strength with high translucency for a versatile zirconia that can be used for copings as well as full contour restorations. At 1,150 MPa biaxial flexural strength, NexxZr T can handle anything. And 50% light transmission means it can be used anywhere, including the anterior. The DENTAL ADVISOR recently completed a six month clinical evaluation and NexxZr T received a 5+ rating in all six categories. The ratings cited excellent esthetics, resistance to fracture and marginal discoloration, and wear resistance of the restoration and opposing dentition for all restorations.

877-386-0389 | [sagemaxdental.com](http://sagemaxdental.com)

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# **Talladium**

## **LUMINESSE ZIRCONIA**

Talladium's Luminesse zirconia maintains one of the most translucent materials on the market. Talladium reports that customers have said their zirconia looks like stacked porcelain, which is very difficult to achieve. Luminesse zirconia is quite color absorbent, which allows technicians to get sophisticated with the brush-on technique. Technicians can achieve a lighter more translucent appearance in the incisal and a deeper rich chroma in the neck region.

The Luminesse line of zirconia consists of a High Translucency Zirconia (HT) for full contour restorations and copings. The High Strength Zirconia (HS) is often used for small to large span bridgework where maximum support is necessary. Finally, the Luminesse Shaded Zirconia is available in all 16 classic Vita shades.

Talladium also has its own milling center, TMC, which is one of the largest milling centers in the U.S. The company continuously strives to improve its products by running the tests in the milling center. TMC is also used as an educational training center for sales reps, technical departments and customers.

800-221-6449 | [talladium.com](http://talladium.com)

“We have been using Talladium's Zirconia for over three years now and have never had a problem of breakage or fracturing. Talladium's Zirconia is unsurpassed in its translucency and durability. Working with Talladium has been a professional experience from product to customer service.”

— Robert Rohling, President of Rohling Dental Laboratory, Sheffield, Ala.

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**Vident**

## VITA IN-CERAM® YZ

Since the introduction of CAD/CAM into the dental industry, VITA In-Ceram YZ zirconia materials have been at the forefront of reliability. VITA's processing is strictly monitored to provide confidence in long-term use as a framework for all-ceramic restorations. Stringent quality-control guidelines direct the manufacturing process of VITA YZ, starting with selection of the raw material. Controlled and consistent pressing of VITA zirconia provides reliable shrinkage and elimination of warpage observed on many post-sintered (and sub-standard) zirconia materials. Every final product has a unique barcode imprinted to ensure that design software, milling and the sintering process—using a VITA VACUMAT 6000MS furnace—are aligned for optimum fit and marginal integrity. The availability of blocks and discs in non-shaded form provides customers with the flexibility of customizing color, and the optical properties of pre-shaded products provide optimum processing efficiencies. With a minimum of 900 Mpa, VITA In-Ceram YZ frameworks are complemented with a highly esthetic layering ceramic VITAVM<sup>9</sup> and press material VITAPM<sup>9</sup>.

800-828-3839  
vident.com



**Zahn Dental**

## ZIRLUX™ FC2

Zirlux FC2 full-contour zirconia offers dental technicians an efficient and reliable method for producing esthetic monolithic zirconia restorations. This system consists of pre-shaded zirconia discs, stain and modifier pastes and glaze. Using the five pre-shaded zirconia discs, the dental technician is able to use a set of 10 stain pastes to produce all 16 Vita A-D shades as well as bleach shades. Six modifiers are also available for individual characterizations. No dipping or use of coloring liquids is required at any point in the process, eliminating extra steps and extra costs for the laboratory and helping to ensure a consistent esthetic outcome. Zirlux FC is available in 98.5 mm and 100 mm discs for laboratories or as milled restorations from outsourcing centers.

800-496-9500  
zirlux.com



**Zirkonzahn**

## PRETTAU® ZIRCONIA

Prettau® Zirconia is a highly translucent, exceptionally biocompatible, high-gloss, monolithic, non-porous and esthetically pleasing dental restoration material, which allows the realization of all kinds of restorations. Thanks to the elimination of veneer ceramics, its flexural strength is 200% higher and both the ceramic chipping and the abrasion vis-à-vis the antagonist tooth have been eliminated. An additional benefit is that it is no longer necessary to apply overlay porcelains to create occlusal surfaces to create teeth. Through the use of manual or CAD/CAM technology, it is possible to precisely copy occlusion to create any single unit or long span bridge for either abutment level or implant restorations.

Together with this material, Zirkonzahn offers the "Colour Liquid Prettau® Aquarell" series, which is applied with a paintbrush before sintering. The results are beautiful with optimal strength in the occlusion and esthetics in the visible areas. Prettau Zirconia is ideal, especially in case of implants, reduced available space or restoration with gingival reconstruction.

678-441-9419  
zirkonzahn.com



# The Beauty of Precision. The Power of Partnership.

With a combined 100-year history of service to dental laboratories worldwide, we've built the Amann Girrbach name on a legacy of commitment to unsurpassed precision and support for dental technicians pursuing accurate, aesthetically pleasing restorations.

Today you can see this commitment in our CAD/CAM philosophy, which is based on a set of core principles that directly address the financial and operations challenges facing today's dental laboratories.

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## Direct Partnerships

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## Exclusive Focus

Benefit from the knowledge and commitment of a partner focused on dental laboratories.



## Ready to Take Your Lab to the Next Level?

Find out how Amann Girrbach's Ceramill CAD/CAM system can increase your lab's precision and profitability at a free Ceramill Live Event in your area. Register today at [www.CeramillLiveEvents.com](http://www.CeramillLiveEvents.com), or call us toll free at **866.587.3498**.

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[www.AmannGirrbachAmerica.com](http://www.AmannGirrbachAmerica.com)



Luke S. Kahng, CDT

# Shade matching a color graduation

Creating a custom shade for patients with unique color graduation from the central to the pre-molar dentition by externally applying One Body color with extra Lustre Paste.

By Luke S. Kahng, CDT

**The male patient in our case study** is in his mid-50s and presented at the laboratory for a custom shade match on canine tooth No. 6 with dark color at the gingival level that was rather challenging to re-create. There was also a color graduation from the central to the pre-molar dentition which was, to me, unique and

most interesting to study. It was not something I had come across before in case presentations. Because the matching process was involved, I had to call upon all of my previous experience to provide a harmonious case outcome.

