



BISCO DENTAL PRODUCTS

The Science of Restorative Dentistry

Groundbreaking calcium-releasing technology opens a new door for expanding the THERA family of products

BISCO is no stranger to developing groundbreaking materials. So, after witnessing the success of Mineral Trioxide Aggregate (MTA) as a revolutionary endodontic material when it came to perforation repairs, apexifications, pulpotomies, and pulp capping, the company's research and development team looked to the lab in an effort to apply the same science to restorative dentistry.

The result was **TheraCal LC**. This resin-modified calcium silicate pulp protectant and liner signaled the use of a new resin and filler technology. Behind the scenes of TheraCal LC's success and growing popularity among clinicians is a unique hydrophilic resin that allows calcium ions¹ to be exchanged between the material and dentin structure—encouraging hydroxyapatite formation and a secondary dentin bridge.^{2,3}

"I like TheraCal LC because it is light-cured, sets up very hard, induces secondary dentin formation, and allows me to etch and rinse cavosurfaces without fear of washing it out," said Dr. Darrell Lyvers. "It also helps minimize postop sensitivity in deep carious lesions where irreversible pulpitis would otherwise be sequela."

A 'Peace of Mind' Material

TheraCal LC offers precise and immediate placement through its syringe delivery, thixotropic properties, and light-



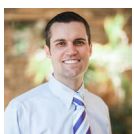
cured set. In fact, simple placement is the favorite feature of Dr. Jeff Peifer, who uses the material as a liner while performing direct composite restorations and core buildups.

"From the first time I used TheraCal LC, I was sold," he said. Not unlike his peers, Dr. Peifer, who practices in Gilbert, AZ, remembers the days of mixing a calcium hydroxide liner with a fluoride-releasing glass ionomer and placing it in small areas, which he said was a nightmare to keep from slumping or getting on the box prep walls. "Because of its syringe delivery, TheraCal LC is very easy to place and manipulate in small areas," he said.

Dr. Peifer also appreciates that TheraCal LC is calci-

5 UNIQUE BENEFITS OF USING THERACAL LC

- 1 **Unique hydrophilic matrix** facilitates calcium release*
- 2 **Alkaline pH** promotes healing and apatite formation^{2,4}
- 3 **Syringe delivery** allows for simple and precise placement—even in small areas
- 4 **High radiopacity** allows for easy identification and differentiation from recurrent decay and other restorative materials—which leads to faster diagnoses
- 5 **Moisture tolerance** results in low water solubility*



Jeff Peifer,
DMD

"TheraCal LC gives me peace of mind when I have a deep cavity preparation."

um-releasing* with an alkaline pH, which promotes healing and apatite formation^{2,4} while insulating the pulp.^{5,6} "This product gives me peace of mind when I have a deep cavity preparation," he shared.

Opening New Doors

The breakthrough success of TheraCal LC and its unique hydrophilic resin and filler technology led BISCO to dig even deeper into the science of restorative dentistry and, in the process, solve even more clinical challenges.

"This new filler technology opened up a new door for product development," shared Dr. Rolando Nuñez, Clinical Research Manager at BISCO. "Now it has become possible to develop materials that contain calcium and fluoride, which can be released via an ion exchange."

TheraCem, the second member of a growing THERA family, is a unique self-adhesive resin cement that not only bonds to dentin and various substrates—including zirconia, metal, and composite—without etching or priming, it also releases calcium and fluoride.⁷ After 30 minutes of polymerization, it transitions from an acidic pH, which is needed for an initial bond, to a preferred alkaline pH.⁸

"I like TheraCem better than other cement products because of its ease of use, release of calcium and fluoride, and easy cleanup," said Frisco, TX, clinician Dr. Robert Beatty, adding that TheraCem allows him to cement crowns with a simplified procedure while being confident he's creating a great seal.

A Growing Family

The THERA family recently added pulpotomy treatment to its list of indications with the release of **TheraCal PT**—a dual-cured resin-modified calcium silicate. After partial or full removal of the coronal pulp, it's used to treat exposed dentin and create a protective barrier around the pulpal complex.

TheraCal PT is chemically formulated with synthetic Portland Cement silicate particles in a calcium-releasing hydrophilic matrix. It offers immediate placement directly into the pulp chamber, followed by a 10-second light-cure.

The THERA family of products continues to expand, with more products currently in development that are poised to protect the remaining dental structure.

"These new materials—whether they are intended to be used as pulp capping agents, liners, bases, or cements—will have an impact on the clinical approach of restorative dentistry and our patients," said Dr. Nuñez. "The age of 'drill and fill' is over."

BISCO's search for new materials that are more compatible with tooth structure is far from over. And in the process of this

ongoing research and development, the search will undoubtedly unearth new science and technology—leading to groundbreaking products that simplify life in the operatory for clinicians everywhere.

"BISCO has some smart people working in their kitchens," said Dr. Peifer. "I have been 'wowed' by every BISCO product that I have used."

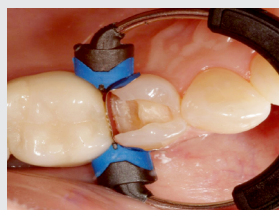
*BISCO has data on file.

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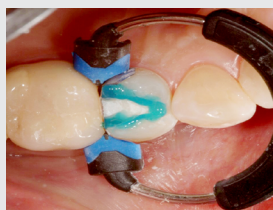
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CASE IN POINT: PROTECTING THE PULP

In this case study, Dr. Todd C. Snyder treats a 48-year-old woman who presented with painful sensitivity on the lower right side of her mouth. While replacing a failed composite restoration on tooth No. 29, TheraCal LC is applied to create a barrier and protect the pulp, while minimizing the risk of postop sensitivity.³



Prep is lined with TheraCal LC to create a protective barrier around the pulp.



Using the sandwich technique, remaining enamel is acid-etched with Select HV Etch w/BAC.



After the final restoration, the patient reported that her sensitivity disappeared.