



# EDGEBIOCERAMIC™

16 YEARS AND OVER 50M CASES TREATED  
**YOU CAN TRUST US**



# YOUR TRUSTED LEADER IN BIOCERAMICS

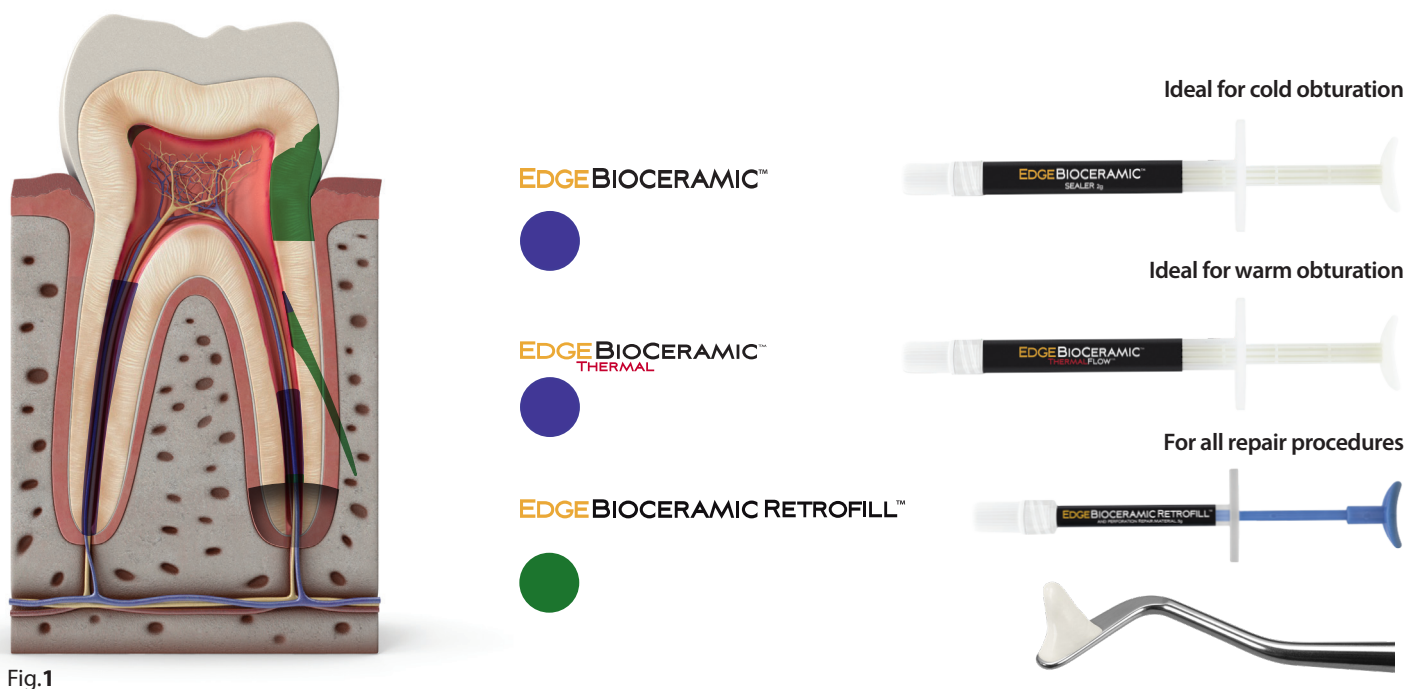
## (Hydraulic Calcium Silicate Cements)

**Edge Bioceramics are the same exact product as the world leading EndoSequence Bioceramics, used clinically in over 50 million cases and for over 16 years!**

EdgeEndo's BioCeramic products consist of premixed bioceramics with different viscosities that are designed for specific clinical applications. EdgeEndo's bioceramics are pure calcium silicate, calcium phosphate-based bioceramics that are designed to repair or replace the presence of the moisture naturally present in dentin.

### EdgeEndo's Pure Premixed Bioceramic Materials

The product line includes the **EdgeBioCeramic™ Sealer**, **EdgeBioCeramic™ ThermalFlow™** Root Canal Sealer, and **EdgeBioCeramic RetroFill™** and Perforation Repair. They are patented premixed calcium silicate, calcium phosphate based bioceramics designed for maximum biocompatibility, healing, and optimal handling. In addition, they are void of any non-bioceramic components such as metals and resins



### Clinical Applications

Figure 1 shows the applications for EdgeEndo's full line of Bioceramic Materials.

