

# Full Zirconia Vs. e.max Single Units

There are many strong materials available as alternatives to the traditional PFM. What are dentists saying about their choices?

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## yooperdoc

Member Since: 09/07/11

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For the past couple of years our office has been using BruxZir (and/or imitation) full zirconia crowns for molars and e.max for premolars forward as a general rule. We were trying out a different lab and a tech called me and asked why I didn't want e.max for a molar. He said that the compressive strength for the posterior is 400MPa and that e.max can get compressive strengths to 550MPa at 1.5mm when bonded, and down to 400MPa at 0.7mm. He said that the wear coefficient of e.max is similar to enamel and that zirconia is often glazed and polished to achieve better aesthetics and that, when this is done, it wears the opposing. He said that while zirconia has compressive strengths to 900MPa, that those are not really needed, and the aesthetics are, as we all know, not the greatest. He tracks his lab's remakes and after 15 years of 600 units/day he sees more problems with zirconia than with e.max. He said that e.max tends to break while we are adjusting them, and that once we bond them, they almost never (he said never) break. So basically he said while zirconia was stronger, e.max was strong enough.

As a side note, this gentleman said there are medical docs in Europe that were using zirconia for hip replacements and they have started removing them because of the specific heat range of the material and moisture levels in the body (not to mention the mouth) change the chemical composition of the material and promote zirconia fractures. The tech extrapolated this to the mouth and predicted that we would see bulk fractures in the next few years. He also said, to his knowledge, there is no three- to five-year study on zirconia restorations that shows they are a good restoration.

The other doc I work with and I have been very impressed with the zirconia marginal fit. We were just wondering if anyone else had any thoughts on the matter. ■

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## eeznogood

Member Since: 02/23/06

Post: 5 of 27

The CEREC crowd, which I'm a part of, has been doing e.max on posterior teeth, including second molars, since the product came out. It has worked too well to be ignored as a valid option. I always try to have at least 1.5mm on the occlusal, 2mm whenever possible. 2mm is what has been shown to be the best for strength, and yes, it needs to be bonded to achieve those high strength numbers.

Keep in mind that as Cerec users, we typically do monolithic e.max crowns with only staining and glazing. Almost never any cut back and building back up with regular porcelain. e.max is definitely good enough and more aesthetic than zirconia.

As for your lab tech's arguments, it seems to me that most of it is stretching it... Who cares if a crown is more aesthetic or not on a second or first molar? Not many people. Cerec users like e.max mainly because it is a strong single-visit crown. That is the big convincing argument. Aesthetics is a plus, but not the major factor.

As for e.max not wearing the opposing tooth, that remains to be seen. Yes, zirconia crowns will do that, but I'm pretty certain that e.max will also.

In spite of all claims, opposing teeth will wear more when biting on porcelain – any porcelain. And if your lab tech is predicting bulk failures for the future of zirconia-based on unverifiable correlations, then there is not much weight to that argument either.

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I would tell you that your lab tech is right when saying that full contour or monolithic e.max is strong enough in the posterior. All the rest that he said is a bit of a load of salesman arguments. ■

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**19th Century Doc**

Member Since: 05/22/05  
Post: 6 of 27

“Good enough.” Are you sure? I’m not saying it won’t be, but maybe we should temper our certitude when making these kinds of statements.

I made a three-unit Zr bridge for a patient as a temp. Guy is a big time bruxer. He broke it after two months.

I’m quite certain I can find quotes about folks discussing how Zr is good enough.

But I hope you are correct... because I’ve done a bunch of e.max restorations on my patients too! ■ **Phil**

MAY 24 2012

**Brad Blair**

Member Since: 01/11/08  
Post: 7 of 27

All the zirconia failures that I have had were Procera; porcelain over a zirconia core. Zero monolithic, but they haven’t been around long enough.

e.max should be strong enough if you can get adequate thickness, which you can’t always do. But as others have said, bonding a molar can be a real pain and conventional cementation of zirconia is a big advantage. ■

MAY 24 2012



**CoachDDS**

Member Since: 11/11/09  
Post: 9 of 27

Phil, then I suspect something was wrong with the bridge... like structurally wrong... not on your end.

The force required to break zirconia both in tension and compression is pretty extreme, in fact I don’t know that we as humans can generate that kind of force.

