TheraFamily

The Award-Winning Family With Unique Benefits

BISCO

Meet The Thera Family

The search for innovative solutions is always the goal for BISCO's team, with an intent to create unique, problem-solving materials that suit the needs of each dentist. This is epitomized by the THERA family, an award-winning line of products which simplifies procedures for clinicians, while providing the added benefit of calcium release.

The Four Unique Thera Products:

TheraCal LC® - a pulp capping and liner material

TheraCal PT® - a pulpotomy treatment material

TheraCem® - a MDP containing self-adhesive resin cement

TheraBase® - a MDP containing base and liner material

THERA POWER

RADIOPAQUE
Easy to identify on radiographs.

ALKALINE PH
Promotes healing and apatite formation.†

MOISTURE TOLERANT
Low water solubility and will not wash out over time.*

CALCIUM RELEASE
Facilitated by a unique hydrophilic matrix.

NO MANUAL MIXING REQUIRED
Easy and direct dispensing.

† Okabe, Tatsu, et al. "Effects of pH on mineralization ability of human dental pulp cells." Journal of endodontics 32.3 (2006): 198-201.

TheraCal LC®

PULP CAPPING LINER

- Protects and insulates the pulp from thermal changes.*,[1,2]
- Compatible with any bonding technique (self-, total-, selective-etch).
- Can be applied directly to the pulp exposure and be used as a liner in the same prep, with no need for two separate products.
- Significant calcium release* leads to protective seal.[1,3,4]
- Low solubility and will not wash out over time.

TheraCem®

CEMENTATION

- Contains MDP, allowing for a strong bond to zirconia, metal and alumina substrates without the use of a primer.
- Low film thickness, ensures the restoration is completely seated.
- Self-adhesive, no bonding agents required.
- Dual-cured, material will cure even in deep restorations where light cannot reach.
- Formulated to allow for a quick and easy removal of excess.

TheraCal PT®

PULPOTOMY

- Primarily designed for pulpotomy treatments. Can also be used as a pulp capping agent and protective liner.
- Biocompatible, resin-modified calcium silicate material.
- Restore in 1 office visit with quick working and setting times (WT=45 seconds (min) as 35C ST = 5 minutes (max) at 35C).
- Automix syringe delivery – no manual mixing ever required.
- Unique hydrophilic matrix facilitates calcium release.

TheraBase®

BASE & LINER

- Contains the adhesion promoting monomer MDP, ensuring reliable and optimal bond to dentin.
- When compared to glass ionomers and resin-modified glass ionomers, TheraBase has greater compressive strength which will provide a stronger foundation for direct composite restorations.*
- Easy to identify on radiographs for quick and effective diagnosis.
- Self-adhesive, no bonding agents required.
- Dual-cured, material will cure even in deep restorations where light cannot reach.

*BISCO has data on file.

1. Lloyd, C. H. "The determination of the specific heats of dental materials by differential thermal analysis." Biomaterials 2.3 (1981): 179-181.
2. McCabe, J. F., and H. J. Wilson. "The use of differential scanning calorimetry for the evaluation of dental materials: I. Cements, cavity lining materials and anterior restorative materials." Journal of Oral Rehabilitation 7.2 (1980): 103-110.
3. Cantekin K. Bond strength of different restorative materials to light-curable mineral trioxide aggregate. J Clin Pediatr Dent. 2015 Witer;39(2):143-8.
4. Mechanical Properties of New Dental Pulp-Capping Materials Over Time. M. NIELSEN, R. VANDERWEELE, J. CASEY, and K. VANDEWALLE, USAF, JBSA-Lackland, TX, , J Dent Res 93 (Spec Iss A): 495, 2014 (www.dentalresearch.org)

SCAN MORE TO LEARN ABOUT THE THERA FAMILY!

TheraCal LC®

Resin-Modified Calcium Silicate Pulp Protectant/Liner

TheraCal LC is a light-cured, resin-modified calcium silicate liner designed for use in direct and indirect pulp capping, as a protective liner under composites, amalgams, cements, and other base materials. It can be used as a replacement for calcium hydroxide, glass ionomer, RMGI, IRM/ZOE and other restorative materials. TheraCal LC performs as an insulator/barrier protectant of the dental pulpal complex.

TheraCal LC's syringe delivery offers controlled and precise placement in all deep cavity preparations. TheraCal LC is easy to manipulate without running or slumping and its light-cured ability permits immediate placement of a definitive restorative material.