The majority of the time, patients do not present with the same coloring. There will be

differences compared to the adjacent dentition, but often with the same translucency and transparency. Depth of color will be the major distinguishing factor a technician will have to determine as he works to match a patient's natural dentition in his restorations. One of the most important measurements you will

## CREATING A CUSTOM SHADE



**Fig. 1** One porcelain color build-up using GC Initial IQ One Body Lustre Paste bisque bake and try in the mouth



**Fig. 2** Custom shade matching



**Fig. 3** Master model



**Fig. 4** Zirconia implant abutment milling



**Fig. 5** Post pre-shading and sintering



**Fig. 6** Porcelain build-up in A shade



**Fig. 7** Lustre Paste was applied to the gingival area.



**Fig. 8** Body and incisal area color application



**Fig. 9** Transparency illusion



Fig. 10 White halo and crack line



Fig. 11 Final touch up



Fig. 12 Detailed color segmentation after Lustre Paste



Fig. 13 Try in stage



Fig. 14 Side view, immediate insertion



Fig. 15 After try in

take is the value of the teeth. Is it high or low? Value was one of the biggest differences between the teeth in this patient's mouth. To compensate, a technician has to carefully choose materials to match the adjacent teeth color. And what about crack lines? That color can be anywhere from reddish brown to opal blue in tone, as it was in this case, with low value.

This article illustrates an approach to creating canine color using One Body color with extra Lustre Paste, applied externally. Care will be taken to demonstrate steps I took as I worked to match the patient's adjacent teeth.

## CASE STUDY

In Fig. 1, we see one porcelain color build-up using GC Initial IQ One Body Lustre Paste with three colors in the A range, enamel and dentin already pre-mixed.

**01** After baking and contouring, the restoration was tried in the mouth to further study the colors in the pre-molar area—a combination of pink, orange and brown. In the gingival 1/3, the laterals presented with heavy pink and light brown variations. Using a lab fabricated custom shade matching system (Fig. 2), I checked it against the patient's mouth and selected coloring appropriately. On the cast model, we can see the implants before we begin responsibility for fabricating the implant restorations (Fig. 3).

**02** Milling the zirconia implant abutments was carried out in the laboratory in the milling processing (Fig. 4) machine. After pre-shading and sintering, colors appeared to be different (Fig. 5). Color choices are, of course, up to technician selection. One layer of porcelain build-up in GC Initial IQ One Color was applied next in shade A (Fig. 6).

**03** In the mouth, I applied Lustre Paste to the gingival area first (Fig. 7), with more color to the body and incisal area, as well (Fig. 8). I next created a transparency illusion in the mesial corner as compared to the adjacent teeth (Fig. 9). There was a noted white halo and crack line in the patient's natural dentition that he mimicked (Fig. 10) while continuing to use Lustre Paste application.

**04** After removing the restoration from the patient's mouth, I modified the color and placed it in the oven (Fig. 11). Note the detailed color, divided between the mesial and distal corner color, and the body and incisal 1/3. The Lustre Paste color application was applied in 4 to 5 segments and baked at 810°C (Fig. 12).

**05** In a different view, the restoration was again tried in the mouth to check the color blending (Fig. 13). Two side view shots (Figs. 14, 15) taken upon immediate insertion show a nearly perfect color match with an extremely happy patient looking on.

## CONCLUSION

As dental technicians, we all know porcelain has traditionally been layered on to a restoration with segmented porcelain build-up. Here, I am trying to create the same effect with external Lustre Paste and demonstrate to colleagues a technique that is less time-consuming while producing the same, if not better, results. Patients and clinicians alike are happy with this method because there are fewer back and forth trips to the lab and more efficiency because of that. **lab**

## ABOUT THE AUTHOR

An accomplished dental technician with more than 20 years of experience, Luke S. Kahng, CDT, is the founder and owner of LSK121 Oral Prosthetics, a dental laboratory in Naperville, Ill. He has published more than 85 articles in dental journals, and his lectures have taken him across the United States and internationally. He is the creator of the Chair Side Shade Guide Seasons of Life, 3.0, 4.0, 5.0, 6.0 and 7.0 ceramic shade tabs, which were invented to facilitate effective communication regarding color between doctors, patients and technicians.

## I MADE THAT:

# VeroDentPlus

An interview with Avi Cohen, Director of Global Dental at Stratasys Ltd., about the development process of this second generation 3D printing material.

Compiled by Anna Sacks



**AVI COHEN**  
Director of Global Dental

When Avi Cohen and his team started working on the initial concept for VeroDentPlus, they knew they had a huge innovation on their hands. Their goal was to serve a wide variety of industries while offering 3D printing and direct digital manufacturing solutions for prototyping manufacturing parts with high details resolution and fine surface finish. Today they consider themselves well positioned to address customer needs across the entire dental spectrum and they continue to work closely with laboratory customers to ensure their business growth.

**Q:** What were you hearing from labs that made you want to develop VeroDentPlus?

**A:** The new material, VeroDentPlus, is the second-generation formulation of the popular VeroDent, an acrylic-based polymer. It was developed in response to customer feedback requesting a darker, more gypsum-like material. Consequently, it's more opaque than VeroDent and offers higher resolution details. Like VeroDent, the VeroDentPlus has a low price point compared to other materials.

**Q:** What was the development process for this product?

**A:** It was a long process, and actually it had started about a year after we had released the original VeroDent material. With continuous care for our dental customers, we have tried to learn from them what they would like to see in the next generation material and what properties it should carry. We have done various formulations and presented them to select dental customers until we got the final "Wow!"

**Q:** How is VeroDentPlus different from other 3D printing materials?

**A:** The new material, VeroDentPlus, is compatible with all open intraoral, impression and plaster scanners and prints models for crowns, bridges, orthodontic appliances, and implant models. The printed dental models with this material are an excellent solution for direct, high quality, precision model production from major intraoral scanners.

