



BISCO

# The Restorative Touch of TheraCal LC

The first member of BISCO's award-winning TheraFamily, TheraCal LC is once again a standout star among DPS readers for its versatility and unique healing properties

When innovators see a problem, they waste no time getting down to work and finding a solution. That said, the perfect solution can take days, months, and even years to come to fruition. That was the case when the talented R&D team at BISCO sought out to answer a nagging question: Why do most traditional calcium hydroxide products inhibit ion release during pulp capping? The quest for an answer ushered in a decade of research that ultimately led to the introduction of TheraCal LC, a proprietary hydrophilic resin formulation that allows for a high release of both calcium and hydroxide ions. With this one product, BISCO solved a conundrum that had long vexed the entire dental industry.

In the years since TheraCal LC's debut in 2011, it has become one of those products many dentists simply can't do without. One such dentist is Craig Aebli, DDS, who practices in Sanford, FL. "I do a fair amount of restorative dentistry, and with a lot of composites, so it's not unusual for me to have patients that have deep areas of decay," said Dr. Aebli. "I probably reach for TheraCal LC several times a week," he added.

TheraCal LC is part of BISCO's award-winning TheraFamily of restoratives, which includes TheraCal PT, TheraCem, and TheraBase. The resin-modified calcium silicate-filled liner material is ideal for direct and indirect pulp capping, and is light-cured for immediate placement, it also serves as a protective liner under composites, amalgams, cements, and other base materials.

### Significant Calcium Release

With its unique proprietary formulation, TheraCal LC promotes significant calcium release,\* which also leads to a protective seal.<sup>1,3,4</sup> The calcium release stimulates hydroxyapatite and secondary bridge formation.<sup>6,7,8</sup>

"I started using TheraCal LC almost as soon as the product was released," Dr. Aebli explained. "Once I heard



## 5 REASONS WHY DPS READERS LOVE THERACAL LC:

- 1 Calcium release that stimulates hydroxyapatite and secondary bridge formation<sup>6-8</sup>
- 2 Alkaline pH, which promotes pulp vitality<sup>5</sup>
- 3 Visible on radiographs to easily distinguish from caries
- 4 Protects and insulates the pulp<sup>1-2</sup>
- 5 Compatible with any bonding technique and can be placed under cements and restorative materials



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—Craig Aebli, DDS

about it and read the results it was producing, I wanted to try it right away. You want a material that will help the pulpal tissue, so that it can start forming dentin bridges. The unique formulation of TheraCal LC allows that ion exchange to occur so that everything can proceed properly," he continued.

### Promotes Pulp Vitality

TheraCal LC insulates the pulp by forming a protective barrier against thermal changes.<sup>1,2</sup> Additionally, the alkaline pH promotes pulp vitality.<sup>5</sup> Dr. Aebli has been using TheraCal LC for many years now and continues to see excellent patient outcomes.

"I typically use it on patients that have deep caries, and especially if I get a pulpal exposure and I still feel it's a vital pulp," he explained. "If I don't have a lot of bleeding and I can get the bleeding under control by placing a cotton towelette that's soaked in sodium hypochlorite, I then proceed with placing TheraCal LC on the area, just enough to cover that exposed tissue and a little bit overlying the dentin."

"Next, I light cure it and then proceed with BISCO's TheraBase as an additional base for an added protective layer," he continued. "In my many years of using this method, I have never had any patients come back saying, 'My tooth still hurts, or my tooth's starting to bother me again,'" he added. "That's really

as much as I can ask for in a successful product."

### Sensitivity—Be Gone!

Postop sensitivity is one of those conditions that all dentists go to great lengths to avoid, and Dr. Aebli is no exception. The good news? He has rarely had patients develop sensitivity issues, a situation he believes is a direct result of using TheraCal LC.

"I've had instances where patients come to see me about a filling that had originally been placed at another dental office," Dr. Aebli recalled. "It may have been a deep filling, and they were presenting with a great deal of sensitivity. We discuss their options and if I feel it's warranted, I will advise them to elect to have the filling redone, and I always use TheraCal LC as part of my treatment. In all these years, it's very rare that I ever have a patient return with that same sensitivity—it always seems that they're doing much better and have less problems with the tooth, and I believe it's due largely to TheraCal LC."

### Simplicity of Syringe Delivery

TheraCal LC is flowable and can be dispensed into deep preps onto moist dentin in 1-mm increments. Once light cured, it can be used with all bonding techniques, including self-, selective-, and total-etch. Highly thixotropic, it will stay where it's placed, and the ready-to-use syringe allows for precise delivery.

This convenience is another reason TheraCal LC is at the top of Dr. Aebli's go-to product list.

"TheraCal LC is dispensed in a syringe, with just a small tip applicator that you attach to the syringe. You can dispense out just as much as you need directly onto the tooth and it flows well," he explained. "If I need to move it around a little with an explorer, I can do that, and once I have it in place, I just light cure it and it's set. It can't get much



## BASE LAYER: THE THERA WAY

TheraBase is a dual-cure, calcium- and fluoride-releasing, self-adhesive base/liner that chemically bonds to tooth structure and releases and recharges calcium and fluoride ions.<sup>9</sup>

- Calcium release generates an alkaline pH\*\* Alkaline pH promotes pulp vitality<sup>5</sup>
- Dual-cured material that will polymerize even in deep restorations where light cannot reach
- Stronger and more durable than other base materials, glass ionomers, and resin-modified glass ionomers\*\*



easier than that, and it's definitely an improvement over some of the other products where you have to mix a powder and liquid together."

