SPIDENT
Clinical Report
Core·it® Dual
& SPIN POST α

SPIDENT Apple Story
Clinical Report
Core·it® Dual & SPIN POST α

Clinical applications using Composite Resin Core : ‘Core it’and ‘SPIN POST α’

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Introduction

An increase in demand for esthetic dentistry has increased the interests in metal-free restorations. As a result, tooth-colored restorations are receiving great attention. In Korea, a Fiber Reinforced Composite Post (FRC Post) is used to increase the bearing capacity of the crown. And a strong and esthetic composite resin core build-up material is widely used in clinical practices. In other words, ‘metal-free’ esthetic materials for core build-ups are widely used.

However, much attention is needed as procedures that require adhesion, such as 'Fiber Post', which are common in clinical practice, are not easy to manipulate. Due to the difficulty of adhesion process, technical errors occur and clinical procedures often fail.

In order to reduce this error, I would like to explain in detail the precautions and usage of Composite Resin Core build-up material ‘Core-it’ containing ‘Fiber Post’.

Core·it® Dual

To briefly explain the characteristics of Spident Core it used in this clinical case:

Core·it® Dual is a dual-cure (self and light curing) composite resin material for core build-ups. It has high compressive strength and low polymerization shrinkage,

so there is almost no marginal leakage and shows excellent radiopacity. It is composed of inorganic filler and amorphous silica hybrid filler system, which has excellent physical properties and has a tooth preparation similar to that of dentin. The shades are provided in yellow, blue, and white. There are two types of product, auto-mix syringe type and cartridge type, and either one can be used according to the dentist preference. In addition, it can be easily applied to the root canals when the intraoral tip is applied.

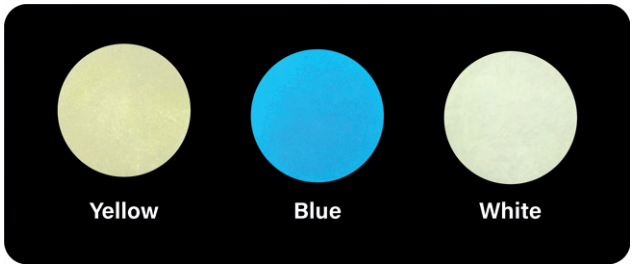
Characteristics :

① High compressive strength and low polymerization shrinkage.

② Excellent thixotropy.

③ Cuts like dentin

④ 3 colors (Yellow=tooth color, Blue, White).

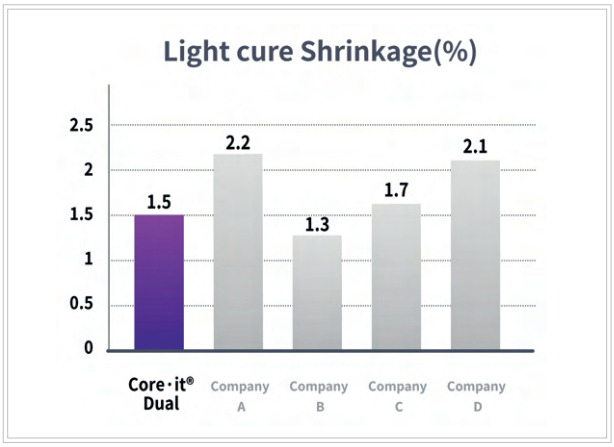


[**Figure. 1**] Three shades of Core ·it® Dual

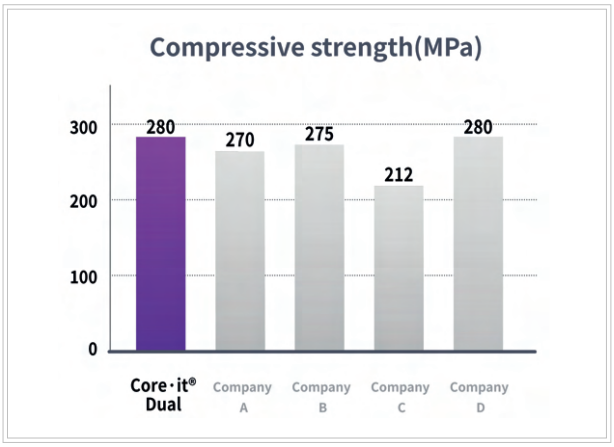
⑤ Dual cure type.