**Q:** What feature of VeroDentPlus are you most proud of?

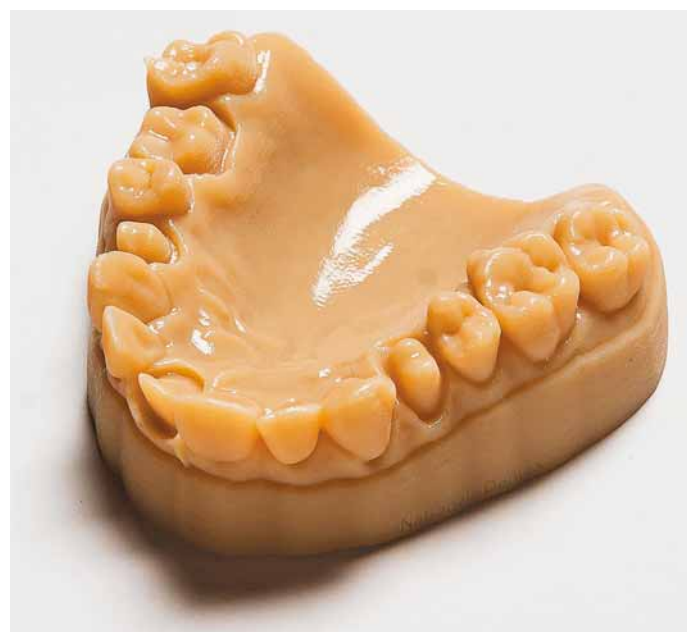
**A:** The VeroDentPlus delivers extreme accuracy, economic benefits and offers the appearance of dental stone. On a personal level, although the material is intended for increasing production with extreme accurate, economical material to offer the appearance of dental stone—I am most proud of the look and feel of the VeroDentPlus.

**Q:** How do you feel VeroDentPlus will help the average lab with their workflow?

**A:** There are a few factors that are critical for the average lab, among those you can find the accuracy, productivity and cost per case. The VeroDentPlus delivers all those benefits to all existing and new customers.

**Q:** How can labs make the leap into 3D printing?

**A:** Digital dentistry is rapidly becoming the standard production tool for dental laboratories. Offering the ability to cut production times, increase efficiency and accuracy and enable new business growth, the benefits of digital production are clear. For dental lab owners and managers, choosing the right technologies to deliver the best return is not always so straightforward. As providers of state-of-the-art 3D printing systems for



digital dentistry, Stratasys is committed to enabling dental labs to reap the maximum benefits from the digital dentistry era. By combining oral scanning, CAD/CAM design and 3D printing, dental labs can accurately and rapidly produce a range of dental and orthodontic appliances. [lab](#)

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Tom Zaleske

## Micro-what?!

You probably gave up on microwave curing long ago. Here's how you can revisit it.

**I know what you're thinking.** You heard about microwave curing years ago, but it never interested you because of the inconsistent results most obtained from the technique.

Personally, I always have been intrigued with the possibility of using microwave energy

to speed up the curing of denture resins. I knew that other industries had adopted microwave technology successfully. So, before my foray into microwave curing began several years ago, I researched the subject using the Journal of Prosthetic Dentistry database. As I looked further

into the topic, some glaring facts became clear as to why the results have been so inconsistent.

Twenty-five years ago, curing with a microwave oven was mostly done using conventional acrylic, rather than microwave-specific products. The ovens used in the testing were

### MICROWAVE CURING SAVES TIME



**Fig. 1** Using microwave curing with GC Nature-Cryl MC, treatment provisionals using clear clasp systems, and Gradia Gum for characterization can project value in simple provisionals in a fraction of the time it used to take me using conventional curing methods.



**Fig. 2** The most immediate denture treatment I service in my lab is 2-phase. I like using microwave curing for these type of cases because of the speed of cure. I am still confident enough in the product and technique to allow for very thin flanges, a by-product of conservative bone trim. Diatorics and bonding primer are always recommended for cases where gross hollow grinding has been performed. Surgical stents are also still suggested.



**Fig. 3** I liked producing processed baseplates for the stability and accuracy of registrations and try-ins. It provides the fit of the final prosthetic for the patient and dentist to evaluate because it becomes the actual base of the denture. Before discovering 3-minute microwave curing, it took 2 hours to heat cure. Now it's more production feasible to solicit this service for many more cases, because of the time savings.



**Fig. 4** Nature-Cryl MC is part of the GC America denture base line. Part of my research into the viability of using this product involved my testing of their microwave clear version. My rationale was if porosity or uncured areas existed after curing, it would be visible in the clear. The result was clear and porosity free, signaling to me that it had the performance I desired.

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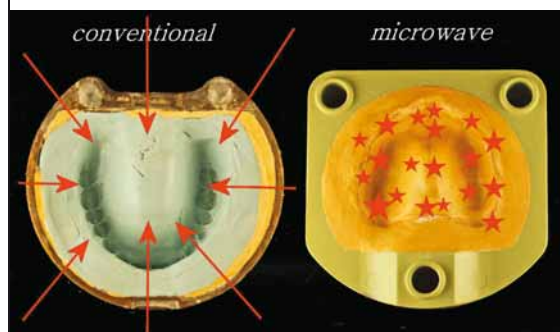
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**Fig. 5** In the conventional method, heat must transfer to the mold from an outside source to reach the acrylic. Consequently, it is not as uniform or thorough because there are thin and thick areas where heat must pass to reach it. In microwave curing the “break down” of the activator is accomplished directly, from inside the mold at a molecular level. Some research indicates that because of this, a more complete cure with less residual monomer is obtained.

unsophisticated and, in many cases, not variable in wattage, didn't have a turntable to fully expose the mold to irradiation, and the molds were placed horizontally rather than stood vertically for uniformity of exposure. Even with the lack of an oven and technique specific in design for microwave curing, the general findings from the research indicated that microwave cured resins possessed a lower residual monomer ratio than conventionally cured resins<sup>1</sup>, bases had equal or better dimensional accuracy than conventionally cured bases<sup>2</sup> and no significant difference in impact strength between the two techniques<sup>1,3</sup>. All research agrees that the benefits are primarily greatly reduced curing times and less generation of heat in the lab by way of curing tanks.

My experience with microwave developed while trying to come up with a faster way to heat cure time-consuming fabrications, such as treatment provisionals (Fig. 1), immediate dentures (Fig. 2), and processed baseplates (Fig. 3), without compromising the quality my accounts expect from me. I had tried the conventional 20-minute fast cure products but when coupled with a bench set, cooling time and heat generation from the boiling water, it just didn't give me the time advantage and environmental climate I was looking for.

Three years ago I started microwave curing using conventional resin from a technique I developed from research I had done on the method. My results were good but I was nervous about the manufacturer not recommending the product for the microwave cure application. Eight months ago I was introduced to a microwave specific resin, GC Nature-Cryl MC, and my anxiety diminished. The product comes in the same seven shades that Nature-Cryl Super Hi Impact, Hi 20 ET, and Pour are offered in, as well as clear (Fig. 4). Their technique for microwave curing the resin is refined, factory developed and supported, and even less time-consuming in curing.