- **EdgeBioCeramic Sealer and EdgeBioCeramic ThermalFlow** are used for obturation (ortho or retrograde as a root end filling capped with a plug of putty). ThermalFlow is optimized for warm condensation methods and BC Sealer is optimized for cold hydraulic condensation.
- **EdgeBioCeramic RetroFill and Perforation Repair** (moldable putty) is used for all repair procedures where you would like to condense the material and where you need strong resistance to washout. It is approved for retro filling, pulp capping, pulpotomies (adult and pedo), resorptive defect repair (internal and external), apexification and apexogenesis.

EdgeEndo's complete line of bioceramic products has been thoughtfully developed to cover all your Endodontic material needs while providing you with the best healing and handling characteristics.

**To learn more and to read our extensive research bibliography of EndoSequence Bioceramics, the same exact product as the new EdgeBioceramics, please visit: [www.edgeendo.com](http://www.edgeendo.com)**



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# HOW DOES YOUR CURRENT SEALER COMPARE?

	Edge Bioceramic Sealer	Your Current System
Biocompatible and Osteogenic	✓	?
Superior chemical Bond of Sealer to Dentin	✓	?
Chemical Bond of Sealer to Filling Material	✓	?
Cost Effective	✓	?
Highly Antibacterial (12+ pH upon setting)	✓	?
Highly Radiopaque	✓	?
Hydrophilic	✓	?
Hydroxyapatite Producing	✓	?
Ideal Working and Setting Time	✓	?
User Friendly (Premixed Syringe Sealer)	✓	?
Zero Shrinkage of Sealer and Filling Material	✓	?
3-D Bonded Obturation at Room Temperature	✓	?

Research of EndoSequence BioCeramics, the same formulation as the new EdgeBioCeramics and other support materials are available at:  
[www.edgeendo.com/studies](http://www.edgeendo.com/studies)

## NOT ALL HYDRAULIC CALCIUM SILICATE CEMENTS ARE THE SAME!

Sealer chemistry, particle size and handling characteristics are key factors in clinical performance of endodontic sealers. High charged hydraulic sealer (TCS + DCS >40%) allow a more efficient hydration reaction resulting in proper CaOH<sub>2</sub> formation with valid antimicrobial properties, bioactivity, solubility, leaching and biocompatibility.

Sealer name	Company	MS DS	Presentation			Composition % in MSDS	Composition						
			Single syringe	Auto mix	Powder/ Liquid		Cement			Radiopacifier	Additives	Vehicle	Other
							Tricalcium silicate	Dicalcium silicate	Other				
AH Plus Bioceramic	Dentsply Sirona	+	X			+	5-15			50-70 zirconium oxide		10-30 dimethyl sulphoxide	0.5 lithium carbonate 6 thickening agents
Bio Root Flow	Septodont	+	X			+				25-50 zirconium oxide	5 calcium carbonate	25-50 propylene glycol	
Edge Bioceramic	Edgendo	+	X			+	20-35	7-15		35-45 zirconium oxide			1-4 calcium hydroxide
Endosequence	Brasseler	+	X			+	20-35	7-15		35-45 zirconium oxide			1-4 calcium hydroxide
Endosequence Hi Flow	Brasseler	+	X			+	20-35	7-15		35-45 zirconium oxide			1-4 calcium hydroxide
iRoot SP	Innovative Bioceramix	+	X			+	20-35	7-15		35-45 zirconium oxide			1-4 calcium hydroxide

EdgeBioCeramic RetroFill and Perforation Repair.

F. Cardinali<sup>1</sup> • J. Camilleri<sup>2</sup>. 2 July 2023. Clinical Oral Investigations. <https://doi.org/10.1007/s00784-023-05140-w>



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## TESTIMONIAL CLINICAL CASE



Professor  
**Gianluca Gambarini,**  
DDS, Italy

“The EdgeBioCeramic Sealer’s favorable handling attributes and exceptional flowability enable the ease of performing uncomplicated root canal obturation procedures.”

Fig. 1

Patient was referred from the general dentist because of pulpitis in a left third upper molar which was part of a metal-porcelain bridge. The previous dentist made a panoramic radiograph, removed the bridge, and asked for an endodontic treatment, because patient had undergone therapy with bisphosphonates and refused extraction, fearing the risk of osteonecrosis.