⑥ Excellent radiopacity.

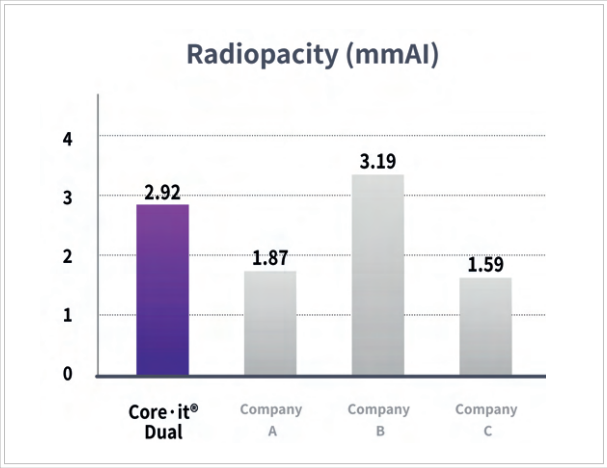
⑦ Auto-mix syringe type and cartridge type.



[**Figure. 2**] Light-cure Shrinkage of Core ·it® Dual



[**Figure. 3**] Compressive Strength of Core ·it® Dual



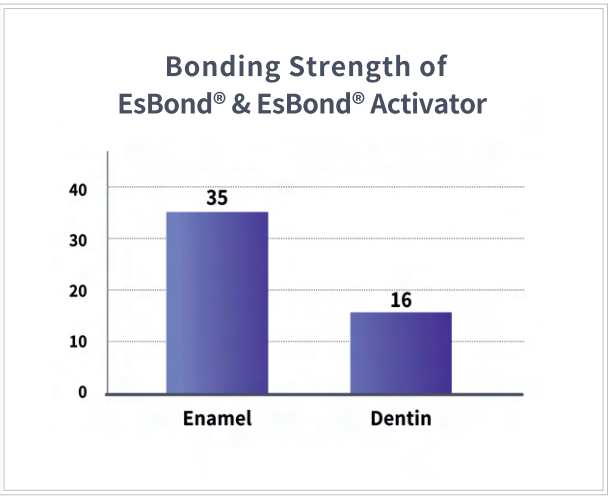
[**Figure. 4**] Radiopacity of Core·it® Dual

Core·it® Dual is a dual-cure product, so dentists need to be careful when choosing a bonding agent.

The polymerization initiators of self-curing composite resin are amine & BPO component and have base properties. And like most of dentin adhesives, have strong acidity. Due to the strong acidity of the adhesive, at the interface between the adhesive and the self-curing composite resin initiators, undergo an acid-base reaction prior to polymerization and lose their activity as initiators. This acid-base reaction would result in failure of adhesion.

As the acidity of the adhesive increases, more acid-base reaction takes place and adhesive strength decreases. Therefore, it is necessary to mix an activator to lower the acidity of the adhesive so that the initiator of the self-cure or dual-cure type restoration material does not lose its activity.

Spident provides an activator dedicated to self-cure and guarantees optimum adhesion when mixed with EsBond® by 1:1 ratio.



[**Figure. 5**] Bonding strength of Core· it®

In the case of dual cure type composite resin for build-ups such as Core·it® Dual, a separate activator must be mixed when used with most 4 th and 5th generation adhesives. The 6th and 7th generation adhesives are highly acidic and are self-etching systems, so it is impossible to use them with Core·it® Dual.

SPIN POST α(Fiber Reinforced Composite Post)

SPIN POST α is a reinforced composite resin produced by mixing a substrate resin in a state where tensile force is applied to a bundle of carbon or glass fibers.