The mechanism of cure for microwaving is essentially the same as conventional polymerization, that being using heat to break down an activator (benzoyl peroxide) molecule



**Fig. 6** Typical home use microwave ovens today have the features needed to deliver exact wattage and full exposure of waves to refine the way curing is accomplished. Technique refinements such as vertical placement on the turntable also help fulfill the promise of the chemistry available in resin technology.



**Fig. 7** Specifically developed for microwave curing, FRP (fiber reinforced plastic) flask and GC Nature-Cryl MC provides a low investment, production advantage for many dental laboratory applications.

to produce a polymerization reaction. The difference is the heat used to accomplish this is generated inside the mold through molecule excitation rather than heat transfer from outside the mold (Fig. 5). Although there are no microwave ovens designed specifically for microwave curing, the technology in the latest, commonly used, inexpensive ovens available at big box stores provide all the features including more efficient magnetron (tube) distributing microwaves, and wattage tuneability that will provide the refinement needed to produce a consistently cured product.

## WHAT YOU WILL NEED

- Nature-Cryl MC powder and liquid (Fig. 7)
- A GC America FRP(Fiber Reinforced Plastic) Flask (Fig. 7)
- A 700 watt microwave oven with a turntable with variable wattage (Sunbeam SGS90701W). \$69

## THE TECHNIQUE

- 01 Invest case using conventional technique and FRP Flask
- 02 Once gypsum has hardened, soften do not melt, wax by placing flask in the oven for 45 sec-1 min. Try to soften enough to remove as one piece but it should not be melted into stone.
- 03 Wash out mold conventionally using dental specific product.
- 04 Once mold has cooled to touch, apply a coat of Coe Sep or equivalent. I coat twice and run warm air over flask to speed up drying and aid in bonding coated layers.
- 05 Mix Nature-Cryl MC using volumetric measurement of 30cc powder-9 mL liquid. For mixing ALL resins always add powder to liquid to ensure complete wetting of polymer.

06 Pack resin once it reaches doughy, not snappy, state. This takes about 15 minutes depending on room temperature. (Research indicates use of a bonding primer such as Vitacol or Palabond prior to packing increases the bond between tooth and base for all modes of cure).

07 Trial pack (1000 psi) short to long, using small increments until mold is filled, indicated by a small amount of flashing just encroaching on land area.

08 Final closure at 2000 psi. Hand-tighten nuts on flask while pressurized, and then a slight 1/32 turn to snug but not compress. Once pressure is released nuts tighten on their own from flask rebound.

09 Research indicates an optional bench set for 10-15 minutes before beginning microwave process can increase bond strength between tooth and base.

10 Adjust wattage to 500 watts plus or minus 10 watts (mine is 490). Set timer for 3 minutes, place flask in vertical position on turntable and start cycle. Vertical positioning rather than horizontal ensure a 360 degree irradiation of flask and resin in mold (Fig. 6).

11 Once the 3-minute cycle is complete, remove flask from oven and allow at least 30 minutes to bench cool before placing in warm water bath for final cooling. Deflask using soft wood or leather mallet to avoid damaging flask.

12 Finish in conventional manner.

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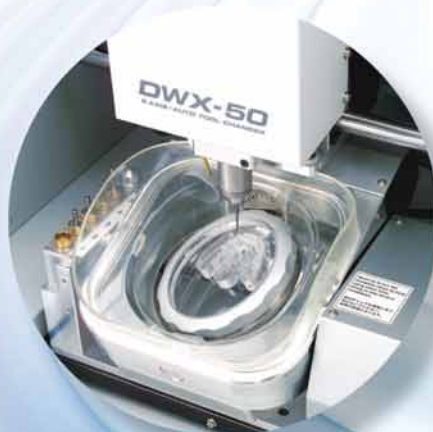
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REAL TIME ROI

# DENTSPLY's Cercon Solutions

DJ Zanon of Nu-Art Dental Laboratory Inc. explains how using DENTSPLY's Cercon zirconia and milling system has helped the lab grow and become more efficient.

by Ryan Hamm



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DJ Zanon, CDT

## THE LAB

Nu-Art Dental Laboratory Inc. is a medium-sized, full-service lab in Wisconsin that offers multiple solutions and options for dentists and clinics,

and increasingly works with zirconia. Nu-Art also handles some dentures and partials, but largely works with implants.

Nu-Art's System Specialist, DJ Zanon, CDT/Mechanical Engineer, has been working at the lab—founded by his father in 1977—for more than 10 years. The lab employs about 40 technicians, and primarily services dentists and clinics in southeastern Wisconsin, as well as a handful of out of state customers.

As zirconia and digital workflow solutions have become more popular, Nu-Art has evolved to meet every industry need, Zanon says. Nu-Art has increased

its in-house milling and CAD/CAM usage as the demand has grown from dentists.

## THE PRODUCTS

Nu-Art has worked with DENTSPLY for more than 15 years, specifically with the Cercon® zirconia and CAD/CAM solution, and now more closely with the Cercon ht full contour zirconia and the Cercon brain expert, a highspeed, 4-axis CAD/CAM milling machine. Cercon ht zirconia provides an all-ceramic option for labs without veneering.

The Cercon zirconia is part of the entire Cercon system, which also includes the Cercon eye, a laser scanner that is seamlessly integrated with the Cercon art CAD module. Design files are sent to the Cercon brain expert, the heart of the system, for milling. This unit contains a laser scanner and a 4-axis milling platform. DENTSPLY reports a decade of clinical history and more than 6 million Cercon zirconia dental units placed, providing dental laboratories confidence in material performance.

## THE RESULTS

Zanon has used the Cercon system for approximately a decade. "We've always purchased DENTSPLY products, but Cercon was the first milling machine we purchased," Zanon says. "We added a second brain a couple years later, and about two years ago we traded those in for a new brain expert."

For Zanon, the appeal of the Cercon system has been its efficiency in working with the zirconia. That's because of Cercon ht's ability to be simultaneously easy (and fast) to work with while still providing an excellent esthetic option that greatly appeals to patients and their doctors.

"It's a very efficient process," Zanon says. "You have a lot less labor involved when you're doing a zirconia restoration. It helps us grow by taking on more quantity without sacrificing quality. The Cercon ht gives you a very esthetic restoration that's also strong, and that's what patients are looking for. For the dentists,

we're able to give them a quality product in a reasonable amount of time and at a reasonable price."

