

FIRST  
FLOWABLE

THEN IMMEDIATELY  
SCULPTABLE



WARM IT



FLOW IT



SCULPT IT

# VisCalor and VisCalor bulk

THERMO-VISCOUS UNIVERSAL  
AND BULK-FILL COMPOSITES



# VisCalor and VisCalor bulk

## FLOWABILITY AND SCULPTABILITY UNITE

Bulk-fill composites have grown in popularity as the material of choice for the treatment of large posterior cavities over the past decade. In contrast, it has been universal composites that are the composites of choice for the treatment of smaller cavities in both the anterior and posterior. Unfortunately, neither of these materials can be easily used to fill uncharacteristically narrow and/or deep cavities that have undergone defect-oriented and minimally invasive preparations, making it difficult to achieve perfect adaptation to the cavity floor and walls. The use of flowable composites as a base or liner offers a good alternative for these types of deep and/or narrow cavities, but then require a final layer of packable composite at the occlusal surface. This common two-step process turns the placement of the restoration into a time-consuming task.

The VisCalor approach combines the viscosity of a flowable composite for application and adaptability, with the sculptability of a packable composite for strength and performance, all while reducing the average time it takes to fill a cavity – especially those that are 4 mm deep – by more than 40%. As a result, VisCalor and VisCalor bulk are materials that can be used for both small and large cavities no matter how deep or narrow, without compromising adaptation or strength.

### FIRST FLOWABLE

As VisCalor warms up via a composite warming device, its viscosity lowers and flowability increases to that of a flowable composite, enabling application as a flowable.

This provides optimal adaptability to cavity walls, floors and undercut regions.

### THEN IMMEDIATELY SCULPTABLE

Then VisCalor becomes immediately sculptable as it quickly cools back down to body temperature, increasing its viscosity to that of a packable composite.

THE RESULT UNITES THE BENEFITS OF BOTH A FLOWABLE AND PACKABLE COMPOSITE INTO ONE SINGLE MATERIAL.

SIMPLIFYING THE RESTORATIVE PROCEDURE INTO AN EFFICIENT 2-IN-1 RESTORATION AND ELIMINATING THE NEED FOR A SEPARATE BASE OR LINER, MULTIPLE INCREMENTS AND/OR AN OCCLUSAL LAYER.



