

# Dental Cements for Luting and Bonding Restorations

## Self-Adhesive Resin Cements



Adriana P. Manso, DDS, MSc, PhD, Ricardo M. Carvalho, DDS, PhD\*

### KEYWORDS

• Self-adhesive resin cements • Dental cements • Luting cement • Cementation

### KEY POINTS

- Self-adhesive resin cements are current popular luting materials with advantages over traditional luting cements: ease of use and improved properties.
- The chemistry of the materials dictates their behavior. Acidic monomers need to be neutralized during setting to prevent compromising curing, increased sorption and expansion and lowering overall properties.
- There is not enough clinical evidence to draw robust conclusions about its performance. Early, short-term studies suggest performance similar to conventional cements and traditional luting cements.

### INTRODUCTION

In the last two decades, the increased demand for esthetics in dentistry has resulted in significant improvements in metal-free restorations, from indirect resin composites to various categories of ceramic materials. Nevertheless, the clinical performance of those esthetic restorative materials relies largely on the luting/bonding procedure. Among the desired features of a luting material for a metal-free restoration are optical characteristics similar to natural dentition, improved mechanical properties to strengthen the final restoration, and ability to bond to multiple substrates. The customarily used conventional luting cements, such as zinc phosphate and glass-ionomer, do not meet these expectations. With the introduction of metal-free indirect restorations, there was an imminent need to develop alternative luting materials. The first resin-based or conventional resin cements introduced to the market required the use of dental adhesives to promote bonding to enamel and dentin. Several studies

---

Supported by UBC Start-Up grants to A.P. Manso and R.M. Carvalho.

Department of Oral Biological and Medical Sciences, Division of Biomaterials, Faculty of Dentistry, The University of British Columbia, 368-2199 Wesbrook Mall, Vancouver, British Columbia V6T 1Z3, Canada

\* Corresponding author. Faculty of Dentistry, The University of British Columbia, 368-2199 Wesbrook Mall, Vancouver, British Columbia V6T 1Z3, Canada.

E-mail address: [rickmc@dentistry.ubc.ca](mailto:rickmc@dentistry.ubc.ca)

Dent Clin N Am 61 (2017) 821–834

<http://dx.doi.org/10.1016/j.cden.2017.06.006>

0011-8532/17/© 2017 Elsevier Inc. All rights reserved.

[dental.theclinics.com](http://dental.theclinics.com)

demonstrated that the use of conventional resin cements can improve mechanical properties of metal-free indirect restorations when compared with other luting cements,<sup>1</sup> and this has been directly related to long-term clinical success.<sup>2</sup> However, incompatibility issues between simplified adhesive systems having acidic and hydrophilic characteristics and self- and dual-cured resin cements were reported at the early stage of development of the new resin cements.<sup>3-5</sup> This incompatibility was responsible for directly compromising bond strengths, potentially reducing retention and support for the restorations.

Most clinical procedures involving resin-based luting materials occur under unfavorable circumstances, such as altered and/or deep dentin, subgingival preparations, and sometimes with challenging field isolation. Combined, all these limiting factors can have a significant impact on the adhesive application and subsequent performance when resin cements requiring prebonding are used. However, their use is justified if one considers all the benefits offered by a resin luting material, such as improved mechanical properties, lower solubility, and reinforcement of all-ceramic restorations in comparison with the traditional luting cements.<sup>6,7</sup> Commercially available self-adhesive resin cements (**Table 1**) combine the easy application of conventional luting materials with the improved mechanical properties and bonding capability of the conventional resin cements. The presence of functional acidic monomers, dual cure setting mechanism, and fillers capable of neutralizing the initial low pH of the cement are essential clinically relevant elements of the material that should be understood when selecting the ideal luting material for each particular clinical situation. This review addresses the most relevant aspects of self-adhesive resin cements and their potential impact on clinical performance. The article focuses only on self-adhesive resin cements as the “modern” luting material, because extensive information on traditional

**Table 1**  
Self-adhesive resin cements listed by alphabetical order

<b>Cement</b>	<b>Manufacturer</b>
BeautiCem SA	Shofu Inc
Bifix SE	Voco
BisCem	Bisco Inc
Breeze	Pentron
Calibra Universal	Dentsply
Clearfil SA	Kuraray Noritake Dental
Embrace WetBond	Pulpdent Corporation
G-Cem	GC Corporation
G-Cem LinkAce	GC Corporation
iCem	Heraeus-Kulzer
Maxcem Elite	Kerr
Monocem	Shofu
Panavia SA	Kuraray Noritake Dental
RelyX Unicem	3M/ESPE
RelyX Unicem 2	3M/ESPE
SeT	SDI
Smart Cem 2	Dentsply
SpeedCEM Plus	Ivoclar Vivadent

The list is not intended to cover all products available. Any omission is unintentional.

Download English Version:

<https://daneshyari.com/en/article/5638705>

Download Persian Version:

<https://daneshyari.com/article/5638705>

[Daneshyari.com](https://daneshyari.com)