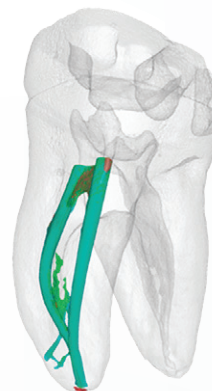
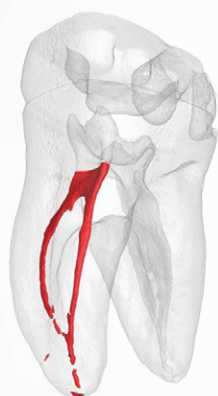




BUSA®

# REDEFINING ENDODONTICS

BIOCERAMIC TECHNOLOGY



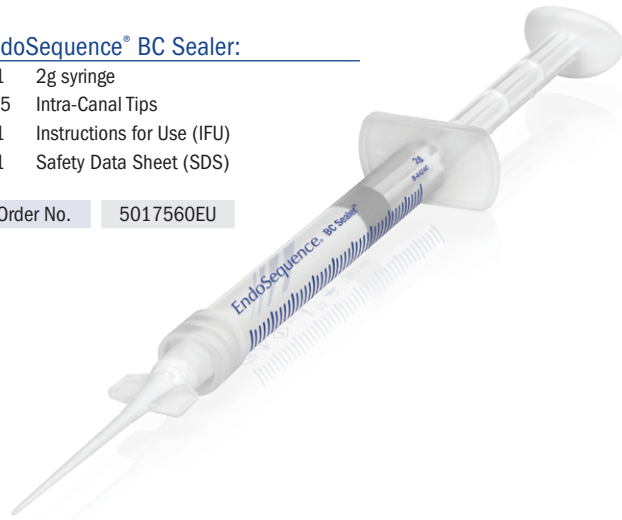
# BC SEALER™

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 BC Points). BC Sealer is anti-bacterial during setting due to its highly alkaline pH and unlike traditional sealers, BC Sealer exhibits absolutely zero shrinkage!

## EndoSequence® BC Sealer:

- 1 2g syringe
- 15 Intra-Canal Tips
- 1 Instructions for Use (IFU)
- 1 Safety Data Sheet (SDS)

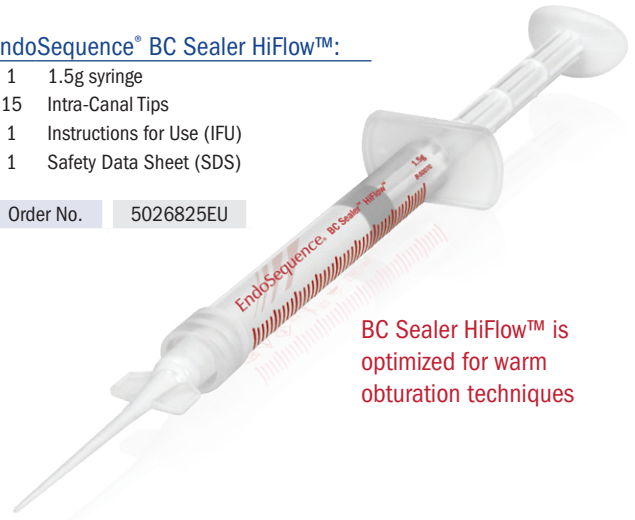
Order No. 5017560EU



## EndoSequence® BC Sealer HiFlow™:

- 1 1.5g syringe
- 15 Intra-Canal Tips
- 1 Instructions for Use (IFU)
- 1 Safety Data Sheet (SDS)

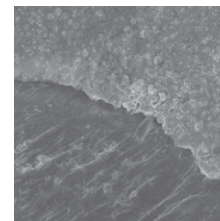
Order No. 5026825EU



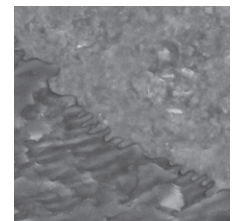
BC Sealer HiFlow™ is optimized for warm obturation techniques

**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	✓	?



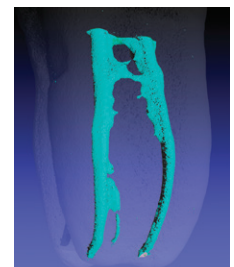
EndoSequence BC Sealer / BC Point Interface