It's that combination of factors that has led Nu-Art to continually rely on the Cercon system for their zirconia needs.

But it's not only the materials themselves that can make or break a lab's experience with products. You can have the very best materials in the world, but if a company is tough to work with or provides no support, you can be left completely in the dark about how to best use the products you buy. Zanon said that's not the case with DENTSPLY, and it's what makes him excited to keep using Cercon ht.

"I think service and reliability are big things," Zanon says. "We know they're going to be around for a while. We have confidence in the company. They're a good company and we trust them. Service is very critical to us. If a machine goes down, we have to get it fixed—we need help fast and they tend to service us quickly."



The Cercon brain expert works in conjunction with the Cercon CAD/CAM solution and Cercon ht zirconia to provide excellent results.



The milled Cercon ht zirconia inside the Cercon brain expert.

Zanon's lab occupies a unique space in the lab market because it's neither huge nor very small. It gives him a different perspective on how a company like DENTSPLY, with the Cercon ht zirconia and Cercon brain expert, can help labs of all sizes.

"I think if you're smaller, it's not very labor intensive, which helps a lot," Zanon explains. "That is helpful even if you are a bigger lab. You just scan it, design it and then you mill it. The labor with Cercon ht is very minimal, so that's a plus. If you're a larger lab, you talk about less labor and larger quantity, so you're able to have consistent results on a much larger scale."

In short, Zanon is excited to see the growth of his business, thanks in part to the DENTSPLY Cercon system of products. And he believes as all-ceramic options continue to increase in market share, it will only help his business expand.

"I see a definite growth with the zirconia part of the market," Zanon says. "I only see that getting bigger and bigger and I think that's going to be a plus for manufacturers and dental labs." **lab**

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REAL TIME ROI

# Core3dcentres

How this digital outsourcing solution helped one lab improve its cost efficiency and ability to help clients.

by Ryan Hamm



CORE3DCENTRES

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Bobby Clark

## THE LAB

Clark Dental Lab (CDL) is a small dental lab in North Texas that specializes in dental implants. The lab has seven employees, and their main focus is on cases involving dental implants. Because they do fixed hybrid appliance work, CDL handles cases from up to 500 different dentists, though some of those clients are only for a single case. The lab, co-owned by Bobby Clark and his father, Darrel, works with

dentists on surgical cases and the restorative doctor to make fixed-hybrid appliances. The lab normally produces an appliance that features a titanium bar wrapped in acrylic, with high-end denture teeth.

## THE DIGITAL PARTNER

Core3dcentres offers a digital solution for laboratories in 15 different countries, with seven different milling centers around the world that

handle more than 600 dental labs. The company was formed when several large laboratories around the world became frustrated by their milling outsourcing options. The labs decided to combine forces and form Core3dcentres. Their U.S. location is in Las Vegas and serves labs by offering multiple milling and material solutions, all of which are available by uploading digital case files to Core3dcentres. From that upload—model and impression files or iTero

PHOTOS COURTESY OF CORE3DCENTRES AND CLARK DENTAL LAB



The Core3dcentres location in Las Vegas.

oral scan files—Core3dcentres offers in-house milling of models and simultaneous milling/fabrication of restorations, implant abutments and implant bars. Core3dcentres prides themselves on accuracy of final product and a quick turnaround time.

## THE RESULTS

Clark Dental Lab has been working with Core3dcentres for about a year.

“We got the 3Shape scanner in April or May of 2012,” says Bobby Clark, co-owner of CDL. “We tried some other milling companies first and didn’t have great

success, and we heard about Core3d and we started working with them.”

Clark says the initial draw to Core3d was that the company was able to meet him where his lab was, rather than dictate the boundaries within which they would work with him.

“The main reason we chose Core3d is that they cooperated with us from the get-go,” Clark says. “I called them and said ‘This is how I’d like to do it.’ They immediately were willing to work within parameters that worked with me and my business. A lot of other companies I’ve had mill for me, they’ve had their ideas for how they’d mill for me and would say, ‘We’re only going to mill this kind of bar, in this kind of way, and if it doesn’t work for you, too bad.’ Whereas Core3d, they’re willing to try anything the 3Shape system allows us to do.”

Clark gives an example, where he’d wanted a stronger and wider over-denture bar than was traditionally available.

“We were able to get no where with a way to change the base design to a harder bar,” Clark explains. “We brought it up to Core3d so it would be wider and

stronger and they said ‘OK!’ We came up with a design that isn’t quite there yet, but it’s a vast improvement over where we started.”

Clark also suggests that Core3d-centre’s flexibility has greatly benefited CDL.

“Core3d’s customer service and ability to work with us and do whatever we ask them to do has made us better,” Clark notes. “It’s given us more options. When a doctor calls and is asking us for something, we don’t have to say, ‘we’re not going to be able to mill that, we’ll have to cast it for you, because our milling company won’t do that.’ Now we can say ‘Sure! We have a milling company that can do that for you.’”

“It’s opened up options for us to not have to say no and nine times out of 10 we can make it happen. Sometimes there’s still something the mills just won’t do, but if it’s able to be done in the 3Shape software and the mills, then we can get it done for someone.”

Clark says Core3dcentres usually has a five-to-seven working day turnaround, which as far as Clark is concerned, puts it at the same level as any major milling center he’s worked with. Additionally, he’s very happy with their pricing model.

“Their pricing is better than a lot of the other milling companies we work with,” Clark adds. “Obviously, when you can offer better pricing, you can offer better prices to customers and be more profitable. It’s better for everyone in the loop.”

But the biggest thing for Clark that keeps him coming back to Core3dcentres? The personal touch.

“The thing that separates them is I can pick up the phone and talk to the same person at any time,” Clark says. “I can call for a rush job and that’s a really great advantage we have with them. They’re a large company but they’re still small enough that you can really communicate with them and accomplish things that might be harder with another milling center.” **lab**



A look inside the work being done at Clark Dental Lab.

# The power of outsourcing your lab's marketing

Why hiring the right vendors to help with marketing leads to better results and ROI.

By Naomi Cooper, President, Minoa Marketing & Chief Marketing Consultant, Pride Institute



Naomi Cooper

When it comes to implementing new business solutions, lab owners have two options—hire an expert, or take the time to figure it out on their own. For anything in the lab that requires professional expertise, whether it is tax preparation, bookkeeping, or even collections, lab owners have the option to either do it themselves or choose to outsource it. In fact, a common debate and internal dialogue for any business owner is over how much to outsource versus what can be managed in-house.

