

REALITY

The information source for esthetic dentistry

2018

The Ratings | RESIN CEMENTS – DUAL-CURED ONLY – SELF-ADHESIVE

1 ★★★★★
(4.3)



1	ACTIVA BioACTIVE-CEMENT	4.3
	<i>Pulpdent</i>	
2	RelyX Unicem 2 Automix	4.2
	<i>3M</i>	
3A	Panavia SA Cement	4.1
	<i>Kuraray</i>	
3B	AbsoLute	4.1
	<i>Centrix</i>	
4A	Bifix SE	4.0
	<i>Voco</i>	
4B	Breeze	4.0
	<i>Pentron</i>	
5A	RelyX Unicem	3.9
	<i>3M</i>	
5B	EMBRACE WetBond Resin Cement	3.9
	<i>Pulpdent</i>	
6	G-CEM	3.7
	<i>GC</i>	
7A	Maxcem Elite	3.6
	<i>Kerr</i>	
7B	BisCem	3.6
	<i>Bisco</i>	
8	SmartCem2	3.5
	<i>Dentsply Sirona Restorative</i>	

RAVES & RANTS

- + Bioactivity could make it the cement of choice for those patients with a high caries rate
- + Virtually no dislodgements and post-cementation sensitivity
- So is a bonding agent necessary or not?
- Slow self-cure set means extra caution is necessary when cleaning excess from metal-based restorations

MANUFACTURER

Pulpdent www.pulpdent.com

PRICES

Single Pack
\$121.50/7g
(\$17.36/g)

SHELF LIFE

2 years

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Activa Cement

INTRODUCTION/MANUFACTURER'S CLAIMS

Luting cement version of the bioactive material from Pulpdent. It is dual-cured, automix, and stated to combine all the benefits of composites and glass ionomers without the disadvantages. It is presumably the first dental resin that mimics the physical and chemical properties of teeth by incorporating three key components: bioactive ionic resin matrix, shock-absorbing rubberized resin component, and reactive ionomer glass fillers.

Continuing the story, it presumably actively participates in the cycles of ionic exchange that regulate the natural chemistry of our teeth and saliva. It is also stated to chemically bond to teeth, seal against bacterial leakage, and release/recharge calcium, phosphate, and fluoride ions.

Since Activa contains water, it is stated to be moisture-friendly, which is presumably necessary for a material to be bioactive. Conventional cements are hydrophobic and, therefore, cannot interact with the moisture-loving tooth structure.

Nevertheless, despite the water in Activa, Pulpdent claims it has very low solubility. And, since it presumably reacts to changes in the mouth, it is being promoted as a smart material. What's more, it has no Bisphenol A or BIS-GMA for that matter.

AVERAGE PARTICLE SIZE (microns)

Submicron to 4 microns.

FILLER CONTENT

Weight	48%
Volume	N/A

pH

3.8, but becomes neutral when cured.

FILM THICKNESS (microns)

11

CONSISTENCY AND HANDLING

It is not particularly sticky, which was echoed by the evaluators – only one found it to be sticky, who also noted it was very stringy. It also cleans up nicely.

FLOW

4.5 It is not particularly runny. All evaluators found the viscosity to be acceptable. Several evaluators really liked the flow. And all evaluators except one had no problems seating restorations, while the lone holdout felt it require excessive pressure to seat crowns.

EXTRAORAL WORKING TIME

About 1.5 minutes (directions say 1.5 minutes intra-orally). Slightly more than half (53%) of the evaluators considered it to be acceptable even for 2+ restorations, while the other 47% were more conservative and only used it to cement single units. One evaluator noted that he used it in three and four unit bridge abutment situations and had no problems. He also noted he even had time to clean up the gross excess. Another seated two posterior crowns and a bridge without any issues.

CLEAN-UP TIME (self-cured mode)

It started to gel after approximately 11.0 minutes from the beginning of mixing (directions say less than three minutes after seating restoration). All evaluators found it to be easy to clean off the excess regardless of whether they tack cured or not.

SIMULATED INTRAORAL SET TIME

It became rock hard at about 13 minutes from the beginning of mixing. This means that if you are using it to cement a metal-based crown, you need to be very cautious to not jostle it very much while you clean off the excess.

SHADES

2 Translucent and A2. We found both shades have minimal chroma and are very similar at 100 microns thickness. Most (87%) evaluators considered these

shades to be acceptable, while the other 13% wanted a better selection.

Shade	Description
Translucent	Virtually colorless
A2	Close match to Vita A2

TRANSLUCENCY/OPACITY (T/O)

Shade	T/O rating (%)
Translucent	16.9
A2	18.9

This shows that both shades are virtually identical, so you only have to buy one of them.