It is composed of more than 60% fiber and more than 30% filler, and has very high flexural and fatigue strength and is maintained by adhesion to the hemorrhoid surface. Since the light transmission is possible with the glass fiber, a dual cure type resin cement can be used. It has the advantage of preventing and distributing the concentration of external stress because its aesthetic and biocompatibility properties and elastic modulus are similar to those of dentin.

However, if the shape of the root canal is rectangular or oval, the fit within the root canal may be insufficient, so adhesion process and correct choice of resin cement are necessary.

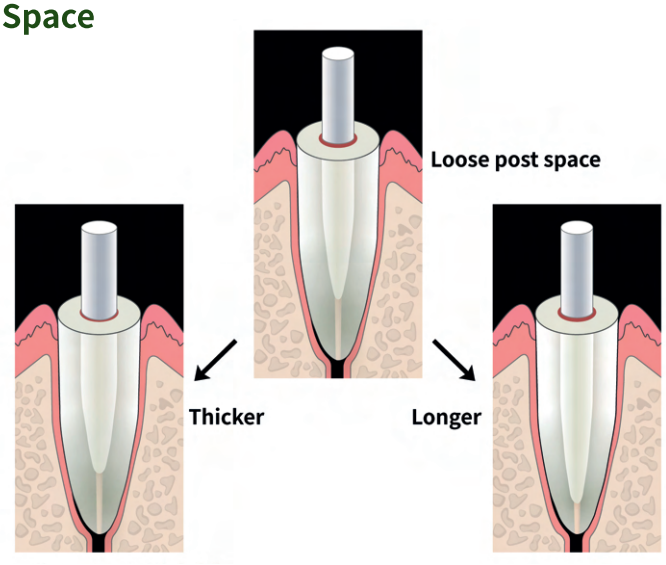
1. SPIN POST α Selection and Surface Treatment

[Figure. 6]

SPIN POST α has 10 thicknesses(0.9 ~ 2.0mm). In most cases, the Post with the minimum diameter is used.

In general, the surface of the post is treated with silane, but since it is contaminated during the post-application process in the root canal, wipe it clean with an alcohol sponge and apply separate silane as thinly as possible. Silane surface treatment is essential for bonding the exposed glass fiber and composite.

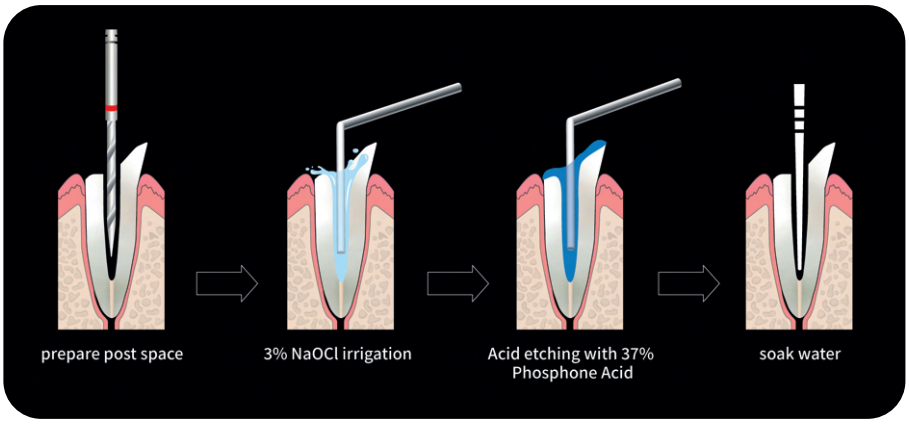
2. Formation of Post Space



[Figure. 7]

Set the length in consideration of the length of the root and the retention of the post. Prep the tooth using a Gates Glidden Drill or a Pilot Drill.
Using a drill suitable for the size of the selected post, form the post space at low speed rpm (1,000~5,000) with sufficient water to minimize the deformation of the tooth and sealer due to overheating. If there is insufficient compatibility with the root canal wall during post try-in, the resin cement layer becomes thick so post length or size should be adjusted.