However, when it comes to marketing, outsourcing should be a no-brainer. There are so many quality vendors who have proven success within the dental industry, and as a result there is simply no need to go it alone or be anyone's guinea pig; these companies are experts in what they do with strong track records. Whether it is search engine optimization or website design, there are plenty of vendors who will work directly with you to create custom marketing strategies.

## WEBSITE DESIGN

Website design is another area lab owners are well-served by outsourcing. Certainly,

there are many do-it-yourself, template design formats available. However, a website should be designed with the belief that it is a powerful tool for the lab, and that there's quantitative research and best practices that have been established to determine what works when it comes to attracting and retaining customers online. The reality is that cookie cutter design will not provide the return on investment you need, and that customization, including the latest and greatest website features, is key in dental lab website design. The site should accurately reflect the lab's experience and the personality—telling the dentists why the lab is better than the competition.

Custom features such as videos, a blog, SEO tactics and social media links are necessary in connecting with the online community and driving new clients to the lab.

## SEARCH ENGINE OPTIMIZATION

Sure, lab owners can take the time to teach themselves some tricks or even become experts in Search Engine Optimization. They can read books and articles and stay updated on the latest trends, strategies and algorithms. But the reality is that as in many technology-based arenas, SEO is a constantly changing beast, and it's

a full-time job to keep up. For lab owners who don't have time to add another responsibility to their job description, hiring a website design and SEO company is an easy solution.

## HIRING THE RIGHT VENDORS

Red Adair, the late American businessman, once said, "If you think it's expensive hiring a professional, wait till you hire an amateur." There are countless, self-proclaimed "experts" ready to assist lab owners with their SEO and website design, all with varying degrees of costs and experience. So what should you look for in a vendor when you make the choice to outsource?

First, be sure the company has a history of proven success in business-to-business SEO marketing tactics. Be specific—you want not just an SEO expert, but an SEO expert who knows how to target search terms that dentists would actually search for when seeking a lab.

Second, the right vendor should offer different levels of service and pricing. And be wary of companies that require payment in full up front before any work has been completed.

Next, look for vendors who offer a range of expertise. Whether you're looking for e-communication solutions, social media marketing, SEO or website

design, you will be best served by hiring one company capable of doing it all. This leads to a long-term business relationship as the vendor's successes enhance the lab's growth.

Hiring one vendor to manage a variety of the online marketing tactics, for example, ensures the lab has a single point of contact rather than multiple partners to manage. Plus, in this scenario, all online marketing efforts are coordinated and work cohesively, while increasing the vendor's accountability and investment in the lab's success—all of which ends up saving you time and money in the long run. **lab**

Naomi Cooper is President & Founder of Minoa Marketing and Chief Marketing Consultant for Pride Institute. She is a respected dental marketing consultant, author, speaker and industry opinion leader who co-teaches Pride's marketing course, The New Rules of Dental Marketing. Naomi can be reached at [naomi@minoamarketing.com](mailto:naomi@minoamarketing.com) and blogs at [minoamarketing.com](http://minoamarketing.com).



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# Finding firing support

Wonderpeg provides stabilization during the firing cycle.

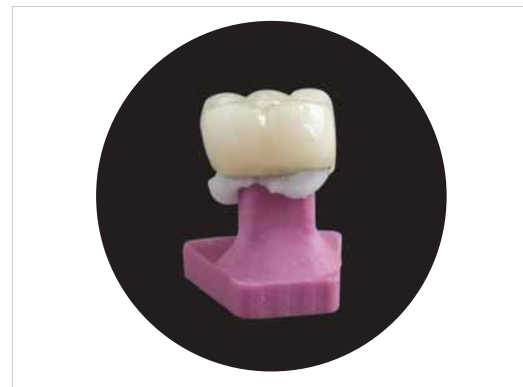
by Kevin Morris, CDT

Supporting restorations during the firing cycle can be difficult because most restorations are irregularly shaped. Some restorations are shallow or small and some bridges are very large and unevenly balanced. Wonderpeg is a material that has been developed to best stabilize restorations during the firing cycle. When Wonderpeg is placed between the restoration and a desired firing peg,

the restoration becomes highly stable. For some restorations, there is no need for a firing peg when Wonderpeg is placed on the inside of the restoration with enough extra to create a space between the restoration and the platform. When used in this way, Wonderpeg can save time and effort. **lab**



Wonderpeg used to support a veneer.



Wonderpeg used to support a crown.

SCAN:



# A true milling and training partner for laboratories

**Wieland Precision Technology uses Ivoclar Vivadent's world-class materials to offer laboratories a better choice in metal-free options—but they take their service even further thanks to education and customer assistance.**

by Anna Sacks

Ivoclar Vivadent is widely known as an industry leader in fixed and removable solutions. But several years ago, the company wanted to see how they could offer their customers even more support—especially in terms of CAD/CAM and leading edge technologies.

Ivoclar Vivadent recently realized this goal by acquiring Diadem Precision Technology, since renamed Wieland Precision Technology (WPT). The marriage of WPT and Ivoclar Vivadent offers dental laboratories the excellence of Ivoclar Vivadent products along with the customer assistance and education emphasis provided by WPT.

"[We] have an array of materials for your precision milled restorative needs," Wieland Precision Technology General Manager Anthony Houle says. "All of our materials are metal-free monolithic restorations and milled to the precise replica of your CAD design in the material you need. We are also proud to offer our new Seamless Digital Solutions™ program, and we've added the Ivoclar Vivadent International Center for Dental Education (ICDE) at Wieland Precision Technology in Troy, Mich." In short, Ivoclar Vivadent with WPT have established a leadership role in milling services, support and training.

## OUTSOURCING THAT MAKES SENSE

WPT's goal is to work with laboratories to provide excellent technical support, customer service and the necessary education and training to help laboratories keep up with ever-changing technology.

WPT believes that emphasis means laboratories don't need to be afraid to take the leap into working with new materials or new technologies.

"Wieland Precision Technology is your flexible digital solutions partner, from materials to training and service," Houle says. "We are committed to offering laboratories the most advanced technologies, the highest quality products and a world-class education. Thus, WPT is the 'true partner' for laboratories in today's industry dynamics. To be a provider is not enough for laboratory owners. Our mantra is to execute digital solutions for their success."