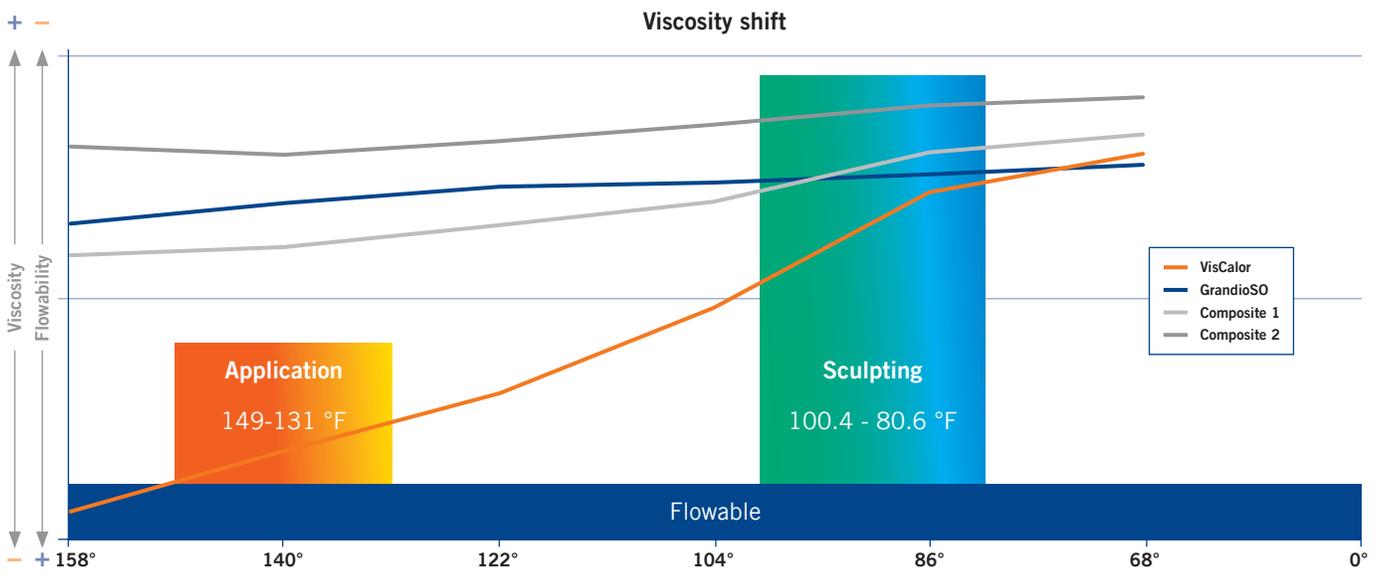
## VisCalor and VisCalor bulk

### EXCEPTIONAL ADAPTABILITY DUE TO UNIQUE VISCOUS BEHAVIOR



VisCalor restoratives are the world's first dental restoratives to utilize thermo-viscous technology. The combination of a special silane surface treatment to the glass fillers, with a coordinated but modified resin matrix consisting of aliphatic and aromatic monomers, achieves significantly extended viscosity-reduction by design when the material is warmed. The terms aromatic and aliphatic relate to the monomers' chemical structure and carbon molecules that will

determine the physical properties such as melting point and other behaviors during temperature change. This allows the restoratives to achieve a flowable consistency when warmed up to the standard temperature of the VOCO warming device (154.4 °F, 68 °C), but then quickly cool down to body temperature and return to the viscosity of a packable composite for immediate sculptability.

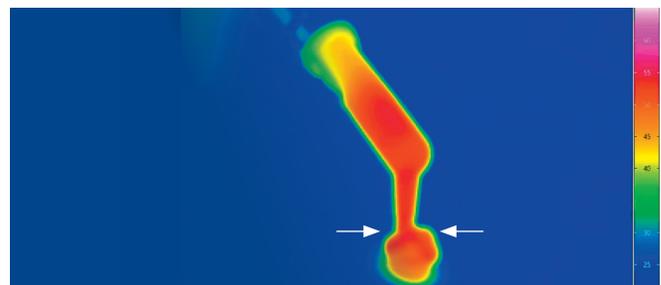


Source: VOCO GmbH

The above graph shows the viscosity behavior of various materials. Only VisCalor restoratives have a similar viscosity to a flowable material when warmed up to 154.4 °F. When the material is cooled down to 100.4–80.6 °F, it becomes significantly more viscous and can be easily sculpted.

During the application phase, VisCalor restoratives stand out due to their optimal consistency – a consistency that conventional composite restoratives cannot achieve when warmed to similar temperatures.

The image to the right, taken by a thermal imaging camera, shows how VisCalor quickly cools to body temperature as soon as it comes into contact with the cavity surface – illustrated by the green-to-blue outer “layers” of the material touching the tooth structure – thus allowing for immediate sculptability.



Source: Prof. Braun, Universität Marburg

## VOCO's Caps Warmer

### COMPOSITE CAPS WARMING DEVICE

Multiple Warming Ports:  
2 instruments, one loaded caps  
dispenser and 4 capsules

Caps Tray

VOCO's Caps Warmer efficiently warms up to 4 capsules of VisCalor at one time. Additionally, it serves as a warmer for two instruments and a holder for VOCO's caps dispenser. Providing three warming levels for different viscosities also serves to simultaneously soften other VOCO composites and ORMOCERs. VisCalor utilizes its highest setting to create a flowable viscosity during initial application. VOCO's Caps Warmer is customized to specifically fit VisCalor's unique capsule size, allowing for a perfect fit and ideal heat transfer. Due to VisCalor's special formulation, utilizing VOCO's Caps Warmer does not have a negative effect on VisCalor's physical properties.