Fig. 2

Third molars can show unpredictable anatomy, however in this case the roots were merging, and three canals were present. The main difficulty was limited access in the posterior area and the presence of double/triple curvature. To minimize operative time and optimize resistance to fatigue a single-file reciprocation technique was used and canals were shaped using **EdgeOneR Utopia** size 25 (EdgeEndo), which is a very efficient and safe instrument, due to its unique thermal treatment. Using progression in steps and frequent irrigation the **EdgeOneR Utopia** was able to negotiate properly the complex root canals (especially the mesial buccal one), respecting the original trajectories with no iatrogenic errors, due to its flexibility, less bounce back and non-cutting pilot tip.

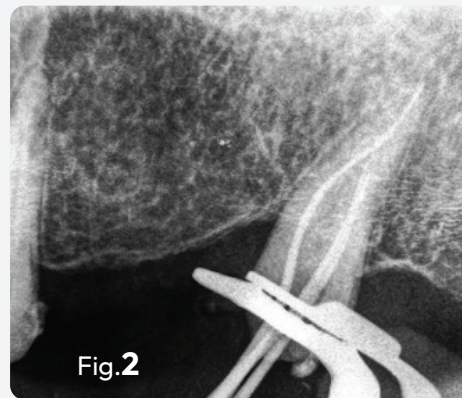
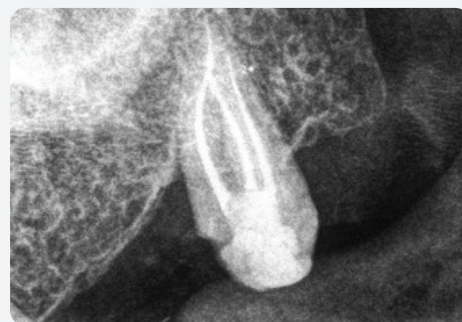


Fig. 3

TSingle-cone hydraulic technique using **EdgeBioCeramic Sealer** (EdgeEndo) was performed. The selection of this method aimed to streamline cone fitting processes within intricate anatomical structures, as the sealer, rather than gutta-percha, is responsible for establishing the apical hermetic seal. The gutta-percha cone only acts as a carrier and there is no need to get a proper tugback, which would be difficult to achieve in such complex anatomy. The favorable handling properties and flowability of the **EdgeBioCeramic Sealer** allowed easy root canal obturation procedure.







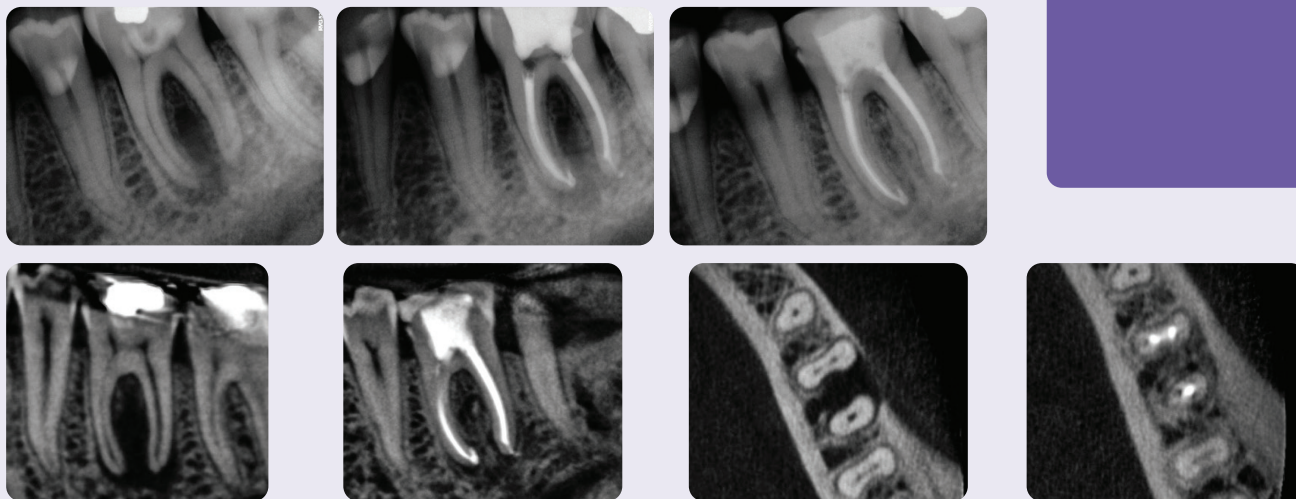
## TESTIMONIAL CLINICAL CASE

"I am confident that EdgeBioCeramic stands out not just for its composition but also for its clinical efficacy. From a clinical perspective, its handling proves to be suitable for daily use, yielding excellent results in follow-up procedures."