3. Pretreatment of the root canal wall



[Figure. 8]

During the post preparation process, the root canal wall has organic/inorganic residues such as GP, sealer, and smear layers. No matter what kind of resin cement

is used for bonding, the following process must be preceded. After washing the inside of the root canal sufficiently (more than 20ml) with 3% NaOCl to remove organic residues, 37% phosphoric acid etchant is applied for 10 seconds to remove the smear layer and inorganic residues. After the phosphoric acid etchant is completely washed with water, the remaining moisture is completely removed using Paper Point in the post space.

4. Resin cement selection and bonding process

The correct choice of resin cement for adhesive posts is very important for post retention. In general, dual-curing or self-curing resin cement is used because light cannot reach the root canal space entirely. If dual-curing resin cement is used, sufficient light is required, and if this situation is not clinically met, it is preferable to use self-curing resin cement.

5. Selection of Composite Resin for Core build-up

In case of restoration with SPIN POST α, the core material is made of composite resin. There are some characteristics of composite resin to be considered for core build up.

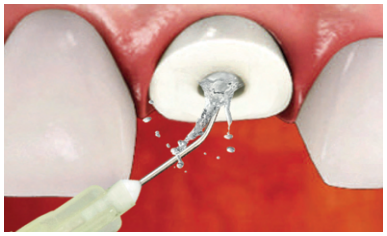
① It must have stufficient physical properties and hardness

② The curing depth must be deep.

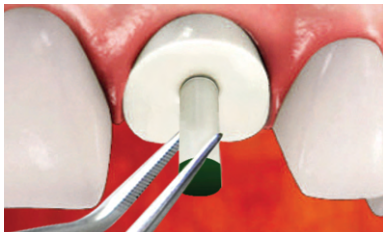
③ It should be easy to use.

④ It should have radiopacity.

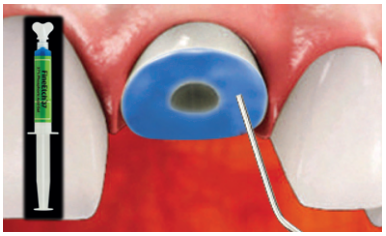
Core·it® Dual Technical Guide



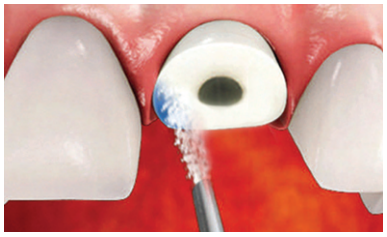
1. Use EDTA (Do not use H2O2) to chemically clean the post space.



2. Clean and rinse the post space, then thoroughly dry using paper points.



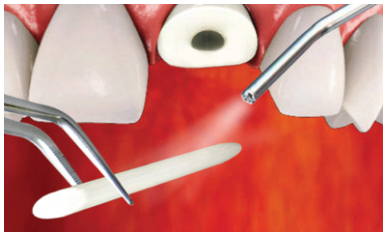
3. Etch according to your preferred techinique.



4. Rinse and Dry.

5. Mix EsBond® and EsBond® activator. Apply it in the root canal and dentin.

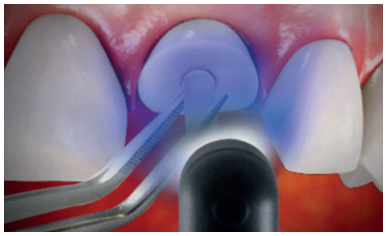
6. Prepare the SPIN POST α according to the manufacturer's instructions.



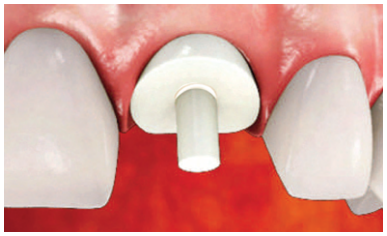
7. Dry with air.