VOCO's Caps Warmer maintains the optimal temperature throughout the day, enabling it to warm a VisCalor capsule in just three minutes. The VisCalor capsule will maintain that temperature for 20 seconds, allowing ample time to place it with ideal adaptability and shape it with immediate sculptability.



#### Advantages

- Composite warming decreases the viscosity of a composite, making application easier
- Warms two finishing instruments, making it easier to sculpt the composite
- Holds four spare VisCalor restorative composite caps
- Three heat levels allow for the softening of other VOCO composites and nano-ORMOCERs
- Does not diminish any of VisCalor's physical properties

Operating button	Indicator Light (left)	Temperature Setting
Press Once	Green	37 °C (98 °F)
Press Twice	Orange	54 °C (130 °F)
Press three times	Red	68 °C (155 °F)

#### Presentation

- REF 9001 Caps Warmer
- REF 9003 Caps Warmer Tray



# VisCalor

## UNIVERSAL THERMO-VISCOUS COMPOSITE



VisCalor – the universal version is based on the same thermo-viscous technology as VisCalor bulk. The key difference is that the greater variety of shades and different opacities allow for more natural and esthetic restorations. Indicated for the anterior in addition to the posterior, VisCalor, with its thermo-viscous technology, is well-suited to showcase clinicians' artistic abilities, re-creating nature with superior sculptability using the instrument or brush technique.

VisCalor's long, narrow tip excels in hard-to-reach posterior areas. It allows placement of the tip at the very base of the cavity floor. VisCalor is extruded slowly as a flowable, ensuring optimal wall adaptation and minimizing any air bubbles. This new capsule design is only usable with a thermo-viscous composite like VisCalor, and allows for more minimally-invasive preparations so as to conserve healthy tooth structure.

Furthermore, VisCalor is based on VOCO's legendary nano-hybrid technology, which has been proven to provide excellent physical properties and longevity.

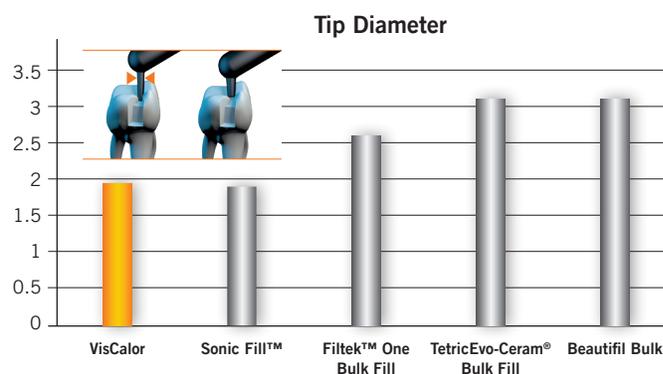
VisCalor and its thermo-viscous technology create the ideal restorative conditions with excellent handling, a fast and yet simplified workflow and optimal esthetics with outstanding strength and longevity. Simply Warm it, Flow it and Sculpt it.



Source: Dr. Walter Denner, Fulda / Germany

Technical Data			
Filler Content	83% by weight	Radiopacity	285%
Compressive strength	331 MPa	Flexural strength	158 MPa
Shrinkage stress	4.1 MPa	Volumetric shrinkage	1.41%
Water uptake	13 µg/mm <sup>3</sup>	Water solubility	<0.1 µg/mm <sup>3</sup>

- Thermo-viscous: Initially flowable for optimal adaptability, then immediately sculptable
- Easy-Access-Capsule with long and narrow tip for hard-to-reach areas and bubble-free application
- 2-in-1 material (flowable and packable) saves time
- Highly filled for low shrinkage and high strength
- Excellent esthetics with high gloss and extended color stability



Source: VOCO internal



### Presentation

- REF 6107 VisCalor – Caps Warmer Kit (16 × A1, 32 × A2, 16 × A3, 16 × A3.5, VisCalor Caps Warmer)
- REF 6106 VisCalor – Heating Dispenser Kit (16 × A1, 32 × A2, 16 × A3, 16 × A3.5, VisCalor Dispenser)
- REF 6110 VisCalor – Shade Guide

