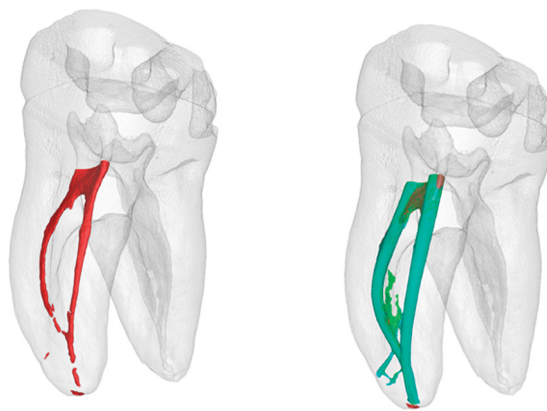


*EndoSequence*®

## REDEFINING ENDODONTICS

Bioceramic Technology





## ROOT REPAIR MATERIAL (RRM™)

TIRED OF HASSLING WITH CONVENTIONAL ROOT REPAIR MATERIALS?

Premixed with Superior Handling and Healing Properties,  
EndoSequence Root Repair Material is Ideal for All Your Root Repair Needs.

EndoSequence® Root Repair Material (RRM™) is available in two specifically formulated consistencies (syringable paste or condensable putty) and contains many of the same characteristics as BC Sealer. The favorable handling properties, increased strength and shortened set time make RRM highly resistant to washout and ideal for all root repair and pulp capping procedures. Research and countless cases confirm that RRM is highly biocompatible and osteogenic. Join the thousands of others that have set aside their spatulas and joined the RRM revolution!

### SUPERIOR HANDLING

- Premixed-syringable paste or putty consistency
- Shortened Set Time ~2 hours vs 4+ hours with others
- Highly Resistant to Washout

### EXCELLENT HEALING

- Highly Biocompatible
- Osteogenic
- Anti-bacterial (+12 pH)

#### ESBCRRM Bulk Syringe Kit

Order #5018265EU  
2-1.5g Preloaded Syringes  
15-Intra Canal Tips  
MSDS  
Instructions for Use

#### ESBCRRM Intro Syringe

Order #5018264EU  
1-1g Preloaded Syringe  
7-Intra Canal Tips  
MSDS  
Instructions for Use

#### ESBCRRM Putty

Order #5018266EU  
1-3g Jar  
MSDS  
Instructions for Use



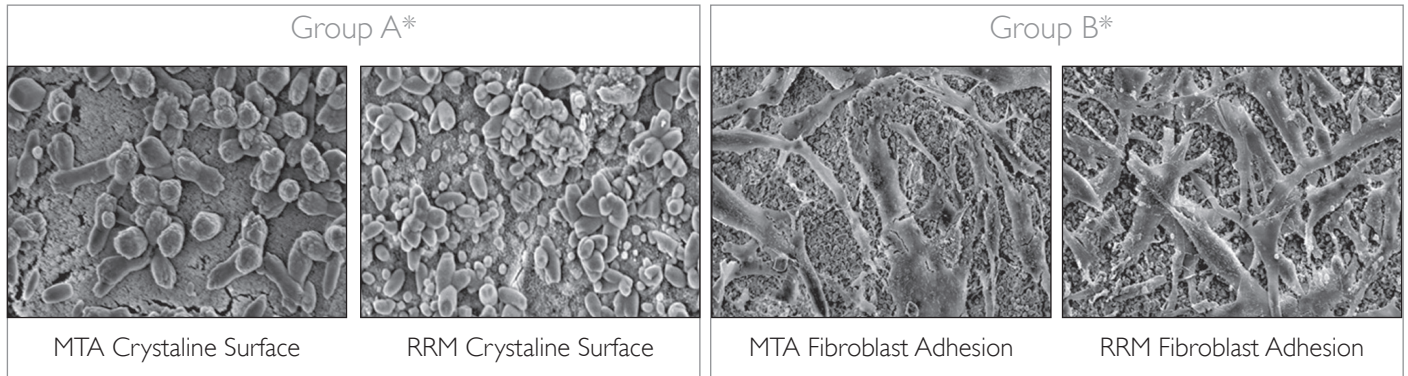
“ Endosequence Root Repair Material's favorable properties, coupled with its ingenious moisture initiated setting reaction and efficient clinical application, represents a step forward in root repair and surgical retrofilling materials. ”

- Dr. Allen Ali Nasseh  
Microsurgical Endodontics, Boston, MA  
Clinical Instructor, Harvard School of Dental Medicine

Applications: Root Endo Filling (Retrograde fills), Repair of Root Perforation, Repair of Root Resorption, Apexification, Pulp Capping  
Composition: Calcium silicates, Calcium phosphate monobasic, Calcium hydroxide, Zirconium oxide, Tantalum oxide, Filler and thickening agents

## BIOACTIVE

The following SEM images illustrate the similarities between MTA and RRM. "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.