In addition to ease of use, TheraCal LC also adds versatility to its list of attributes. According to BISCO, it can also be used as an alternative to calcium hydroxide, glass ionomer, RMGI, IRM/ZOE, and other restorative materials. TheraCal LC is compatible with any bonding technique and can be placed under cements and restorative materials.

### Top 3 Reasons...

Awarded the DPS Recommended Product badge in 2015, and a favorite among *Dental Product Shopper* readers in the years since, TheraCal LC remains an operator staple for Dr. Aebli for 3 key reasons: "Its ease of application, the fact that it's a light-cured material, and the good results I've continuously received with pulpal healing. These features are a huge advantage when

## PULOPTOMY: THE THERA WAY

**TheraCal PT** is a biocompatible, dual-cured, resin-modified calcium silicate designed for pulpotomy treatment that maintains tooth vitality by performing as a barrier and protectant of the dental pulpal complex.

- Working time: minimum 45 seconds at 35°C
- Setting time: maximum 5 minutes at 35°C
- Easily dispense from a dual-barrel automix 4-g syringe directly on pulp exposures
- Low solubility and will not wash out over time



you're trying to restore a tooth with deep caries and pulp exposures."

On the next page, read "Case in Point: Solving A Restorative Challenge" in which Dr. Andrés E. López shares a recent case where he used several BISCO products, including TheraCal LC, to resolve a fistula and place an overlay on a patient's lower left molars.

### References:

\*BISCO has on file the calcium release data for TheraCal LC.  
\*\*Data on file, BISCO Inc.

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6. Gandolfi MG, Siboni F, Prati C. Chemical-physical properties of TheraCal, a novel light-curable MTA-like material for pulp capping. *Int Endod J.* 2012; 45(6):571-9.
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9. Gleave CM, Chen L, Suh BI. Calcium & fluoride recharge of resin cements. *Dent Mater.* 2016; 32(5):e26.

### FOR MORE INFORMATION:

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[www.bisco.com](http://www.bisco.com)

## CEMENTATION: THE THERA WAY

**TheraCem** is a dual-cured, calcium- and fluoride-releasing, self-adhesive resin cement that delivers a strong bond to zirconia and most substrates with no etching or priming required.

- Indicated for luting crowns, bridges, inlays, onlays, and prefabricated metal, non-metal, or fiber posts
- Automix dual-syringe provides a consistent mix for immediate delivery
- Easy cleanup and high radiopacity



## CASE IN POINT: SOLVING A RESTORATIVE CHALLENGE

In this case snapshot, Andrés E. López, DDS, describes using several BISCO products—including TheraCal LC, All-Bond Universal, Core-Flo DC Lite, and Duo-Link Universal—to treat a 28-year-old female who presented with a fistula on her lower left molars that hadn't resolved after 2 months.

I completed a clinical, radiographic and photographic analysis. The tooth had a provisional restoration (IRM) and cotton in the pulp chamber. The pre-operative x-ray revealed the presence of a fractured file in the mesiolingual canal. I isolated the tooth, removed the caries, placed the matrix, selective etched, applied CHX 2%, and completed distal deep margin elevation (DME). I then placed All-Bond Universal on the distal composite. Single session endodontics was performed on the fractured file. Obturation was made with bioceramics cement and gutta-percha.



### Restoring the Upper Right Molar

Next, I carefully cleaned the pulp chamber, applied All-Bond Universal and Core-Flo DC Lite to build the core structure. The patient was prescribed antibiotics. When the patient returned 10 days later for her second visit, the fistula had disappeared. I completed absolute isolation, removed occlusal and mesial caries on the upper-right third molar, applied TheraCal LC in deep areas, selective etched, applied CHX 2% and All-Bond Universal, then layered the composite.

### An Overlay for the Lower Left Molar

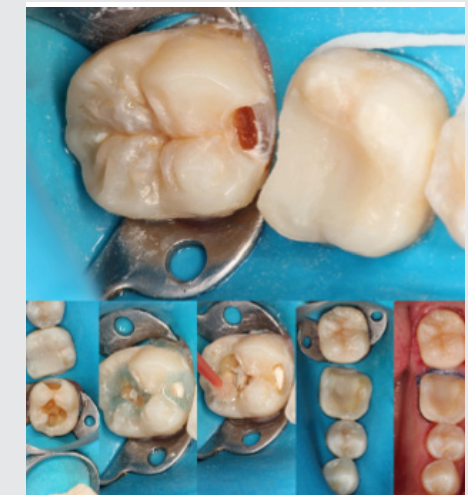
The preparation for an overlay on the lower left molar was also performed. The rubber dam was removed, the retraction cord placed, preparation completed, and digital impression taken. When the patient returned for the third visit, we again completed absolute isolation, prophylaxis, selective acid etching, placed All-Bond Universal, and cemented the lithium disilicate overlay with Duo-Link Universal adhesive resin cement.



**Figure 1**—Upper left, pre-operative image; upper right, after endo and build-up; lower left, the CAD design; lower right, lithium disilicate overlay in place.



**Figure 2**—Pre-endo deep margin elevation; matrix is placed; endodontics completed.



**Figure 3**—Removal of caries; TheraCal LC used in deep dentin; selective etch used; All-Bond Universal applied; the layered composite restoration; preparation of the lower left molars; cord retraction completed to take digital impressions.