EndoSequence BC Sealer / Dentin Interface



Radiograph courtesy of Dr. Gilberto Debelian, DMD, PhD, Adjunct Associate Professor, Dept of Endodontics at Universities of North Carolina and Pennsylvania

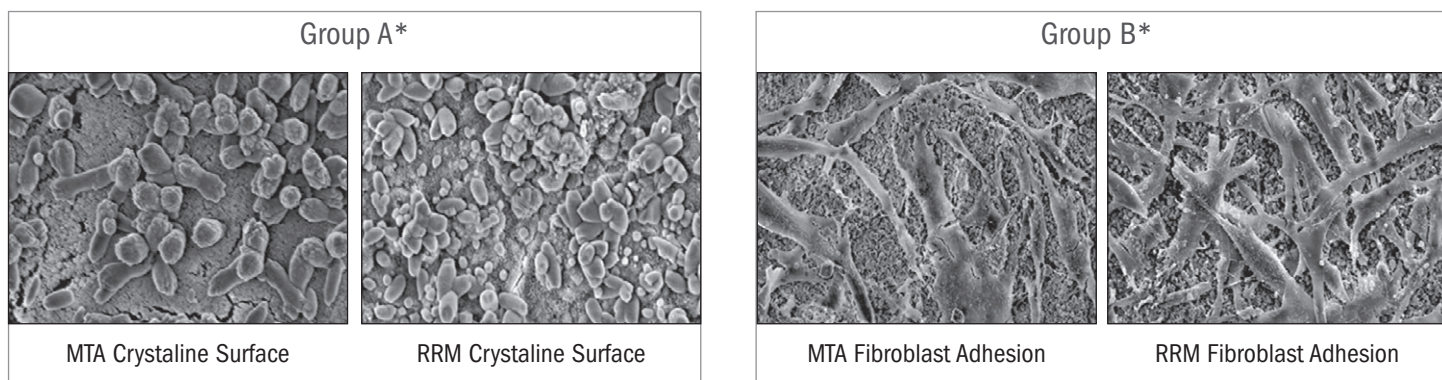


Micro CT Courtesy of Dr. Adam Lloyd, Chair of Department of Endodontics, UTHSC

\*Research and other support materials available at [www.BrasselerUSA.com/Bioceramics](http://www.BrasselerUSA.com/Bioceramics)

# 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.

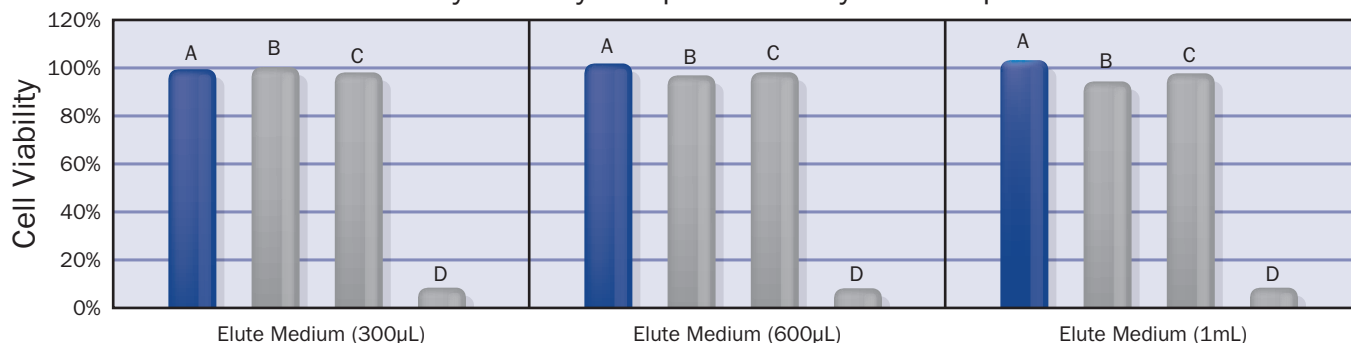


Source: Jingzhi M, Shen Y, Stojicic S, Haapasalo M. Biocompatibility of Two Novel Root Repair Materials. JOE. 2011; 37(6): 793-8