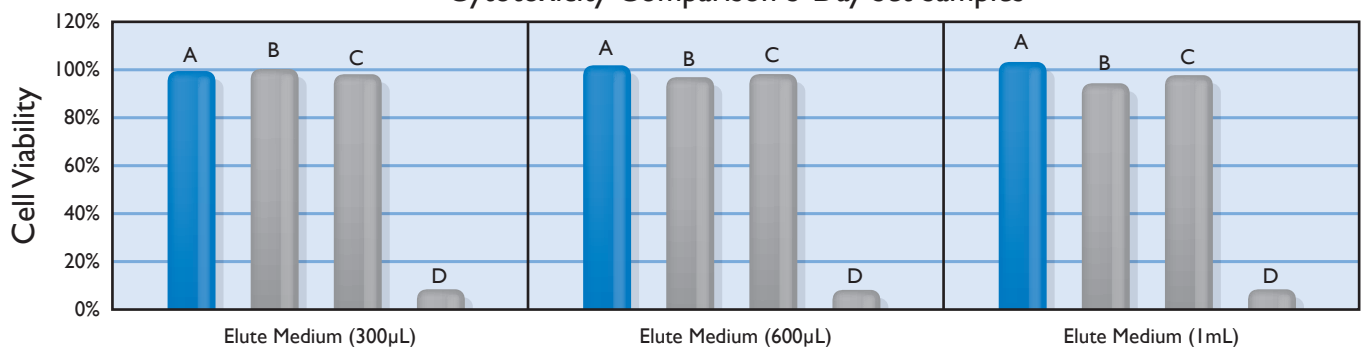


Source: Jingzhi M, Shen Y, Stojicic S, Haapasalo M. Biocompatibility of Two Novel Root Repair Materials. JOE. 2011; 37(6): 793-8

## EXCELLENT BIOCOMPATIBILITY AND MINERALIZATION ABILITY

The following graphs illustrate the biocompatibility and mineralization ability of RRM as compared to other commonly used root repair materials.

### Cytotoxicity Comparison 3-Day Set Samples

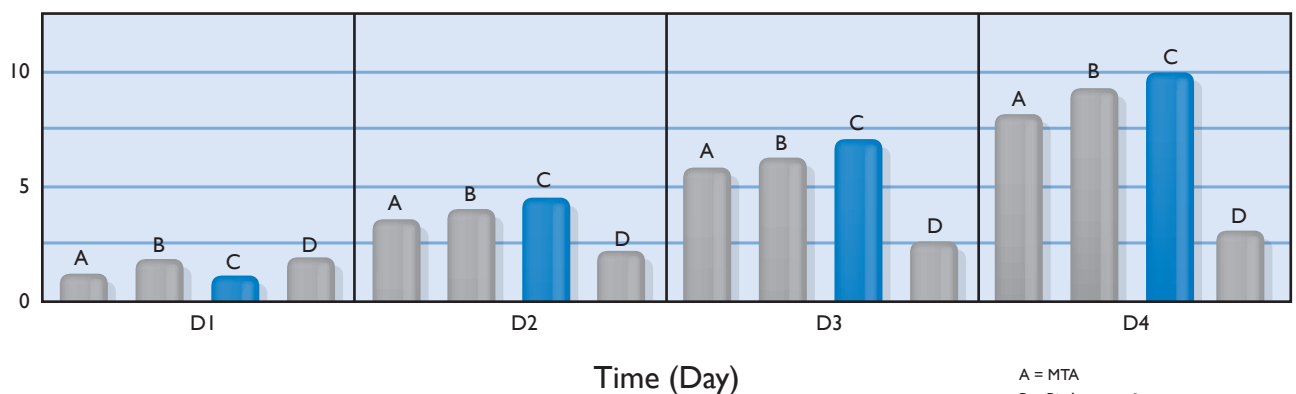


Source: AlAnezi AZ, Jiang J, Safavi KE, Spangberg LSW, Zhu Q. Cytotoxicity evaluation of EndoSequence Root Repair Material. Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology. 2010; 109(3): 122-5. DOI:10.1016/j.tripleo.2009.11.028

