

# Celtra® Duo (ZLS)

Finally, a CEREC® block that gives you total control. You choose the workflow process. You determine the level of esthetics. Even the degree of strength is up to you. Whether you decide to mill and polish, or mill and fire, Celtra Duo (ZLS) is the epitome of processing simplicity and clinical confidence.

### Proven in practice

Not only does Celtra Duo (ZLS) look great right out of the milling chamber, it looks great in patients' mouths, too. Don't just take our word for it—see for yourself! Clinical case photos demonstrate the remarkable fit, finish, and esthetic results of this one-of-a-kind CEREC material.

### Praised by practitioners

Marketing materials tell only part of the story. CEREC Doctors who take the time to provide their enthusiastic recommendations and heartfelt reviews of Celtra Duo (ZLS) tell the rest of it. Read the reasons why your peers have made Celtra Duo (ZLS) their "go-to" CEREC material, case after case.

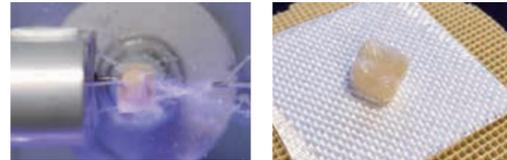
### Backed by science

Celtra Duo (ZLS) has been subject to rigorous scientific material tests, in-vitro wear simulations, biaxial and 3-point flexural strength tests, bond strength analyses, esthetic evaluations, and more. These tests provide important material characteristics data that correlates directly to real-world clinical application.

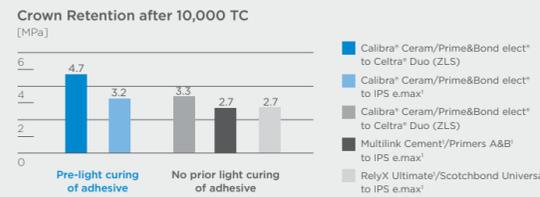
## One block, two processing options and an easy cementation solution

**Option 1: Mill and Polish**  
(413 MPa biaxial flexural strength)

**Option 2: Mill and Fire**  
(560 MPa biaxial flexural strength)



### Ideal for the cementation of Celtra® Duo (ZLS)



Test: Crown-pull Bond Strength Testing. Ceramics were treated with 5% HF and silanated. All adhesives were used in self-etch mode. All cements were self-cured except for the group with optional light-curing through crown. Artificial aging: 10,000 thermocycling (5-55 °C).



### Celtra® Duo (ZLS)

Dentsply Sirona Restorative  
38 West Clarke Avenue  
Milford, DE 19963

[celtraduo.com](http://celtraduo.com)  
800-532-2855



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**Celtra® Duo**  
Zirconia-reinforced Lithium Silicate (ZLS) Block

## Compendium

For more information or to schedule a demonstration, contact your local CEREC Consumables Specialist or visit [celtraduo.com](http://celtraduo.com)

# Case Studies

By featured clinician, Dr. Michael Tsao



## Michael Tsao, DDS

- Founder of CEREC® Asia and Sweet Space Dental Clinic
- Beta tester for Dentsply Sirona CAD/CAM Chairside Products
- Chairman of Taiwan Digital Dentistry Association
- Certificate in the Harvard Dental Implant Course



Case studies and accompanying case photography are used with permission from the clinician.



All cases are single-visit without cutback and layering, only stain and glaze.

### Case 1

Full-smile restoration: 8 single-unit Celtra® Duo (ZLS) crowns – teeth 5-12



### Case 2

4 single-unit Celtra® Duo (ZLS) anterior crowns – teeth 7-10



### Case 3

4 single-unit Celtra® Duo (ZLS) anterior crowns – teeth 7-10



### Case 4

4 single-unit Celtra® Duo (ZLS) anterior crowns – teeth 7-10



“Through hundreds of cases with Celtra Duo (ZLS), I am convinced it has struck a great balance between esthetics and efficiency.”

“Celtra Duo (ZLS) is a reliable and versatile material to keep in your arsenal.”

# Material Evaluation Summaries

Backed by science

## • Translucency of esthetic dental restorative CAD/CAM materials and composite resins with respect to thickness and surface roughness

D Awad, B Stawarczyk, A Liebermann, et al., *J Prosthet Dent.* 2015 Jun;113(6):534-40. doi: 10.1016/j.prosdent.2014.12.003. Epub 2015 Mar 4.