OPTIMAL LEVEL OF MOISTURE

The prep should not be desiccated, so blotting would be the safe drying technique. All evaluators except one used it moist, while the lone holdout dried the preps. Those using "moist" qualified that by describing it as "damp" or "almost dry".

PRIMER/ADHESIVE

Although the marketing info states you do not need to etch or bond, the directions caution that if retention is a concern, you are supposed to use a bonding agent. The type of bonding agent, however, is not specified. Most (67%) evaluators did not use a bonding agent and reported no problems, while the other 33% were more cautious and chose to use an adhesive. No problems were reported in this group either.

Comments from the evaluators:

- In four or five non-retentive situations, I used a bonding agent and had no problems. The rest were bridges and crowns. Initially, I had some deep abutment preps and was worried about sensitivity so I also used a DC bonding agent. After that I stopped

using bonding agents even in difficult situations. No sensitivity right from the start.

- I only used it for retentive preps, either onlays or crowns.
- I used it to "salvage" crowns for medically compromised patients. There were great undercuts and I would doubt that the crowns would fail. The porcelain fused to metal crowns were sandblasted.
- Never used it on a non-retentive prep.
- I only used it on retentive preps. For non-ideal retention, I used either total-etch or another cement with a primer.
- I think Pulpdent needs to give more definitive direction – it either works without an adhesive or it does not.
- I used it both ways. On retentive preps, I didn't use a bonding agent. On non-retentive ones, we did. Either way, we never had any dislodgements.
- I was concerned about the company's suggestion that bonding agents can break down over time and, since they generally don't recommend the use of bonding agents for luting restorations, I avoided using them even for restorations with compromised retention form and didn't have any problems with debonding.
- All my preps were retentive.

For those evaluators who did use an adhesive, one-third used an etch & rinse bonding agent, one-third used selective etch, and one-third used self-etch. Comments from the evaluators:

- I used total etch and dual cured bonding resin in some cases. In some cases, I used self-etch or selective etch.
- If there was enamel, I etched normally. If there was dentin, etched less than 5 seconds. In some cases, I didn't etch at all.

In a pointed question about preps that included enamel, half of the evaluators did not etch, 30% etched all the time, and 20% etched some of the time.

DISLODGEMENTS

All evaluators except one reported no dislodgements, with the lone holdout reporting a few cases.

POST-CEMENTATION SENSITIVITY

Regardless of whether a bonding agent was used or not, all evaluators except one reported no sensitivity, with the lone holdout reporting only one case that eventually subsided.

PACKAGING

Our evaluation samples came in conventional, shrink-wrapped, easy to stack, single shade refill cardboard boxes that had product identification on all sides and ends. The shade identification, however, is in a small font and not easily found. On the other hand, the expiration is easily found on the label on the bottom of the boxes, but the storage temperature (41°F/5°C-81°F/27°C) is difficult to read without loupes.

The boxes conveniently open by raising the flap-like lid to expose the contents – no need to open an end and have to dump out all the contents onto a cabinet top to see what's really in the box. The dual-barrel cartridges of material are secured in a cardboard shelf as soon as you open the top flap. Flip up this shelf and the mixing tips in a zip-closure bag are

found and easily retrieved. This is a very clever design that shows Pulpdent wants Activa to be cutting edge on all fronts, although one evaluator thought the box was flimsy and another considered it to be entry level.

The dual-barrel cartridge has a label that prominently identifies the product, shade, and expiration date.

DIRECTIONS

Single sheet of coated paper only in English. Instructions are straightforward and easy to understand except when it comes to the aforementioned ambiguity on whether to use a bonding agent or not and how do you determine whether a prep is retentive or not. Several evaluators were puzzled by this issue.

In addition, one evaluator was intrigued by the recommendation that this cement is not to be used to bond laminate veneers. It wasn't explained, but he suspects it is because of the "rubberized" matrix that might allow for cracking of thin ceramic. Also, he couldn't understand why the company recommends not using zirconia primer.

REALITY

STRENGTHS

Virtually no dislodgements and post-cementation sensitivity reported. Easy to use, seat restorations, and clean excess. Viscosity and handling very good – not runny. Adequate working time and shades. Bioactivity a bonus. No Bisphenol A.

WEAKNESSES

Its equivocation as to whether you need to use an adhesive or not is a concern and its rather slow chemical set when you are seating a metal-based restoration is somewhat of a clinical nuisance. Bioactivity has not been demonstrated clinically.

BOTTOM LINE

Based on its chemistry, Activa Cement certainly has great potential and it could be the cement of choice for those patients with a high caries rate, but clinically demonstrated bioactivity still needs to be proven.

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