### Case. 1

48 years old female patient, ASA 1, presented for the evaluation and the treatment of tooth #36. On clinical examination the tooth was sensitive to percussion and palpation. The radiographic examination showed a very large radiolucency on both mesial and distal roots. The evaluation included the diagnosis of necrosis and apical periodontitis, leading to the indication of endodontic treatment.

Following anesthesia and rubber dam placement, access was performed, and canals were located and instrumented using **EdgeTaper Platinum** files (EdgeEndo) to size F1 #20. Treatment was completed in 2 visits with calcium hydroxide placement between appointments. Canals were obturated using hydraulic condensation using **EdgeBioCeramic Sealer** (EdgeEndo). Bioceramic cement was used for its antibacterial and bioactive properties. The one year follow up shows a complete healing of the lesion.



### Case. 2

A 52-year-old female referred to the clinic for the treatment of tooth 21. Intra-oral examination showed a poor restoration on tooth 21. Percussion and palpation were negative with mobility grade 1. Radiographic examination showed an unsatisfactory restoration on tooth 21 with an apical radiolucency. After obtaining the written consent, the treatment was carried out. The area was anesthetized. Tooth was isolated using the rubber dam and access cavity was opened. The root canal used for shaping was the **EdgeTaper Blaze Utopia** to size F2 #25. The final irrigation protocol was performed by a continuous delivery of EDTA and NaOCl. Solutions were activated using ultrasonic activation - 1 minute per solution. Canals were dried and obturated using hydraulic condensation with **EdgeBioCeramic Sealer** (EdgeEndo). Lateral and secondary canals are visible on the post operative radiograph.



**Maya Feghali**  
DDS, France



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## TESTIMONIAL CLINICAL CASE



**Dr. Biraj Patel**

American Trained  
Endodontist, Diplomate  
of the American Board of  
Endodontics (ABE)

“EdgeBioCeramic truly shines with its exceptional composition and clinical efficacy. It consistently delivers excellent results in follow-up procedures. I highly recommend it for endodontic applications.”

### Case 1

46 years old Male patient, ASA 1, presented for the evaluation and the treatment of tooth #36. On clinical examination the tooth was sensitive to percussion and palpation. The radiographic examination showed a very large radiolucency on both mesial and distal roots, a separated instrument in the mesio-lingual canal. The diagnosis of previously initiated with symptomatic apical periodontitis was made, and the endodontic treatment was indicated. Following anesthesia and rubber dam placement, access was

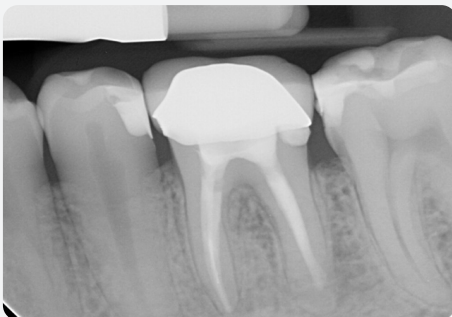
performed, and canals were located. The coronal fragment was removed and the apical fragment was bypassed. The canals were instrumented using **EdgeEndo X7** files (EdgeEndo) to size 35.04 in the mesial canals and 40.04 in the distal canal. Canals were obturated using hydraulic condensation using **EdgeBioCeramic Sealer** (EdgeEndo). Bioceramic cement was used for its antibacterial and bioactive properties. The one year follow up shows a complete healing of the lesion.