## 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.

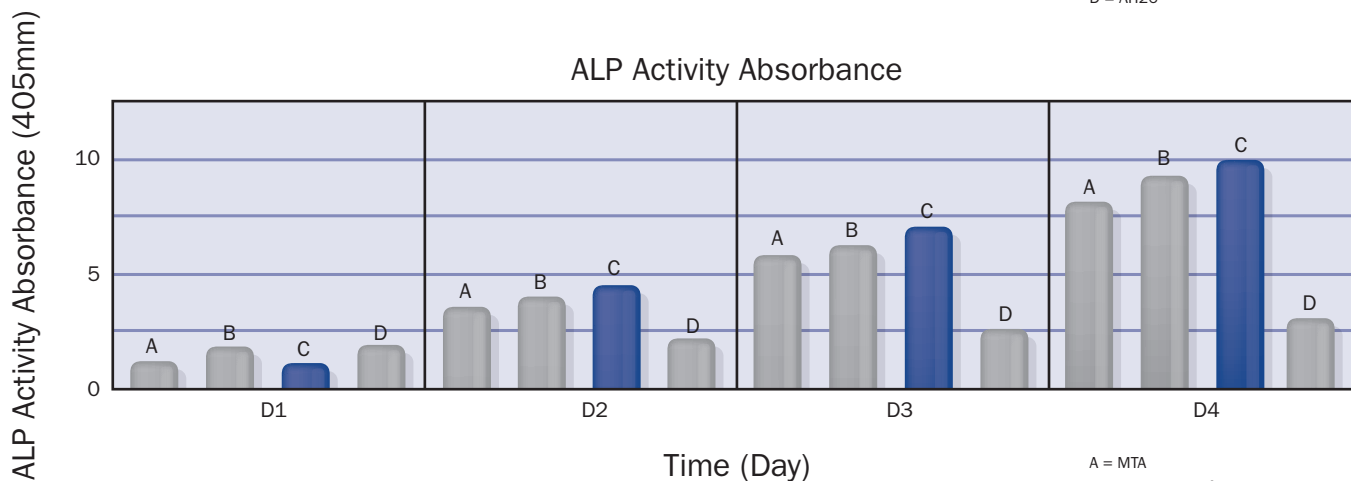
### Cytotoxicity Comparison 3-Day Set Samples



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



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

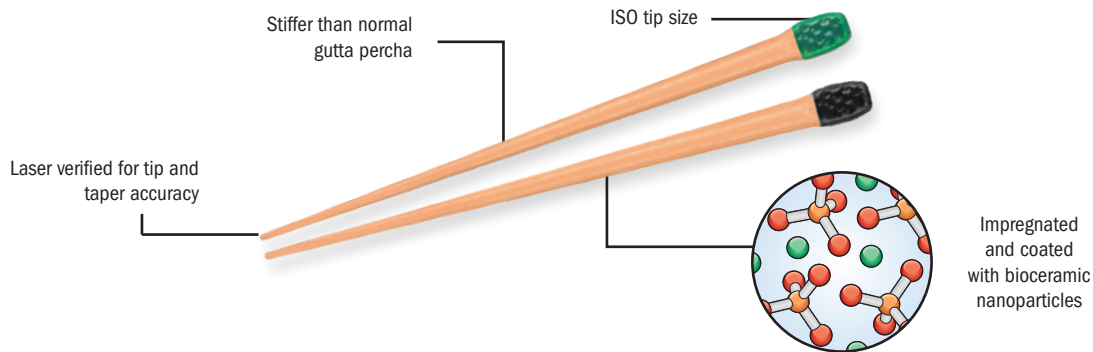
A = MTA  
 B = BioAggregate®  
 C = EndoSequence® RRM™ Putty  
 D = Control

AH Plus®, AH26®, ProRoot® MTA, MTA-Fillapex™, Apexit Plus™, EndoREZ®, Epiphany™, Resilon®, Sealaplex™, BioAggregate® and Tubli-Seal™ are not trademarks of BUSA. EndoSequence®, BC Sealer™, BC Points™, BC Obturation System™ and RRM™ are trademarks of BUSA.