### Objective of Study

Evaluate the translucency of restorative CAD/CAM materials and direct composite resins with respect to thickness and surface roughness.

### Key Finding / Analysis

The effect of all tested parameters was significant among the tried materials ( $P < .05$ ): Celtra® Duo (ZLS), IPS e.max®, IPS Empress®, Lava™ Ultimate, Telio CAD, VITA CAD Temp®, VITA Enamic®, VITA Mark II®, TEC® BulkFill, TEC® A2, and Filtek™ Supreme XTE. The greatest influence on the measured translucency was thickness (partial eta squared  $\eta^2 = .988$ ), closely followed by material (.982), and the pretreatment method (.835). The surface roughness was strongly influenced by the pretreatment method (.975) and type of material (.941).

### Conclusion

Celtra Duo (ZLS) is a new class of ceramic, which is called zirconia-reinforced lithium silicate. The inclusion of 10% zirconia dissolved into the lithium silicate glass matrix results in 4 times smaller silicate crystals, implying a high glass content and higher translucency than conventional LiSi2 ceramics. In fact, Celtra Duo (ZLS) attained higher T% values than IPS e.max CAD, but only in the case of a polished surface.

## • Fracture toughness of chairside CAD/CAM materials— Alternative loading approach for compact tension test

R Badawy, O El-Mowafy, LE Tam, *Dent Mater.* 2016 Jul;32(7):847-52. doi: 10.1016/j.dental.2016.03.003. Epub 2016 Apr 28.

### Objective of Study

Determine plane-strain fracture toughness ( $K_{Ic}$ ) of five different chairside CAD/CAM materials used for crown fabrication, following alternative innovative loading approach of compact test specimens.

### Key Finding / Analysis

Highest  $K_{Ic}$  values were recorded for fired/crystallized glass-ceramic materials [Celtra Duo (ZLS)/e.max, respectively] and glass-ceramic materials without firing or crystallization were associated with significantly lower mean  $K_{Ic}$  compared to their fired/crystallized counterparts.

### Conclusion

Celtra Duo (ZLS) was tested in both fired and unfired conditions to determine the effect of firing on  $K_{Ic}$ . The significantly higher  $K_{Ic}$  values ( $p < 0.01$ ) recorded for fired Celtra Duo (ZLS) compared to non-fired specimens and may be due to crack-healing processes that may have occurred to existing surface microcracks after heat application.

## • Effect of Silane on the Resin Cements/Zirconia-Reinforced Lithium-Silicate Bond Strength

Kang Y, Lee H, Son H. Poster Session: International Association for Dental Research, March 25, 2017

### Objective of Study

This study evaluated the effect of silane on the bond strength of resin cements used in combination with universal adhesives to zirconia-reinforced lithium-silicate (ZLS).

### Key Finding / Analysis

Forty 12mm x 14mm x 5mm ZLS (Celtra Duo, Dentsply Sirona, shade A3 LT) were fabricated. The specimens were embedded into acrylic resin. The surface of the specimens was etched (5% HF, 30s). The specimens were randomly divided into 4 groups (n=10/gp): Group A, Single bond universal (SBU, 3M™ ESPE™); Group B, Silane (S, Porcelain primer, Bisco®) and SBU; Group C, All-bond universal (ABU, Bisco); Group D, S and ABU. A pre-cured composite-resin cylinder with a diameter of 0.8mm was bonded to treated ZLS using dual-cure resin cement [Group A, B: RelyX™ Ultimate (3M ESPE); Group C, D: Duo-Link Universal™ (Bisco)]. The specimens were stored (37°C water, 24h) and subjected to  $\mu$ SBS test. The data were statistically analyzed (ANOVA, Tukey's,  $p < 0.05$ ). Group B (22.48±3.98MPa) showed a significantly higher bond strength than Group A (17.47±3.54MPa). Group D (23.08±5.10MPa) showed a significantly higher bond strength than Group C (17.13±4.37MPa) ( $p < 0.05$ ).

### Conclusion

1. The silane contained in SBU was not effective in optimizing the resin cement/ZLS bond than separate silane. 2. The silane treatment prior to applying the universal adhesive significantly improved the bond strength between resin cement and ZLS.