Pre op



Post op

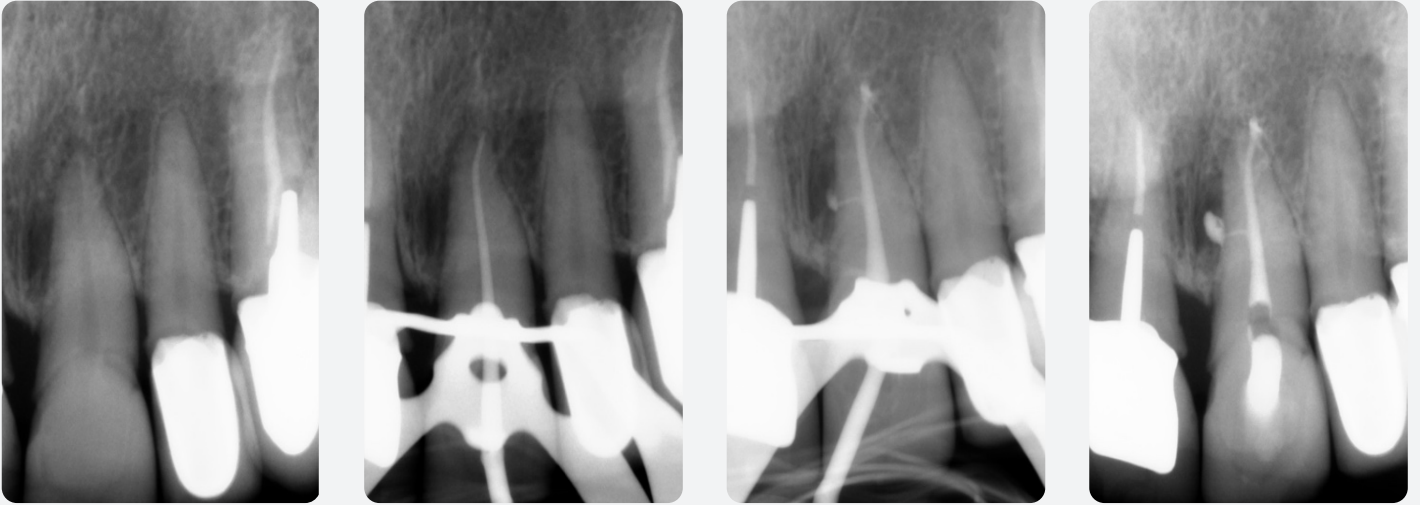


1 year follow up



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## Case 2

A 36-year-old female referred to the clinic for the treatment of tooth #46. Intra-oral examination showed a deep caries lesion on tooth #46. The tooth was Percussion tender and lingering to cold testing. Radiographic examination revealed a deep caries.

The area was anesthetized. Tooth was isolated using the rubber dam and access cavity was opened. The root canal used for shaping was the **EdgeEndo Utopia X7** to size 30.04 in the mesials and 35.04 in the distal canal. The final irrigation protocol was performed by a continuous delivery of EDTA and NaOCl. Solutions were activated using ultrasonic activation - 1 minute per solution. Canals were dried and obturated using hydraulic condensation with **EdgeBioCeramic Sealer** (EdgeEndo).



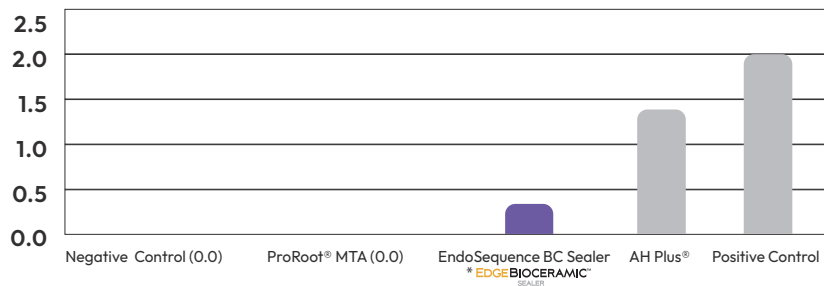


## CLINICAL STUDIES

Edge Bioceramics are the same exact product as the world leading EndoSequence Bioceramics, which are alkaline +12pH making them highly antibacterial. A recent study showed that EndoSequence **EdgeBioCeramic™** Sealer, which has the same formulation as Edge Bioceramics, killed *Enterococcus faecalis* within 2 minutes of contact.

## SUPERIOR BIOCOMPATIBILITY

EndoSequence, like EdgeBC Sealers are essentially a root repair material with a flowable consistency. The unique osteogenic properties of this BC Sealer make it particularly effective on non-vital cases with extensive bone loss or apical periodontitis. A recent study showed our BC Sealer to be much more biocompatible than AH Plus®.