Shade	Caps 16 × 0.25 g	Shade	Caps 16 × 0.25 g
A1	6113	B1	6119
A2	6114	B2	6120
A3	6115	Incisal	6121
GA3.25	6116	OA2	6122
A3.5	6117	BL (Bleach)	6123
A4	6118		

# VisCalor bulk

## THERMO-VISCOUS BULK FILL COMPOSITE



### 4 mm with no occlusal layers required

With VisCalor bulk, you can place bulk-fill restorations without a separate occlusal layer, multiple increments or a base. When applied at the bottom of the cavity, the material flows on and into all regions like a flowable composite, creating bubble-free, mono-block restorations that then need only to be sculpted and cured. The impressive physical parameters and 2-in-1 material technology means that there is no need to apply an occlusal layer.

### New capsule features narrow tip

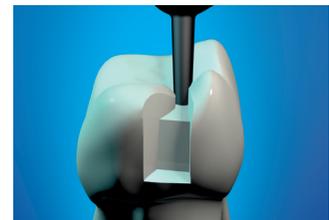
The narrow, long capsule tip allows for direct application, even in difficult-to-access areas and narrow cavities. This offers the additional advantage of creating higher quality, bubble-free restorations that reduce the chance of unintentional gaps and potential incipient decay compared to other bulk-fill composites in traditional capsules. Additionally, this contributes to the potential long-term performance of the restoration.



Optimal adaptability



Traditional capsule tips



VisCalor bulk capsule tip with better access

### VisCalor bulk is more than 40% faster\*

	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Total time + material**
Placing a restoration with flowable material and 2 mm composite	Bonding 35 sec.	Coating the bottom layer with flowable material 20 sec.	Light-curing 20 sec.	Applying the first composite layer 20 sec.	Light-curing 20 sec.	Applying the second composite layer 20 sec.	Sculpting 30 sec.	Light-curing 20 sec.	ca. 3:05 min. min. 2 Caps
Placing a restoration with bulk-flowable and bulk-fill material	Bonding 35 sec.	Applying bulk flowable material 20 sec.	Light-curing 20 sec.	Applying sculptable bulk-fill material 20 sec.	Sculpting 30 sec.	Light-curing 20 sec.			ca. 2:25 min. min. 2 Caps
Placing a restoration with VisCalor bulk	Bonding 35 sec.	Applying VisCalor bulk 20 sec.	Sculpting 30 sec.	Light-curing 20 sec.					ca. 1:45 min. min. 1 Cap

\*In restorations that are 4mm in depth or less \*\* Sample calculation for minimally invasive cavity of 4 mm depth

### Clinical case



Initial situation



Minimally invasive prepared cavity at tooth 5



Filling the cavity with VisCalor bulk



Restoration two months after filling

Source: Dr. Walter Denner, Fulda / Germany

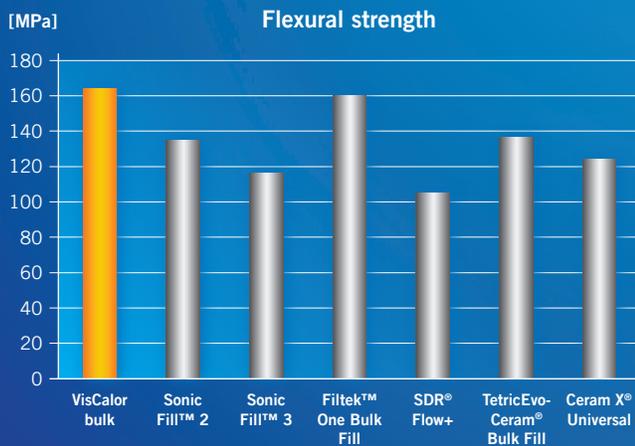
# VisCalor bulk

## OUTSTANDING PHYSICAL PROPERTIES OPTIMIZED FOR THE BULK-FILL TECHNIQUE

4 mm increments: this means a relatively high proportion of VisCalor’s surface is in contact with the cavity margin, making polymerization shrinkage an important issue to consider. Armed with an 83% (by weight) fill rate, VisCalor offers a volumetric shrinkage of 1.44% and a shrinkage stress of 4.6 MPa, putting it in a class of its own among bulk-fill composite materials.