Houle offers a tangible example of WPT's service-oriented approach. "As a business owner, if your mill goes down your laboratory can't afford to be behind in work," he says. "The new Seamless Digital Solutions™ program offers customers who own a Wieland Mill the ability to send STL files directly to Wieland Precision Technology and receive precision milled restorations back quickly in your laboratory during the service period of your mill."

## SUCCESS THROUGH ZENOSTAR AND ZENOTEC

Thanks to their heightened strength in full contour zirconia crowns and bridges, Ivoclar Vivadent products Zenostar and Zenotec can be used without a ceramic veneer and can be conventionally cemented. Along with IPS e.max CAD, Houle is proud to call these materials the top choice in the dental laboratory. Innovations in CAD/CAM milling technology and materials combined with an

increasingly widespread use of a digital workflow help the materials achieve their reliable success rate.

"We recognize the rise in technology places new demands on laboratories," Houle says. "They are searching for a reliable partner to deliver the support mechanisms to help them be successful. Wieland Precision Technology has such a ready-built infrastructure."

## AN EMPHASIS ON EDUCATION

WPT is an extension of the Ivoclar Vivadent International Center for Dental Education (ICDE). The ICDE offers an array of introductory digital dental courses tailored to the digital needs of laboratory technicians. All courses are included with the purchase of a 3Shape scanner or Wieland Milling System.

If you have ever tried to use a new, great piece of equipment without knowing how to actually use it, you know how frustrating it can be. WPT knows education is key to the success of any of the products sold in the Ivoclar Vivadent group of companies.

"Not using something to its full potential does not yield positive results to the end user or the manufacturer," Houle says.

## THE FORMULA FOR SUCCESSFUL LABS

WPT works with every customer individually to make sure their requirements and parameters are correct to ensure the final restorations are a success.

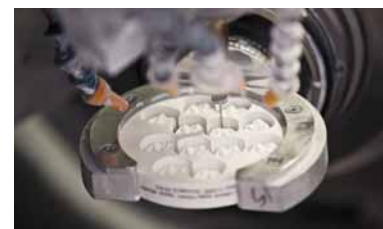
"We are here to support your laboratory no matter the size," Houle says. "Our



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mandate as your digital outsource partner is to assist you in growing your business and to manage the rapidly changing new technologies and new materials that are available to the market." **lab**

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**02. Why is Zahn Dental so excited about this product launch?**

Technicians, dentists and patients are demanding monolithic, highly esthetic, natural looking restorations. Zahn Dental is confident that Zirlux FC2 will bring both strength and beauty to every case. We are also excited about our collaboration with Henry Schein Dental to co-brand this product and drive additional business to our Zirlux FC2 certified laboratories.

**03. What makes Zirlux FC2 stand out from other competitive brands available today?**

The pre-blended universal discs allow a simple, single stain technique enabling technicians to eliminate extra steps when using other zirconia products. This single stain technique allows technicians to spend less time in production and work more efficiently.

**04. There is concern within the industry that full contour zirconia will aggressively wear against opposing dentition.**

Wear is largely a function of surface roughness. A polished and glazed Zirlux FC2 surface provides a strong yet smooth surface for opposing dentition to function against. If adjustments are made, it is important to polish and reglaze the adjusted area to ensure a smooth occlusal surface. Zahn Dental can provide clinicians and laboratories with independent studies performed by John Burgess, DDS, showing the low wear against opposing enamel that can be achieved with Zirconia material, including Zirlux FC2.

**05. What is different about the Zirlux FC2 Characterization Kit?**

When paired with a Zirlux FC2 universal disc, the Characterization Kit allows technicians to use a single stain technique by applying the stain and modifier in one simple application. The complete system provides technicians the ability to create lifelike restorations that dentists and patients require, with the efficiency they desire.

**06. What shades can a technician achieve using the Zirlux FC2 Characterization Kit?**

All 16 Vita® A-D shades as well as bleach shades can be easily achieved using a single stain technique by applying the stain and modifier in one simple application (after sintering). No dipping or use of coloring liquids is required at any time in the process, making Zirlux FC2 the ideal choice for producing fast and consistent monolithic restorations.

**07. Are marketing materials available to support this product?**

Zahn Dental has a unique and exciting marketing program in place for our Zirlux FC2 certified partners. These laboratories are provided with personalized brochures and postcards, branded prep guides, and prescription pads for distribution to their current and targeted accounts. Henry Schein and ConnectDental's influence within the industry will increase exposure for Zirlux certified labs featuring these partners in trade publications, Henry Schein Dental sale flyers and online marketing campaigns.

**08. What is ConnectDental and how does it tie into Zirlux FC2?**

Zahn Dental and Henry Schein have collaborated to launch ConnectDental, driving laboratories and clinicians to embrace digital dentistry enabling them to connect, improving productivity and treatment outcomes. ConnectDental is launching educational events across the country to promote digital dentistry and to educate clinicians on Zirlux FC2 and its benefits.

**09. How does a laboratory become Zirlux Certified?**

It is very easy to become a certified Zirlux FC2 laboratory. The first step is to try the product and experience the natural looking results that are achieved on each case. We have a website dedicated to the product that can be viewed at [zirlux.com](http://zirlux.com) or you can ask your local Zahn consultant for more information and the requirements needed to become certified.

**10. How would a laboratory begin using Zirlux FC2?**

Zahn Dental is your One Solution Provider—you can rely on us to fill all of your business needs. We have the necessary CAD/CAM equipment needed to scan, design and mill; or you can outsource your models and STL files to Custom Milling Center (CMC).

Vita® is a registered trademark of VITA Zahnfabrik H. Rauter GmbH & Co.