### Cytotoxicity Comparison (at 24 hours)

Cytotoxicity Ranking Classification (based on Lodinet al.2008):  
 0.0 - 0.4 = non cytotoxic  
 0.5 - 1.4 = slightly cytotoxic  
 1.5 - 2.4 = moderately cytotoxic  
 2.5 - 3.5 = severely cytotoxic

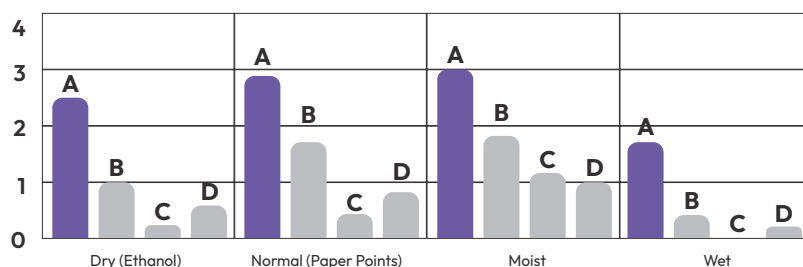
Source:  
 Zhang W, Li Z, Peng. Ex vivo cytotoxicity of a new calcium silicate-based canal filling material. International Endodontic Journal. 2010; 43(9): 769. DOI:10.1111/j.1365-2591.2010.01733.

\*EdgeBioceramic Sealers are the same exact product as Endosequence BC Sealers.

## SUPERIOR BONDING

EndoSequence BC Sealers's, which has the same formulation as the EdgeBioceramics Sealer, BC Sealer's hydrophilic/hydroxyapatite producing formula and excellent flowability allow it bond readily to both dentin and to bioceramic filling materials. A recent study showed that this BC Sealer has superior bond strength when compared to other popular sealers. The study varied the moisture content to determine its effect on bond strengths. Our BC Sealer outperformed all the other sealers at all moisture levels.

### Push-Out Bond Strength (MPa)

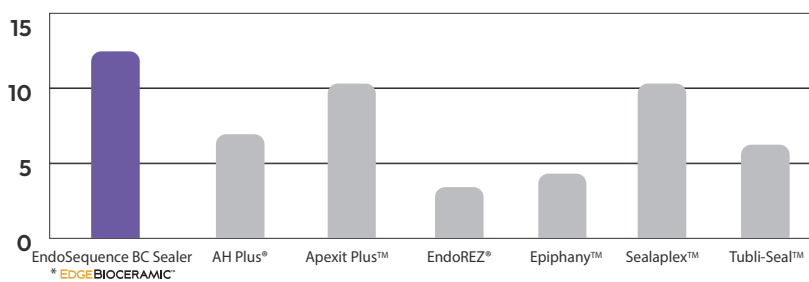


### Bond Strength Comparison in Different Moisture Conditions

A = BC Sealer® + gutta percha  
 B = AH Plus® + gutta percha  
 C = MTA Fillapex™ + gutta percha  
 D = Epiphany™ + Resilon®

Source:  
 Nagas E, Uyanik MO, Eymirli A, Cehreli ZC, Vallittu PK, Lassila LVJ, Durmaz V. Dentin moisture conditions affect the adhesion of root canal sealers. JOE. 2011; 38 (2): 240-4

### pH Value



### Antibacterial (pH) Comparison (at 1day)

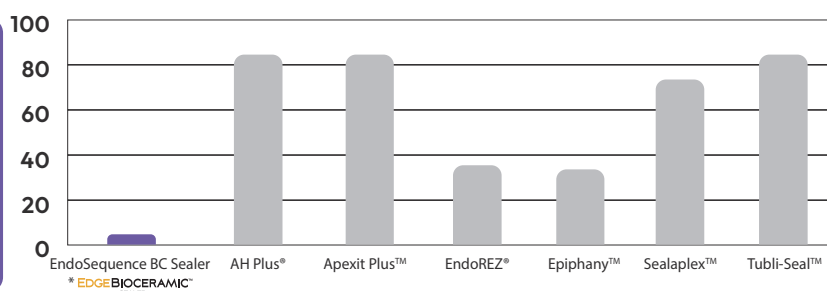
Source:  
 Zhang HS, Shen Y, Ruse ND, Haapasalo M. Antibacterial activity of endodontic sealers by modified direct contact test against *enterococcus faecalis* JOE. 2009; 35 (7) : 1051 - 5

\*EdgeBioceramic Sealers are the same exact product as Endosequence BC Sealers.