8. Apply Core·it® Dual or EsCem directly into the post space.

9. Insert the SPIN POST α immediately into the post space within 1 minute after application.



10. Light cure each surfaces for 20 seconds (LED 1200mW /cm^2).



11. Let the material set for 4 minutes.

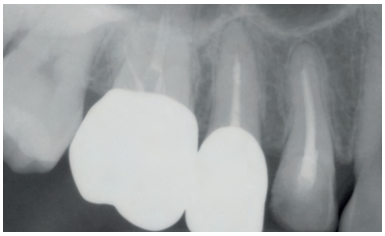
12. Apply Core·it® Dual directly into the matrix.

13. Light cure(20 sec), or Self cure(4min).

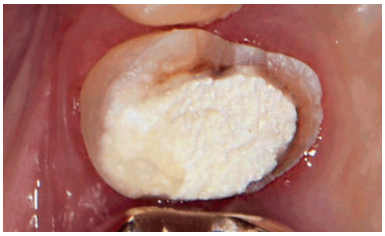
14. Tooth preparation.

15. After treatment.

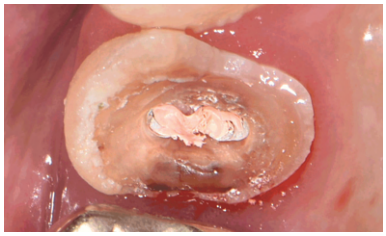
Clinical Case



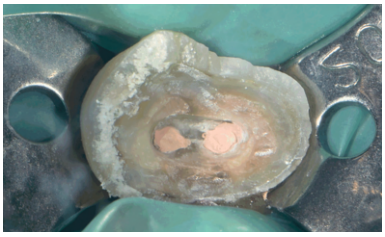
[**Figure. 1**] X-Ray Image



[**Figure. 2-1**] Use a drill suitable for the size of the selected post to form the post space.

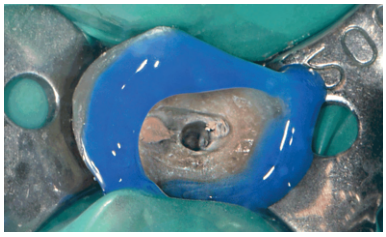


[**Figure. 2-2**] Use a drill suitable for the size of the selected post to form the post space.

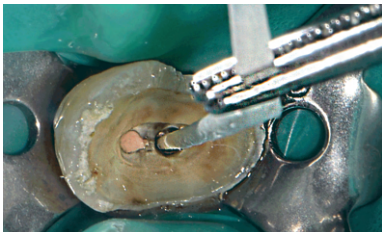


[**Figure. 2-3**] Use a drill suitable for the size of the selected post to form the post space.

[**Figure. 3**] Use 3% NaOCl (20ml) to thoroughly clean the root canal wall.

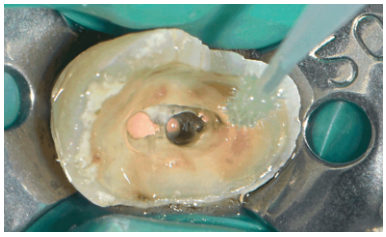


[**Figure. 4**] After apply etchant for 10 seconds, rinse thoroughly with water.

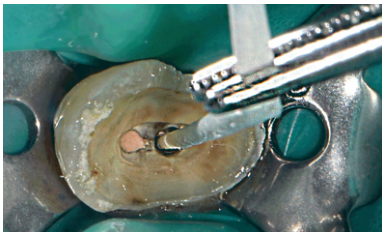


[**Figure. 5**] Remove excess moisture with Paper Point.

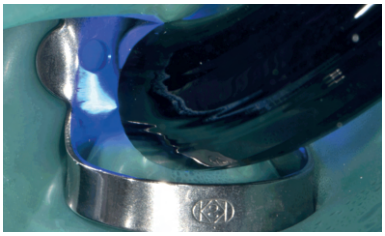
[**Figure. 6-1**] Mix adhesive and activator.



[**Figure. 6-2**] Apply it in the root canal and dentin for 15 seconds twice.