# ENDOSEQUENCE® BC POINTS™, BC PELLETS™, 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.

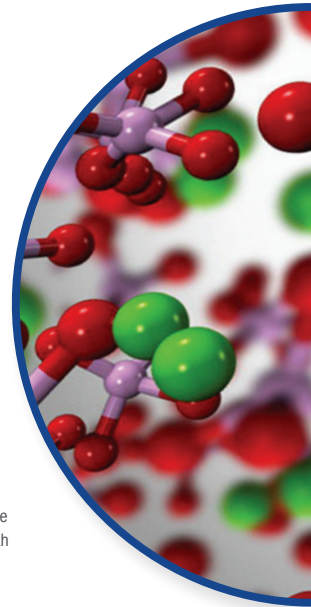


### BC Obturation Kit (.04 Taper):

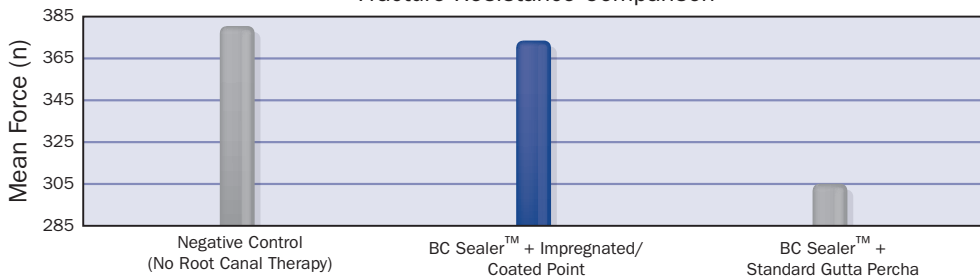
- 1 Assorted BC Points Wheel (.04 Taper)
- 1 BC Sealer
- 15 BC Tips™

Order No. 5019504EU

\*Also available in .06 Taper

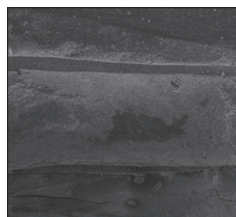


### Fracture Resistance Comparison

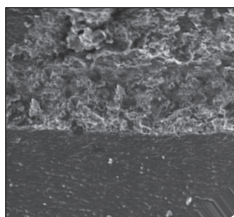


Source: Ghoneim AG, Lutfy RA, Sabet NE, Fayyad DM. Resistance to fracture of roots obturated with novel canal-filling systems. JOE. 2011; 37 (11): 1590-2

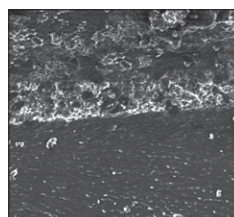
It is universally accepted that microbes require food and space to survive and multiply. Therefore the primary goal of obturation should be to completely fill and seal the entire canal thereby eliminating any gaps (this includes the gap between the sealer and the filling material). The below SEMs visually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



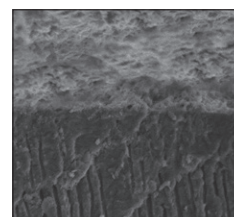
x35 Magnification



x200 Magnification



x350 Magnification

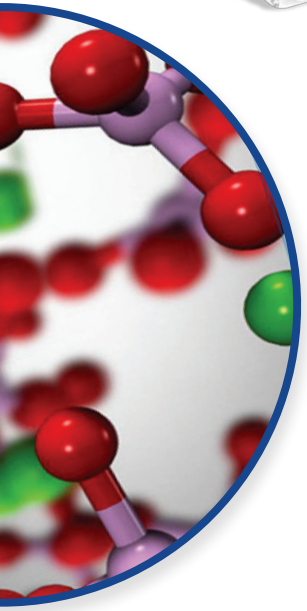


x1000 Magnification

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

## BIOCERAMIC BONDED OBTURATION

Standard gutta percha can be used with BC Sealer™, but for a true, gap-free seal, BC Points™ are recommended. 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 it is recommended to use BC Sealer™ at 150°C to avoid drying out the sealer.



### BC Pellets:

100 Pellets

Order No. 5023074EU

### EndoSequence BC Points™ Individual Packs (60/Pack)

Tip ID	Tip Size	.04 Taper	.06 Taper
○ White	15	5019508EU	5019520EU
● Yellow	20	5019509EU	5019521EU
● Red	25	5019510EU	5019522EU
● Blue	30	5019511EU	5019523EU
● Green	35	5019512EU	5019524EU
● Black	40	5019513EU	5019525EU
○ White	45	5022681EU	5019526EU
● Yellow	50	5019515EU	5019527EU
● Red	55	5019516EU	-
● Blue	60	5019517EU	-
● Green	70	5019518EU	-
● Black	80	5019519EU	-



### BC Obturation Wheel (.04 Taper):

15 ea. (sizes 15-60) BC Points (.04 Taper)  
15 ea. (sizes 15-60) Paper Points (.04 Taper)

Order No. 5019506EU

### BC Obturation Wheel (.06 Taper):

15 ea. (sizes 15-50) BC Points (.06 Taper)  
15 ea. (sizes 15-50) Paper Points (.06 Taper)

Order No. 5019507EU

# ENDOSEQUENCE® ROOT REPAIR MATERIAL (RRM™)

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.