## EXCELLENT FLOW

EndoSequence, like Edge BC Sealer's extremely small particle size and hydrophilic nature allow it flow into all aspects of the canal anatomy. A recent study proved that EndoSequence, which has the same formulation as the new EdgeBC Sealer, has a contact angle which is lower than all other sealers tested. This unique feature of our BC Sealer improves its ability to bond to dentin and obturation materials and also improves its ability to effectively kill microbes throughout all aspects of the root canal system.

### Contact Angle



### Antibacterial (pH) Comparison (at 7day)

Source:  
 Zhang HS, Shen Y, Ruse ND, Haapasalo M. Antibacterial activity of endodontic sealers by modified direct contact test against *enterococcus faecalis* JOE. 2009; 35 (7) : 1051 - 5

\*EdgeBioceramic Sealers are the same exact product as Endosequence BC Sealers.



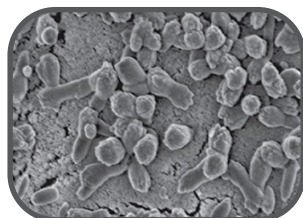
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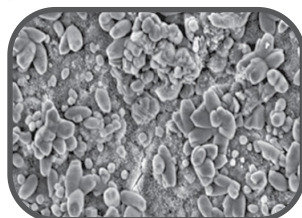
The following SEM images illustrate the similarities between MTA and EndoSequence RRM, the same exact product as the new EdgeBC Retrofill. “Group A” shows the crystalline surfaces of MTA and RRM. Both surfaces are composed primarily of calcium, carbon, and oxygen. More notably, “Group B” shows the extent of human gingival fibroblast adhesion to MTA and RRM (after 7 days of incubation). Notice the extensive matrix- like overlay on the surface of the RRM. These SEMs visually confirm that RRM is highly bioactive and efficiently promotes biomineralization.

## BIOACTIVE

Group A\*

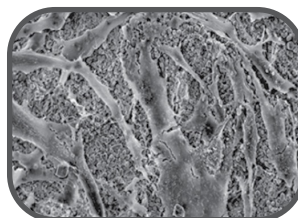


MTA Crystalline Surface

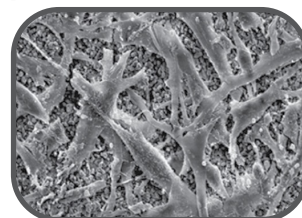


RRM Crystalline Surface

Group B\*



MTA Fibroblast Adhesion



RRM Fibroblast Adhesion

Source: Jingzhi M, Shen Y, Stojicic S, Haapasalo M. Biocompatibility of Two Novel Root Repair Materials. JOE. 2011; 37(6): 793-8

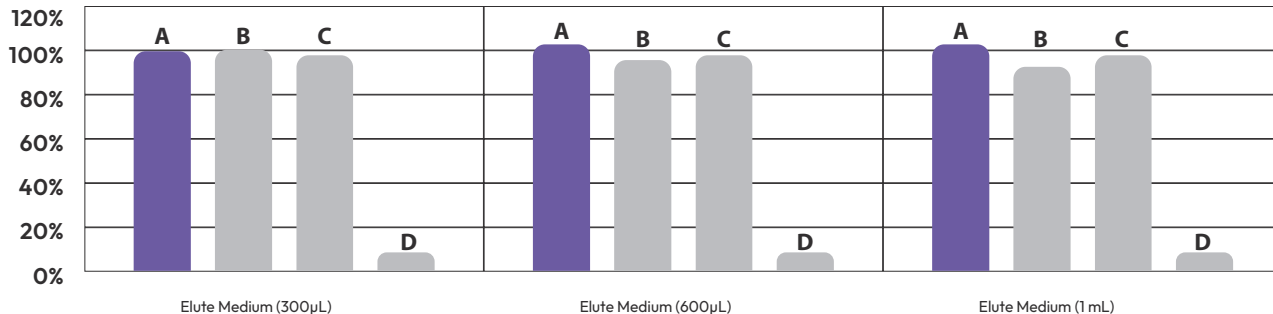
## EXCELLENT BIOCOMPATIBILITY AND MINERALIZATION ABILITY

The following graphs illustrate the biocompatibility and mineralization ability of EndoSequence RRM, which has the same formulation as the new EdgeBC Retrofill as compared to other commonly used root repair materials.