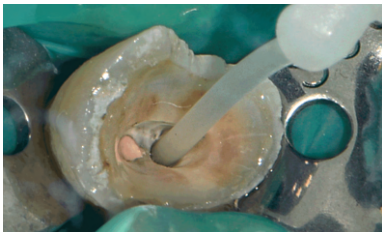


[**Figure. 7**] Remove the excess bonding using paper point so that it does not interfere with the seating of the post.

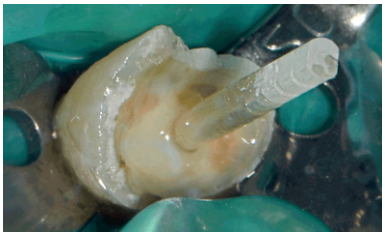


[**Figure. 8**] Light cure for 20 seconds.

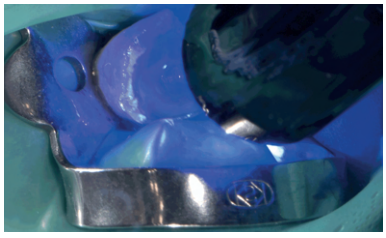
[**Figure. 9**] After cleaning the surface of the post with an alcohol sponge, apply Silane to the surface.



[**Figure. 10**] Install the endo mixing tip and slowly inject resin cement from the end of the root canal.



[**Figure. 11**] Insert the SPIN POST α immediately into the post space within 1 minute after resin cement application.



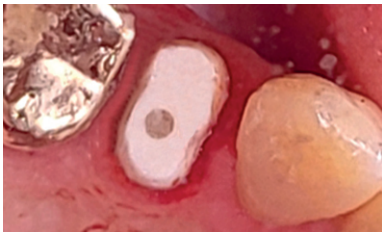
[**Figure. 12**] After inserting the post completely, light should be done for more than 40 seconds.

[**Figure. 13**] Cut SPIN POST α with diamond bur.

[**Figure. 14**] Put the matrix around the tooth

[**Figure. 15**] Build-up it with Core·it® Dual slowly so that there are no air bubbles.

[**Figure. 16**] Light cure for 20 seconds.



[**Figure. 17**] Remove matrix and perform final preperation.

[**Figure. 18**] After treatment.

The End

The major difference from the metal core is that it has anisotrophy in strength by using 'Core it' and 'SPIN POST α ' in combination. The design of the core build-up structure needs to fully consider the relationship between the placement of the fiber post and the direction of stress applied to the teeth.

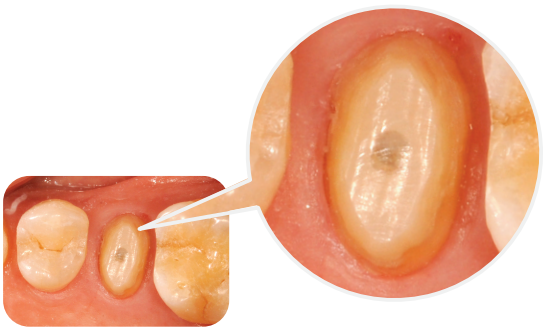
Core·it®

Flowable Core Build up Resin

Dual Automix

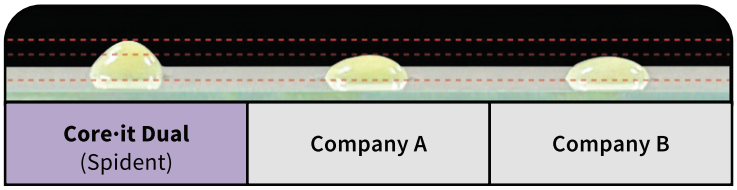
☑ Dentin like trimmability

>> You can optimally control the bur so that no difference is felt, especially at the transitions between dentin and Core·it Dual. This helps to make groove-free preparation without under-cut.