## SUPERIOR HANDLING

- ✓ Premixed-syringable paste or putty consistency
- ✓ Shortened Set Time (as short as 20 mins)
- ✓ Highly Resistant to Washout

## EXCELLENT HEALING

- ✓ Highly Biocompatible
- ✓ Osteogenic
- ✓ Anti-bacterial (+12 pH)
- ✓ Non-Staining



### ESBCRRM Intro Syringe

- 1 1g Preloaded Syringe
- 7 Intra-Canal Tips
- 1 Instructions for Use (IFU)
- 1 Safety Data Sheet (SDS)

Order No. 5018264EU

### ESBCRRM Bulk Syringe Kit

- 2 1.5g Preloaded Syringe
- 15 Intra-Canal Tips
- 1 Instructions for Use (IFU)
- 1 Safety Data Sheet (SDS)

Order No. 5018265EU

### ESBCRRM Putty

- 1 .3g Jar
- 1 Instructions for Use (IFU)
- 1 Safety Data Sheet (SDS)

Order No. 5018266EU



Order No. 5024200EU

### BC RRM-Fast Set Putty™

- 1 .3g Preloaded Syringe
- 1 Instructions for Use (IFU)
- 1 Safety Data Sheet (SDS)

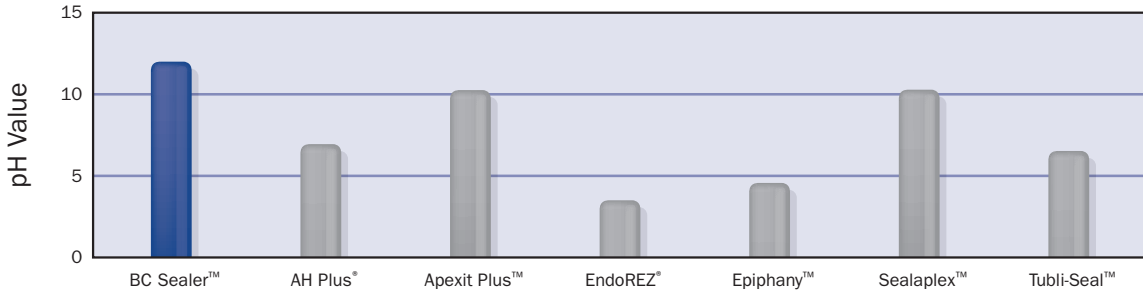
“ Endosequence Root Repair Material’s favorable properties, coupled with it’s ingenious moisture initiated setting reaction and efficient clinical application, represents a step forward in root repair and surgical retrofilling materials. ”

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

# 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.

Antibacterial (pH) Comparison (at 1 day)

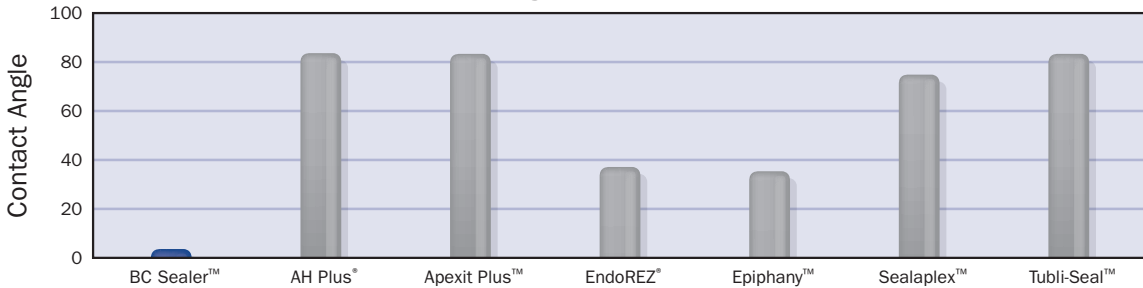


Source:  
Zhang H, Shen Y, Ruse ND, Haapasalo M. Antibacterial activity of endodontic sealers by modified direct contact test against *enterococcus faecalis*. JOE. 2009; 35(7): 1051-5

