

## Core Paste Research Reference Guide

1. The DENTAL ADVISOR PLUS, Volume 10, No. 3., December, 2002.

The *Dental Advisor* awarded Core Paste Syringeable 4 1/2 PLUS's with a 93% rating and reported the advantages of the auto-mix system and the resulting improvement in mixing and dispensing efficiency. Clinicians frequently mentioned its ease of use and that the working and setting times were nearly optimal. Core Paste Syringeable was reported to have the right viscosity and flow, and the final surface was smooth and easy to prepare.

2. "Strength of Various Types of Posts with Coronal Tooth Build-Ups," Clinical Research Associates Newsletter, November 1998.

This study demonstrated that Core Paste can be used with any post to restore the tooth structure. It was concluded that Core Paste alone, without a post, is less likely to have fractured teeth under stress compared to metal posts.

3. Hernandez, R., Boston, D., Bader, S., and Trope, M., "Resistance to Fracture of Restored Endodontically Treated Premolars," IADR 1993.

The purpose of this study was to compare the resistance to fracture of endodontically treated premolars restored with various bonding agents. Seventy endodontically treated premolars were restored with seven different combination materials. Compressive force was applied until a fracture occurred. The force of fracture of the walls of each tooth was recorded and the results in the various groups compared. It was concluded that two combinations, including the Tenure®-Core Paste combination, were significantly stronger than all other groups tested.

4. Millstein, P., Segura, J., O'Leary, J., Harty, T., "Design of Prefabricated Post Heads on Various Core Materials," Journal of Dental Research, Volume 76, Abstract No. 2231, 1997.

The study consisted of two hundred and forty samples with combinations of three prefabricated post systems: Parapos™, Parapost XT (Coltene/Whaledent), Flexipost (EDS); and four core materials: Duel (Fuji), Core Paste (Den-Mat), TiCore (EDS), and amalgam (Tytin, Kerr). All samples were made with a 1 mm core material covering. Compressive and tensile failure loads were measured. The study determined that Core Paste was significantly stronger in both compressive and tensile modes than TiCore, amalgam, or Duet.

5. The DENTAL ADVISOR PLUS, Volume 7, No. 3, May/June 1997.

The *Dental Advisor* reported that Core Paste was highly rated for ease of mixing and consistency of the mix. There were very favorable comments about the syringeability and flow of the material, particularly for post cementation. The set Core Paste provides some resistance to high-speed preparation and produces a smooth surface upon contouring. The evaluation also noted that the color differentiation of the white core material from the tooth structure is excellent.

6. Kasloff, Z., Galan, D., and Williams, P.T., "Cuspal Deflection Studies Using an Electronic Probe to Evaluate Restorative Materials and Bonding Agents," Esthetic Dentistry Update, Volume 6, No. 1, February 1995:10-13.

Several studies have shown that large-cavity preparations in posterior teeth weaken tooth structure, and if restored, under occlusal loading cuspal fracture can occur. This study measured the amount of deflection that occur when a vertical load is applied to the cuspal incline of a tooth. The Tenure®-Core Paste combination, compared with amalgam, significantly increased resistance to deflection. The following table describes the results.

**Deflection Recordings**

Amalgam		Tenure-Core Paste	
Unfilled	Filled	Unfilled	Filled
158	150	152	76

7. THE DENTAL ADVISOR, Volume 2, No. 3, April 1992.

The physical properties of Core Paste with Ti-Core® (Essential Dental Systems) and Ketac-Silver™ (ESPE™-Premier) were compared. The study concluded that Core Paste is stronger than Ti-Core and silver-reinforced, glass ionomer cores such as Ketac-Silver. The following table describes the results.

Property	Core Paste	Ti-Core	Ketac-Silver
Compressive Strength, MPa	220	190	150
Tensile Strength, MPa	44	35	12

8. Masuhara, H., "Inspection Report about the Physical Properties of Composite Resin which is Used for Restoration and Core Buildup," Tokyo Medical and Dental University, March 1981.

This study demonstrated that Core Paste, compared to other core build-up materials, has low water sorption, low thermal expansion, and high physical strength. The following table describes the results.

**Core Build-Up Materials**

<b>Product Name</b>	<b>Comprehensive Strength (kg/cm<sup>2</sup>)</b>	<b>Flexural Strength (kg/cm<sup>2</sup>)</b>	<b>Water Sorption (mg/cm<sup>2</sup>)</b>	<b>Thermal Expansion (ppm/C)</b>
Clearfil Core	2430	1040	0.40	31.1
Corelite	2570	1080	0.40	31.1
Core Max	2650	1110	0.11	27.2
<b>Core Paste</b>	<b>3400</b>	<b>1220</b>	<b>0.12</b>	<b>17.1</b>
Exact	2380	740	0.39	42.2
Concise 1994 CBJ	2450	830	0.29	40.3