A **1g syringe** of TheraCal LC can be used for up to **15 liner applications**

2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023

Dental Advisor **Top Award Winner** for pulpal protectance for **11 years in a row**

"TheraCal LC has been an integral part of my pulp capping procedures for over 7 years and I have come to trust its consistent reliability to keep nerves calm."

– Mark Malterud, DDS

"I like the idea of taking the extra step to protect the pulp and provide comfort for the patient."

– Siti Lowery, DDS

"The calcium release is nice in helping stimulate reparative dentin, and it clearly helps with reducing pulpitis and pulpal sensitivity."

– Richard Siegel, DDS

OVER
5 MILLION
SYRINGES SOLD
WORLDWIDE

SINCE 2011
27 MILLION
LINER
APPLICATIONS
PLACED*

BISCO's **#1** pulp capping/ liner product sold across the globe

Sold in over **75** countries

NO REFRIGERATION **REQUIRED**

2 YEAR SHELF LIFE

Apatite-Formation

Environmental scanning electron microscope images for biodentine, TheraCal LC, and TheraCal PT® after 28 days immersion in phosphate-buffered saline.[1]

TheraCal LC, due to its calcium-silicate composition, has demonstrated excellent apatite formation both in-vitro[1-2] and in-vivo.[3] Using different characterization techniques, TheraCal LC surfaces have promoted calcium and phosphate deposition indicating potential apatite layer development. The apatite formation is also observed as a dentin bridge formation when tested in-vivo.[3] Apatite formation is a critical component for healing.[4]

*Data on file. BISCO, Inc.

1. Elbanna, Ahmed, Diaa Atta, and Dalia I. Sherief. "In vitro bioactivity of newly introduced dual-cured resin-modified calcium silicate cement." Dental Research Journal 19.1 (2022)
2. Kim, Yemi, et al. "Biological Characteristics and Odontogenic Differentiation Effects of Calcium Silicate-Based Pulp Capping Materials." Materials 14.16 (2021): 4661.
3. Cannon, Mark, et al. "Primate pulpal healing after exposure and TheraCal application." Journal of Clinical Pediatric Dentistry 38.4 (2014): 333-337.
4. Gandolfi, Maria Giovanna, et al. "Calcium silicate and calcium hydroxide materials for pulp capping: biointeractivity, porosity, solubility and bioactivity of current formulations." Journal of applied biomaterials & functional materials 13.1 (2015): 43-60.

Indirect Pulp Cap Case

Clinical case by:
Sebastian Velasquez, DDS

1. Under rubber dam isolation, complete cavity preparation.

2. Remove infected carious tooth structure. Leave preparation visibly moist.

3. Apply **TheraCal LC** directly to the deepest area of the preparation. Dentin must be visibly moist and the layer is not to exceed 1mm in depth. Light-cure for 20 seconds.

4. Proceed with chosen etch technique (selective-etch technique shown).

5. Apply adhesive, such as **All-Bond Universal®**, following manufacturer's instructions.

6. Final restoration.

TheraCal PT®

Dual-Cured Resin-Modified Calcium Silicate Pulpotomy Treatment

TheraCal PT is a bio-compatible, dual-cured, resin-modified calcium silicate that is used to treat exposed dentin. TheraCal PT maintains tooth vitality by performing as a barrier and protectant of the dental pulpal complex.

TheraCal PT's calcium release properties and ability to generate an alkaline pH allows for it to be used in deep cavity preparations. The dual-cure ability permits immediate placement of the restorative material.

A **4g syringe** of TheraCal PT can be used for up to **15 pulpotomy applications**

2020 2021 2022 2023

Dental Advisor **award winner** for pediatric products for **4 years in a row**

"Pulpotomies with TheraCal PT from BISCO are easy, fast, efficient, and effective. You can count on BISCO to produce reliable materials every time."

– Carla Cohn, DMD

"It's very good at protecting the pulp, easy to apply, bonded well, and resulted in little, if any, postop sensitivity."

– Todd Sarubin, DDS

"The material handles well and adapts to the pulpal floor with minimal manipulation."