A = EndoSequence® Root Repair Material  
B = Gray MTA  
C = White MTA  
D = AH26®

ALP Activity Absorbance (405nm)

### ALP Activity Absorbance



Source: Zhang S, Yang X, Fan M. BioAggregate® and iRoot BP Plus (RRM™ 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™ Putty  
D = Control

# EndoSequence<sup>®</sup>

## BC SEALER<sup>™</sup>

### THE "STATE-OF-THE-ART" IN ENDODONTIC OBTURATION HAS CHANGED!

Unlike conventional base/catalyst sealers, BC Sealer utilizes the moisture naturally present in the dentinal tubules to initiate its setting reaction. This highly radiopaque and hydrophilic sealer forms hydroxyapatite upon setting and chemically bonds to both dentin and to our bioceramic points (EndoSequence<sup>®</sup> BC Points<sup>™</sup>). BC Sealer is anti-bacterial during setting due to its highly alkaline pH and unlike traditional sealers, BC Sealer exhibits absolutely zero shrinkage!

**Never before has an obturation system been able to make these claims.  
How does your current system compare?**

	BC Sealer and Points	Your Current System
Biocompatible and Osteogenic	✓	?
Chemical Bond of Sealer to Dentin	✓	?
Chemical Bond of Sealer to Filling Material	✓	?
Cost Effective (Considerably Less Expensive Than Carriers)	✓	?
Highly Antibacterial (+12 pH upon setting)	✓	?
Highly Radiopaque	✓	?
Hydrophilic	✓	?
Hydroxyapatite Producing	✓	?
Ideal Working and Setting Time	✓	?
User Friendly (Premixed Syringable Sealer)	✓	?
Zero Shrinkage of Sealer and Filling Material	✓	?
3-D Bonded Obturation at Room Temperature	✓	?

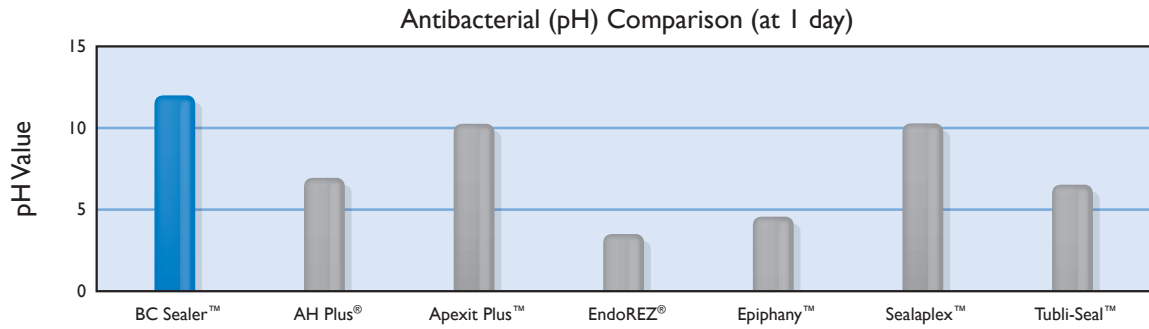


“Finally a sealer that is biocompatible, hydrophilic and antibacterial with no post-operative complications.”

Dr. Richard Herman Diplomate of the American Board of Endodontics  
Adjunct Assistant Clinical Professor NOVA Southeastern University Post Graduate Endodontics