### Cytotoxicity Comparison 3-Day Set Samples

Source: AlAnezi AZ, Jiang J, Safavi KE, Spangberg LSW, Zhu Q. Cytotoxicity evaluation of EndoSequence Root Repair Material. Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology. 2010; 109 (3) : 122-5. DOI: 10.1016/j.tripleo.2009.11.028

A = EndoSequence RRM / EdgeBC RetroFill  
B = Gray MTA  
C = White MTA  
D = AH26\*

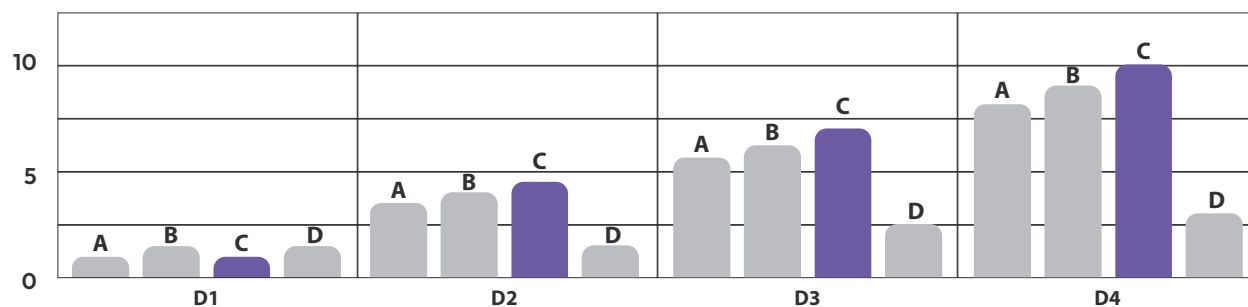


### ALP Activity Absorbance

### Time (Day)

Source: Zhang S, Yang X., Fan M. BioAggregate® and iRoot BP Plus (RRMTM Putty) optimize the proliferation and mineralization ability of human dental pulp cells. International Endodontic Journal. 2013; DOI: 10.1111/iej.12082

A = MTA  
B = BioAggregate\*  
C = EndoSequence RRM / EdgeBC RetroFill  
D = Control



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PRODUCTS

# Obturation and Surgery have become easier with EdgeBioCeramic™



EDGEBIOCERAMIC™ SEALER



EDGEBIOCERAMIC™ THERMALFLOW™



EDGEBIOCERAMIC™ RETROFILL  
AND PERFORATION REPAIR MATERIAL

Handles like putty/Cavit\*  
spatula not included in packaging

Now includes  
the new  
reduced waste  
tips which  
preserve  
material by  
62%\*



\*Cavit™ is a registered trademark of 3M.

Product	Contents	REF
EdgeBioCeramic™ SEALER	2g syringe with 15 tips disposable tips	USEBIOCSEU
EdgeBioCeramic™ THERMALFLOW™	1.5g syringe with 15 tips disposable tips	USEBIOTFEU
EdgeBioCeramic™ RETROFILL AND PERFORATION REPAIR MATERIAL	0.5g syringe	USEBIORMEU
EdgeBioCeramic™ Replacement Tips	15 reduce waste tips	USEBIOPTU



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## Additional Attributes

**EdgeEndo** files do not have shape memory so they will not straighten out the canal (except for EdgeTaper which is not heat treated and the Utopia Line) thus minimizing the risk of canal transportation.

• **Safe Unwinding:** as a safety feature the files are designed to unwind. It's labeled safe because the file unwinds/untwist before it breaks. When the file starts unwinding it signals to the clinician that the file is fatigued and can break if they keep using it.

## Questions

1. What is Fire-Wire and FireWire Blaze? • Nickel Titanium after **EdgeEndo's** proprietary heat treatment.
2. What is "Annealed Heat Treated (AHT)"? • How **EdgeEndo** makes fire wire. Annealed means "heat-treated."
3. What Torque/speed should the motor be set to? • Our recommendation is to use the existing settings used with current rotary/reciprocating file. Please, check the IFUs in case of doubts.
4. Does the torque/speed change with each Edge series? • Yes, check the respective IFUs.



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