## 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.

Contact Angle Comparison (at 7 days)

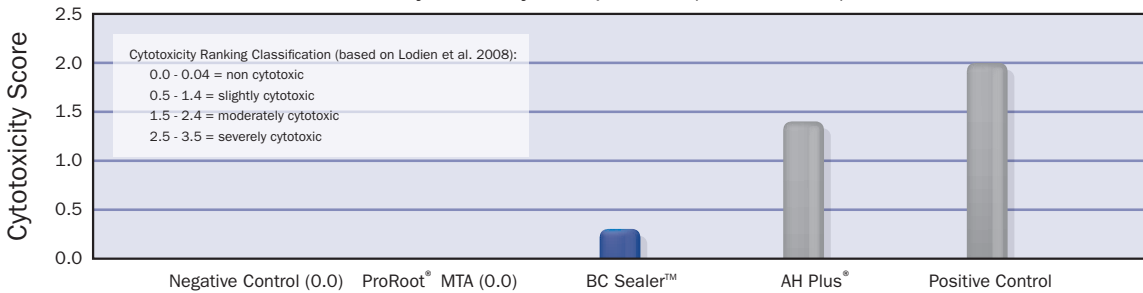


Source:  
Zhang H, Shen Y, Ruse ND, Haapasalo M. Antibacterial activity of endodontic sealers by modified direct contact test against *enterococcus faecalis*. JOE. 2009; 35(7): 1051-5

## 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®.

Cytotoxicity Comparison (at 24 hours)

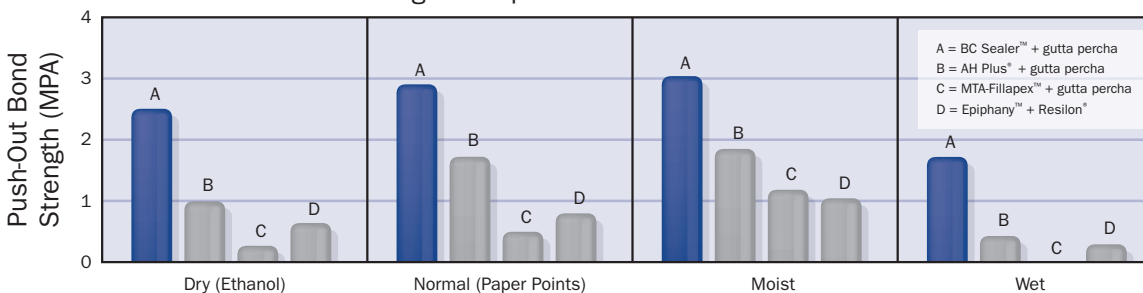


Source:  
Zhang W, Li Z, Peng. Ex vivo cytotoxicity of a new calcium silicate-based canal filling material. International Endodontic Journal. 2010; 43(9): 769. DOI:10.1111/j.1365-2591.2010.01733.

## 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.

Bond Strength Comparison in Different Moisture Conditions

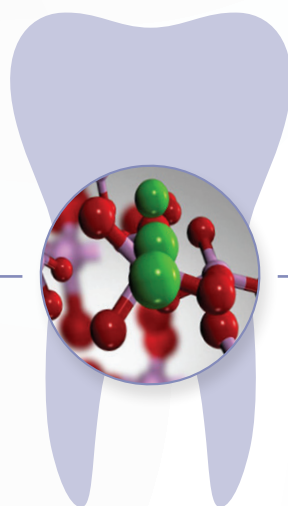


Source:  
Nagas E, Uyanik MO, Eymirli A, Cehreli ZC, Vallittu PK, Lassila LVJ, Durmaz V. Dentin moisture conditions affect the adhesion of root canal sealers. JOE. 2011; 38 (2): 240-4

WITH OVER 30 MILLION CASES AND 60 PUBLISHED STUDIES, **BC SEALER™** IS THE BIOLOGIC STANDARD OF CARE IN ENDODONTIC OBTURATION.



BC Points™



BC Sealer™

Learn about the new biologic standard of care.

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

Visit our website at [BUSADental.com](http://BUSADental.com)