– Shohreh Sharif, DDS

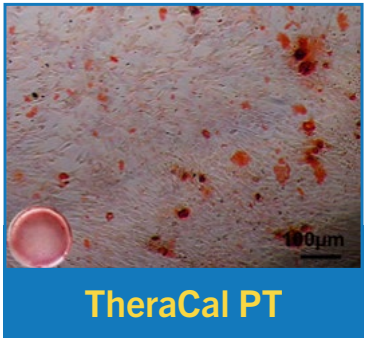
DOESN'T REQUIRE MANUAL MIXING

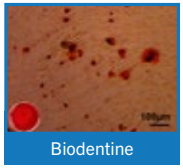
Evaluators rated TheraCal PT as

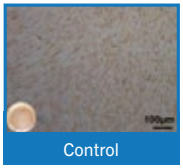
85%

better than competitive products*

Mineralization Potential







Images show samples of alizarin red staining. An increase in the red color from the samples indicate a higher fixation to calcium deposits, thus, higher mineralization potential.[1]

"TheraCal PT has demonstrated in-vitro success showing improved pulp vitality.[1-3] The significantly higher mineralization potential exhibited by both BD [Biodentine] and ThPT [TheraCal PT] compared with both the negative and positive control groups highlights their ability to potentially favor the development of a mineralized layer on their surface when placed in direct contact with pulp tissue in VPT [vital pulp therapy] procedures."[1] As a result, TheraCal PT offers an improved in-vitro cytocompatibility and mineralization.[1-3]

*Dental Advisor "TheraCal PT". 2019 Dental Consultants Inc.

1. José Luis Sanz, et al, "Comparative Biological Properties and Mineralization Potential of 3 Endodontic Materials for Vital Pulp Therapy: Theracal PT, Theracal LC, and Biodentine on Human Dental Pulp Stem Cells", Journal of Endodontics, 47 (12), 2021, 1896-1906
2. Elbanna, Ahmed, Diaa Atta, and Dalia I. Sherief. "In vitro bioactivity of newly introduced dual-cured resin-modified calcium silicate cement." Dental Research Journal 19.1 (2022)
3. Rodríguez-Lozano, Francisco Javier, et al. "Cytocompatibility and bioactive properties of the new dual-curing resin-modified calcium silicate-based material for vital pulp therapy." Clinical Oral Investigations 25.8 (2021): 5009-5024.

Pulpotomy Case

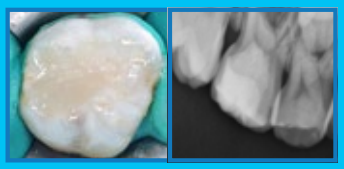
Clinical case by:
Juan Carlos Cabanilla, DDS

1. X-Ray of radiographic diagnosis of pulpitis

Removal of coronal pulp and hemorrhage control

2. Application of TheraCal PT in the pulpal chamber

Polymerized TheraCal PT



3. Final composite restoration and post-operative radiograph

4. 90-day clinical follow-up and radiograph

TheraCem®

Self-Adhesive Resin Cement

TheraCem is a dual-cured, calcium and fluoride-releasing, self-adhesive resin cement indicated for luting crowns, bridges, inlays, onlays and posts (prefabricated metal/non-metal/fiber posts).

TheraCem's MDP containing formula promotes adhesion that enhances the bond strength to zirconia, metal, and the tooth structure without the use of an additional dental adhesive or primer. TheraCem's single step procedure makes cementation to zirconia easier than ever before.

A **8g syringe** of TheraCem can be used for up to **15 crown restorations**

2019 2020 2021 2022 2023

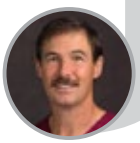
Dental Advisor **preferred product** and **top award winner 5 years in a row**

"TheraCem is an essential part of our clinical protocol. It's capability to be utilized with so many different materials and in so many clinical situations makes it an invaluable addition to our crown and bridge treatments. We love TheraCem's ease of use and simple clean up. We use TheraCem everyday!"

– Gary Radz, DDS

"As a user of bioceramic calcium root canal sealers, having the calcium in the cement is a definite advantage."

– Emery Cole, DMD

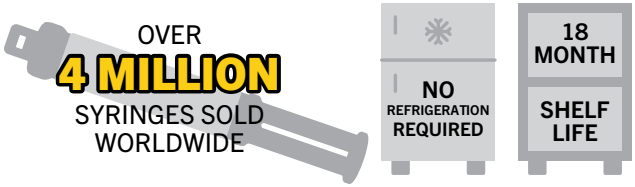


"TheraCem gives me the comfort of knowing that I am placing a product that will help the tooth - and my dentistry - over time."