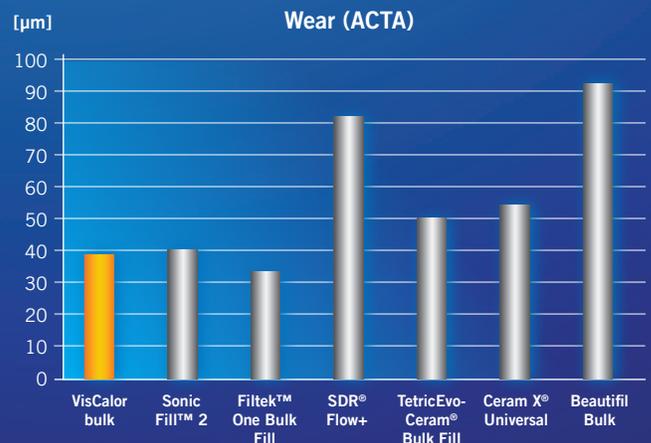
Source: Internal measurement



Source: Internal measurement

Supported by a flexural strength of 164 MPa and a compressive strength of 335 MPa, restorations performed with VisCalor bulk can withstand the day-to-day stresses within the mouth. This makes VisCalor bulk ideal for long-term performance as a bulk-fill restorative.

VisCalor bulk's durability – or its ability to hold up over time in regards to wear – stands out compared to other bulk-fill materials as seen on the graph to the right. When combined with its other physical properties (flexural strength, polymerization shrinkage, shrinkage stress, water absorption, etc.), VisCalor bulk's 2-in-1 material benefits result in minimized procedural steps, reduced costs and increased simplicity to make VisCalor bulk the ideal bulk-fill restorative.



Source: Internal measurement

# VisCalor bulk

## THERMO-VISCOUS BULK-FILL COMPOSITE



### Indications

Class I and II posterior restorations  
Base in Class I and II cavities  
Class V restorations  
Locking, splinting of loose teeth  
Repairing veneers, enamel defects and temporary C&B-materials  
Extended fissure sealing  
Restoration of deciduous teeth  
Core build-ups

### Advantages

- Thermo-viscous: Initially flowable for optimal adaptability, then immediately sculptable. This 2-in-1 material approach (flowable and packable) saves time
- Bulk-fill with 4mm depth of cure speeds up the procedure
- Easy-Access-Capsule with long and narrow tip for hard-to-reach areas and bubble-free application
- VOCO's new TVT polymer technology for:
  - fast viscosity change
  - the ability to flow
  - low shrinkage and excellent wear
- Monoblock concept for one highly filled material from bottom to top
- Safe to use. VisCalor bulk's temperature increase during application and polymerization stays within the normal range of pulpal physiology\*

\*Braun A; Temperature development inside the tooth during application of a thermo-viscous bulk-fill material; Report to VOCO; University of Aachen, 2019.

### Four shades – The choice is yours

Universal shade		
Universal shade with chameleon effect for use across the entire classic shade range with a curing time of just 10 seconds.		
Individual tooth shades		
Three additional shades are available for exact shade-matched restorations. Curing time: 20 seconds (at 1.000 mW/cm²).		



### Presentation

**REF 6062** Kit VisCalor bulk + VisCalor Dispenser, 80 × 0.25 g caps (16 × universal, 16 × A1, 32 × A2, 16 × A3)

**REF 6063** Kit VisCalor bulk + VOCO Caps Warmer, 80 × 0.25 g Caps (16 × universal, 16 × A1, 32 × A2, 16 × A3)

REF 6065 Caps 16 × 0.25 g universal

REF 6066 Caps 16 × 0.25 g A1

REF 6067 Caps 16 × 0.25 g A2

REF 6068 Caps 16 × 0.25 g A3



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