**“Zahn Dental is confident that Zirlux FC2 will bring both strength and beauty to every case.”**  
— Rita Acquafredda

PHOTO CREDIT: ZAHN DENTAL

# Spring Lab Promos

Dental Laboratory Product Promos / April 1 - June 30, 2013

## Stone & Plaster Physical Properties

	Water per 100 grams of Powder	Initial Set (minutes)	Setting Expansion	Compressive Strength Dry
Suprastone™	19 ml	8 - 10	0.15 - 0.30%	15,000 psi
Vel-Mix™	20 ml	7.5 - 9	0 - 0.15%	14,000 psi
Vel-Mix Classic™	23 ml	7.5 - 9	0 - 0.15%	12,000 psi
Hydrock™	30 ml	10 - 12	0 - 0.20%	10,000 psi
Hydrock Rapid Stone™	30 ml	7 - 9	0 - 0.20%	10,000 psi
Snow White Plaster #1™	60 ml	10 - 12	0 - 0.30%	2,300 psi
Snow White Plaster #2™	94 ml	3 - 5	0 - 0.15%	1,000 psi
Laboratory Plaster Regular	45 ml	9 - 13	0 - 0.30%	3,500 psi
Laboratory Plaster Fast	45 ml	3 - 7	0 - 0.30%	3,500 psi



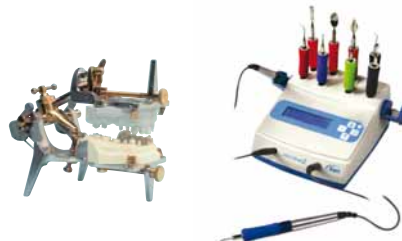
**Kerr Die Stones, Model Stones and Plasters** are a complete line of application specific formulas for use by the laboratory and dentist. This line is designed to deliver durability as well as accuracy, with a creamy, consistent mix, with optimal flow. With a proven history of over 50 years of quality. Packaged in convenient, easy to handle 33 lb cartons.



**Buy any 3 Stones,  
Get 1 FREE**



**Buy any 40 Stones,  
Get a Galetti Articulator,  
or an Ultra-Waxer 2 FREE**



**Buy any 80 Stones,  
Get a Centrifigo Caster, or  
Touchsteam Steamer FREE**



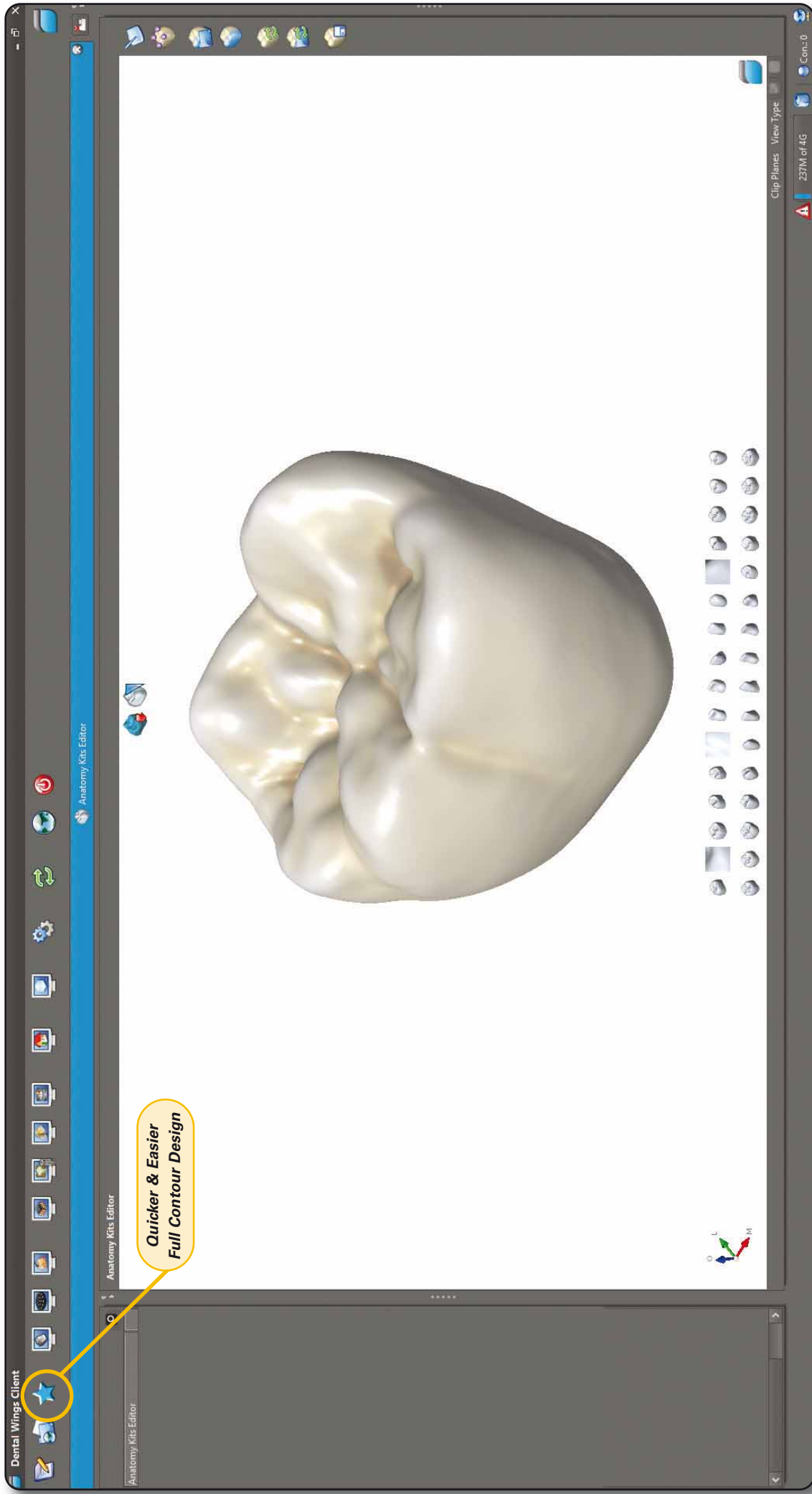
**Visit [Kerrlab.com](http://Kerrlab.com) or call 800.KERR.1234 for more information**

The required purchase must be reflected on one invoice dated between April 1 - June 30, 2013. Invoices recieved after July 15, 2013 will not be honored. Offer cannot be combined with any other Kerr or dealer promotion. Allow 6 to 8 weeks for delivery of free goods. Kerr Ultra-Waxer - 2 includes 2 tips (Small PKT #35167, Large PKT#35168). Kerr reserves the right to discontinue or chage this offer at any time. Please print PROMO CODE DLPMAY2013 on invoice and fax your proof of purchase directly to 888.727.2614 or email a PDF of your proof of purchase to [kerrpromo@kerrdental.com](mailto:kerrpromo@kerrdental.com). See [Kerrlab.com](http://Kerrlab.com) for additional promotions.



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**Contact your Zahn Digital Technology Specialist  
for more information on DWOS 3.5.1**

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