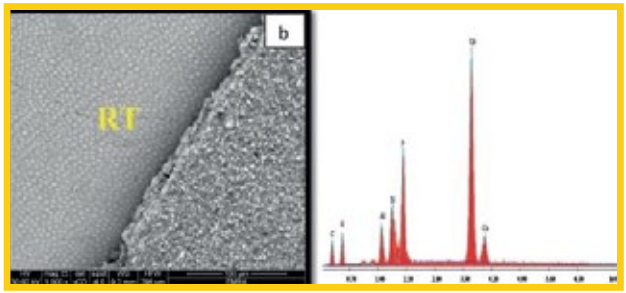
– Robert Beatty, DDS

BISCO's **#1** selling cement in the world

Sold in over **55** countries



Bonding Performance



Reference 1

Micro-Shear Bond Strengths (MPa) of Each Type of Cement to Enamel and Dentin

Type of cement	Type of bonding substrate		*P*
	Enamel	Dentin	
RelyX Unicem	3.04 ± 0.99[A]	6.46 ± 1.74[A]	.031*
TheraCem	6.46 ± 1.37[A]	10.67 ± 1.27[A]	.001*

Values are given as mean ± standard deviation. Different superscript letters within the same column indicate a statistically significant difference.[1] *Significance (P≤ .05)

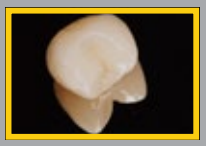
TheraCem shows higher bonding performance regardless of the bonding substrate. The MDP within TheraCem's formula can ionically interact with the natural hydroxyapatite within the dentin. The result of this phenomena is a chemical interaction between the dentinal structure and the the cement. This provides both a micromechanical and chemical adhesion of the material.[1]

1. Mahrous, Aliaa, Mohamed M. Radwan, and Samah Mohamed Kamel. "Micro-shear bond strength of novel MDP calcium-fluoride-releasing self-adhesive resin cement after thermocycling." Int. J. Periodontics Restor. Dent 40 (2020): 445-455.

Cementation Case

Clinical case by:
Sebastian Jordan, DDS

1. Cast metal post and core cemented on the first upper left bicuspid.



2. A CAD/CAM zirconia restoration was fabricated.

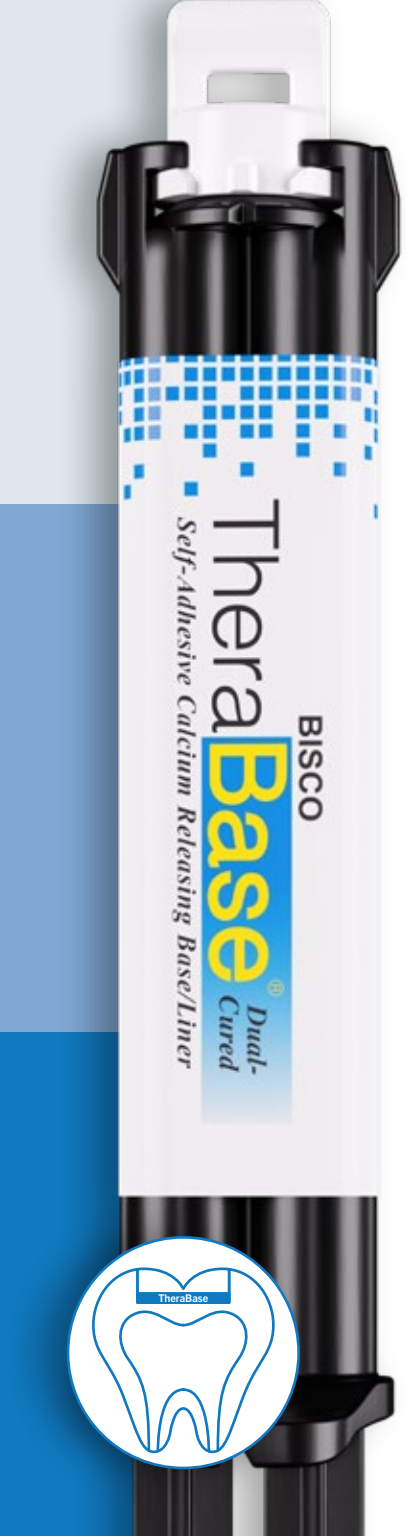
3. Restoration tried-in to check proper fit and occlusion.

4. ZirClean® applied for 20 seconds to remove surface contaminants, then rinsed and dried.

5. TheraCem dispensed into the intaglio surface of the restoration.

6. The restoration was seated, tack cured, and excess cement removed.

7. Final restoration.



TheraBase®

Self-Adhesive Calcium Releasing Base/Liner

TheraBase is a dual-cure, calcium and fluoride releasing, self-adhesive base/liner. TheraBase's calcium release generates an alkaline pH which promotes pulp vitality.[1] It is a dual-cured material that will polymerize even in deep restorations where light cannot reach.