## HIGHLY ANTIBACTERIAL

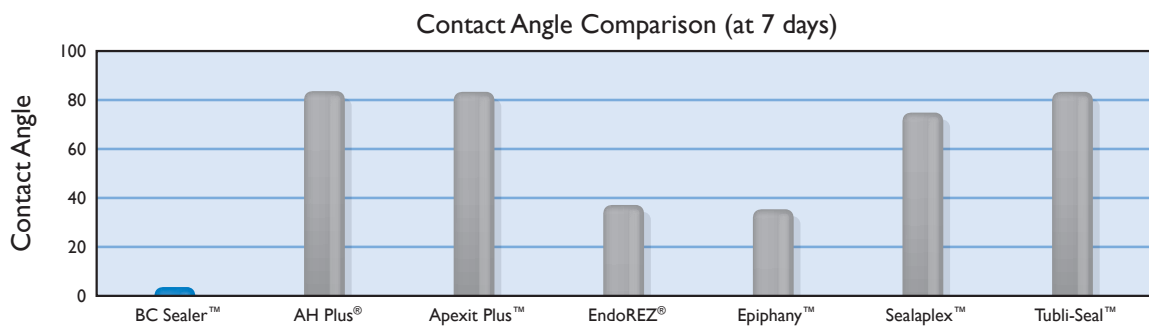
BC Sealer is alkaline (+12pH) making it highly antibacterial. A recent study showed that BC Sealer killed *Enterococcus faecalis* within 2 minutes of contact.



Source:  
Zhang H, 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

## EXCELLENT FLOW

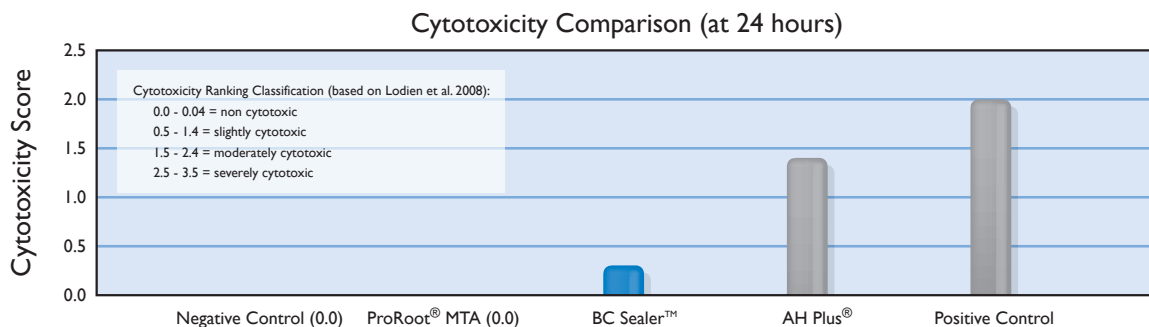
BC Sealer's extremely small particle size and hydrophilic nature allow it flow into all aspects of the canal anatomy. A recent study proved that BC Sealer has a contact angle which is lower than all other sealers tested. This unique feature of BC Sealer improves its ability to bond to dentin and obturation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



Source:  
Zhang H, 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

## SUPERIOR BIOCOMPATIBILITY

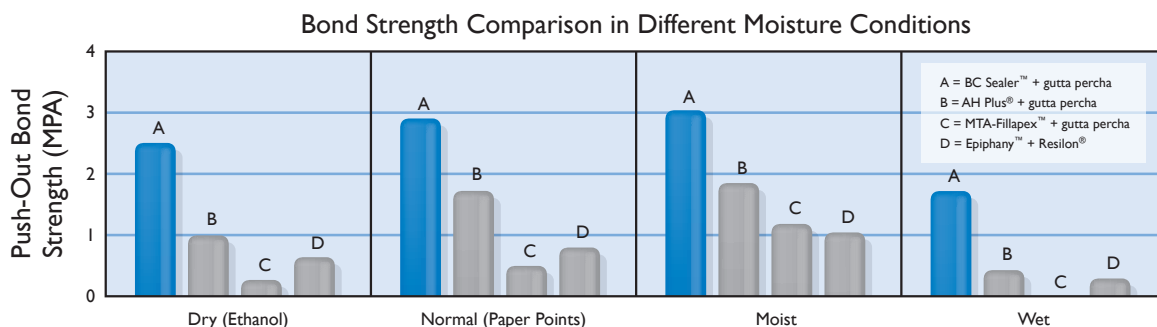
BC Sealer is essentially a root repair material with a flowable consistency. The unique osteogenic properties of BC Sealer make it particularly effective on non-vital cases with extensive bone loss or apical periodontitis. A recent study showed BC Sealer to be much more biocompatible than AH Plus®.



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.

## SUPERIOR BONDING

BC Sealer's hydrophilic/hydroxyapatite producing formula and excellent flowability allow it bond readily to both dentin and to bioceramic filling materials (BC Points™). A recent study showed that 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. BC Sealer outperformed all the other sealers at all moisture levels.