As far as e.max vs. zirconia, there’s advantages to both. Zirconia is strong as nails and “generally” (just for you, Phil) won’t break. It’s also great at masking out a dark stump. e.max is much more aesthetic and can be very pretty, and it’s bondable. You just have to reduce the tooth enough to have the space. Different tools in the toolbox. Take your pick. ■

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**19th Century Doc**

Member Since: 05/22/05  
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There was something wrong with it, Eric. It was too thin at the connector. That’s because they needed to leave enough room under the pontic for a healing cap (implant was being placed). Still... it wasn’t crazy thin.

My point being, these companies selling this stuff are generally full of it. Anyone who’s been around long enough has memories of the “next great material” that proved crap... only years later, after it had already been used. Monolithic zirconia is sold as almost bullet proof. I’m here to tell you... it ain’t.

Don’t believe the hype.

I’m not saying don’t use these materials. I’m saying use them judiciously. ■ **Phil**

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**rgk**

Member Since: 01/17/02  
Post: 11 of 27

They all work and they all fail. e.max can fail too. Zirconia fails when limits are pushed. Phil’s bridge broke at the connect. I doubt it broke right through the joint but probably were it flared into the next crown. Probably below the .7mm thickness. Now here is something to think about. Yes, an e.max should work in the right situation, but as mentioned, if it’s too thin and cemented it will most likely break. If there are interferences it will break too. I offer both and have yet to have a failure with either. To be honest, I would rather do e.max over zirconia. The aesthetics are slightly better but, as mentioned, zirconia is

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making changes. Another factor is cost. e.max in general is a lower cost material to use than zirconia. Typically I let the doctor choose. If it's in a person who is a heavy bruxing patient, I would probably recommend full contour zirconia followed by e.max. If it's in a more aesthetic zone then e.max first, then zirconia. ■ **Rick**

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**busterlou45**

Member Since: 06/23/03  
Post: 12 of 27

Do we really know anything until it is used over time? You can't just test things in the lab like real-world use would be. As it has been said, both materials have pluses and minuses. I've broken my share of Procera crowns to the point that they are no longer a tool in my toolbox. Not just debonding of layered porcelain, but quite a few fractured copings as well. e.max crowns seem to be very promising. They are lithium disilicate, I believe. Hmmmm. Where have I heard that before? Oh yeah, the revolutionary Empress II. I'm pretty sure this was the same material and it eventually became the bastard child of Ivoclar. Suddenly it was gone and nobody really talked about it. Much higher failure rates over time, I assume. Now the e.max is the same material... "but they figured it out" as I was told by the sales rep at a convention. OK, Ivoclar is a great company and I bought in... again. I love e.max but time will tell if that will continue. BruxZir crowns look promising and I'm doing more and more recently. I hear the BruxZir ones are better than the knockoffs... but again, who told me that? Sales guy. I have read other things as well to support it, but again, time will tell. ■

MAY 24 2012

**19th Century Doc**

Member Since: 05/22/05  
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Had to go in today (on a day off!) to section that zirconia bridge. It was definitely not less than .7mm thick. It was not as thick as I'd have liked it to be... but definitely more than .7mm. I'm having a PFM bridge fabricated. Like I said, when it comes to putting yourself on the line with these new materials... Caveat Emptor. ■ **Phil**

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**uscdds95**

Member Since: 10/05/06  
Post: 16 of 27

I think a big advantage of BruxZir crowns are that you only need 1mm of occlusal reduction. Working on second molars, you don't want to prep too much or you will risk cold sensitivity and losing that valuable extra millimeter of retentive wall. ■

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**rdsmith**

Member Since: 06/21/06  
Post: 21 of 27

We have been doing porcelain to zirconia since 1999. We have done thousands upon thousands, and for years we were one of Procera's biggest clients. The rate of fractures on these is barely higher than our PFMs but still so low that it doesn't even cause an eyebrow to lift. It all depends in framework design and handling.

As for FCZ and e.max... I would definitely go with e.max press over CAD (especially if your lab is using Sirona Inlab/Cerec) for margin and fit added strength from press, and you should know how they are milling their FCZ for the same reason. We have the in-lab and it works if your not using a microscope. FCZ has awesome margins when done with a good mill, wear is equal to e.max when polished and slightly less when glazed (though if you use e.max glaze on FCZ, won't it be the same? Hmm?) ■

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