TheraBase is stronger and more durable than other base materials, glass ionomers and resin-modified glass ionomers.* Its radiopacity allows for easy identification on radiographs, providing effective diagnosis.

BISCO's latest Thera product

A **8g syringe** of TheraBase can be used for up to **29 base applications**

2021
Dental Product Shopper
Best Product winner

2022
Recipient of Catapult
Education's vote of confidence

2023
Dental Advisor
4.5 Plus Product

"I use TheraBase because it gives me a feeling of security knowing that the patient is less likely to experience post-operative sensitivity. "

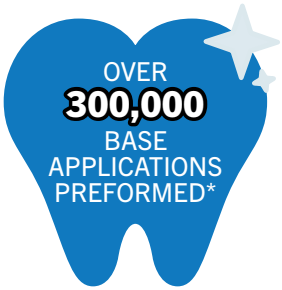
– Alex Vasserman, DMD

"I believe it was effective in preventing pulpitis as the patients reported no hypersensitivity. "

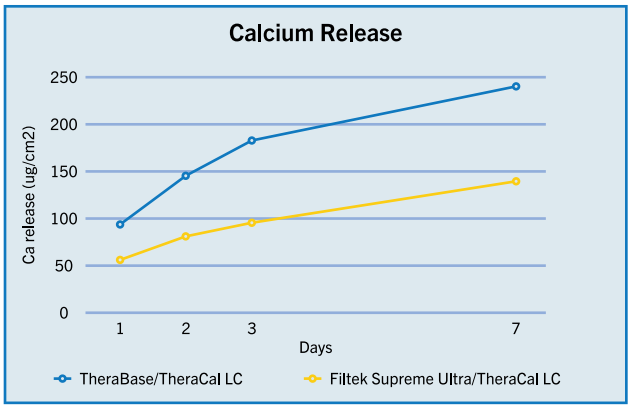
– Aliisha Choucair, DMD

"It was incredibly easy to mix and was simple to accurately place exactly where I wanted it to go. "

– Francis Jacobyansky, DMD



Higher Calcium Release



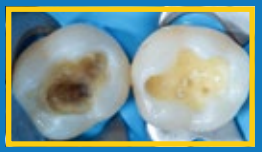
The calcium release of TheraBase when used in combination with TheraCal LC is 75% higher compared to the control case of composite and TheraCal LC. Calcium release at the interface between specimens was only observed between TheraBase and TheraCal LC specimens, on the control case of composite and TheraCal LC was not observed due to the specimens bonded together.*

*BISCO Inc. data on file.

1. Okabe, Tatsu, et al. "Effects of pH on mineralization ability of human dental pulp cells." Journal of endodontics 32.3 (2006): 198-201.

Base Case

Clinical case by:
Raul Euan, DDS



1. After cavity preparation, all water was removed using a stream of air.

2. TheraBase was applied to the dentin surface of the prepared cavity directly from the dispensing syringe.

3. TheraBase was allowed to self-cure for 5 minutes (37°C). If desired, TheraBase can be light-cured for 20 seconds.

4. A selective-etch bonding technique was used to condition the surface of the preparation with BISCO's Select HV® Etch. Any bonding technique can be applied.

5. All-Bond Universal® was applied following manufacturer's instructions.

6. Restorations were filled with a light-cure composite material following manufacturer's instructions.

ORDER INFORMATION

TheraCal LC®

4 Syringes TheraCal LC (1g ea.), Accessories, Instructions
H-33014P

1 Syringe TheraCal LC (1g), Accessories, Instructions
H-3301P

Accessories

50 Black Disposable Syringe Tips (22 Gauge)
X-80621N

TheraCal PT®

1 Auto-Mix Syringe TheraCal PT, Accessories, Instructions
H-34110P

Accessories

Auto-Mix Cannula Tips (30)
X-81270P

TheraCem®

1 Dual-Syringe Natural Shade (8g), 15 Mixing Tips and Intraoral Tips, Instructions
D-46311P

Accessories

Dual-Syringe Static Mixing Tips (30)
X-81252P

Dual-Syringe Mixing & Intraoral Tips (30)
X-81257P

Dual-Syringe Mixing & Root Canal Tips (30)
X-81267P

TheraBase®

1 Dual-Syringe TheraBase (8g), Accessories, Instructions
H-35001P

Accessories

Auto-Mix Cannula Tips (30)
X-81270P