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

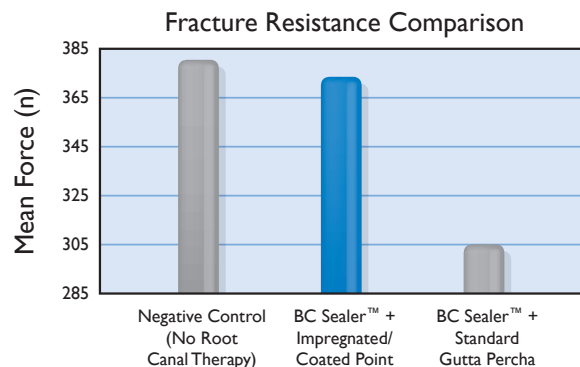




## BC OBTURATION SYSTEM™

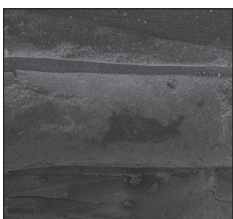
### BIOCERAMIC BONDED OBTURATION

Unlike traditional points, EndoSequence® BC Points™ are subjected to a patented process of impregnating and coating each cone with bioceramic nanoparticles. The bioceramic particles found in BC Sealer bond with the bioceramic particles in BC Points™ to form a true gap-free seal. A recent study showed that BC Sealer, when used in conjunction with our impregnated and coated cones, actually increased the fracture resistance to a level comparable to that of teeth that have not undergone root-canal therapy.

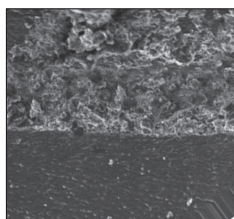


Source:  
Ghoneim AG, Lutfy RA, Sabet NE, Fayyad DM.  
Resistance to fracture of roots obturated with novel canal-filling systems. *JOE*. 2011; 37 (11): 1590-2

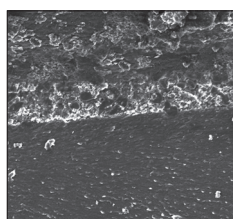
It is universally accepted that microbes require food and space to survive and multiply. Therefore the primary goal of obturation should be to completely fill and seal the entire canal thereby eliminating any gaps (this includes the gap between the sealer and the filling material). The below SEMs visually confirm BC Sealer's unprecedented ability to adapt to the surface of dentin and BC Points™.



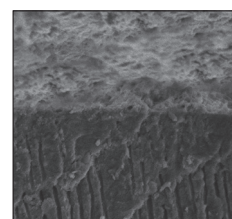
x35 Magnification



x200 Magnification



x350 Magnification



x1000 Magnification

SEMs courtesy of Martin Trope DMD, Clinical Professor; Department of Endodontics, School of Dental Medicine, University of Pennsylvania.

#### EndoSequence® BC Obturation Kit\*

Order #5019504EU (.04)

Order #5019505EU (.06)

#### EndoSequence® BC Sealer™

Order #5017560EU

#### EndoSequence® BC Pellets™

Order #5023074EU



“ In all my years of viewing high magnification SEMs, I have never seen a sealer form such a consistently intimate bond with dentin.”

- Dr. Martin Trope  
Clinical Professor; University of Pennsylvania

\*BC Points™ are available in individual sizes and in assortment wheels. Standard gutta percha can be used, but for a true, gap-free seal, BC Points™ are recommended.

**Note:** The benefit of using BC Sealer™ and BC Points™ is that three-dimensional bonded obturation can be achieved at room temperature. However, if a warm, vertical technique is preferred, then BC Pellets™ should be used at 150°C.

AH Plus®, AH26™, ProRoot® MTA, MTA-Fillapex™, Apexit Plus™, EndoREZ™, Epiphany™, Resilon™, Sealaplex™, BioAggregate® and Tubli-Seal™ are trademarks of their respective owners and are not trademarks of Brasseler USA Dental, LLC or Peter Brasseler Holdings, LLC, One Brasseler Blvd. Savannah, GA 31419 USA. EndoSequence®, BC Sealer™, BC Points™, BC Obturation System™ and RRM™ are trademarks of Brasseler USA Dental, LLC or Peter Brasseler Holdings, LLC, One Brasseler Blvd. Savannah, GA 31419 USA