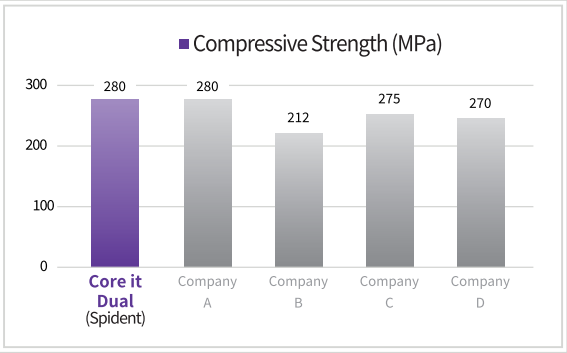
☑ Exceptional thixotropic property

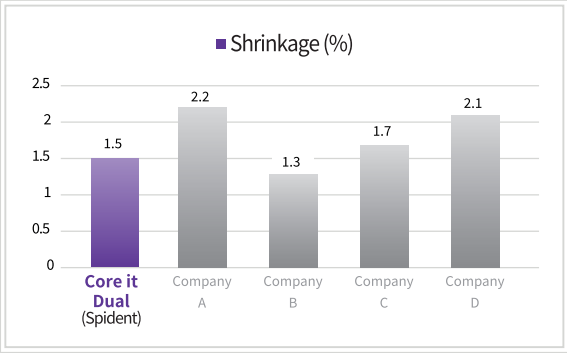
>> Core·it dual has thixotropic property and it can hold shape when you build up. It also has ideal flowability during post cementation.

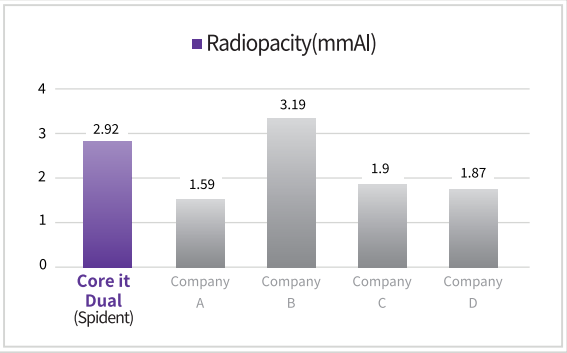


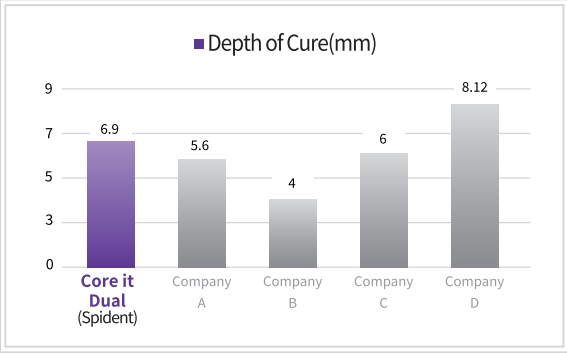
☑ Excellent mechanical properties

>> Core·it dual has compressive strength similar to dentin and shows excellent physical properties.









SPIN POST α

Glass Fiber Composite Post

SPIDENT

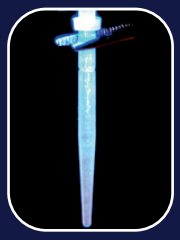
SPIN POST α

Glass Fiber Composite Post

3 reasons that you should choose SPIN POST α

1. Excellent radiopacity and light penetration
2. High flexural strength
3. Flexural modulus similar to dentin

Excellent radiopacity



Perfect light penetration

Advantages

·Secure bond strength with pre-Silanisation

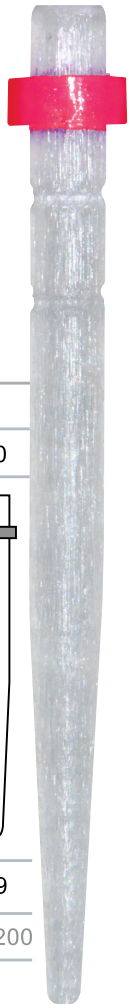
·Enhanced flexural strength(>1,800Mpa)

·Optimal Radiopacity(>330% Al equivalent)

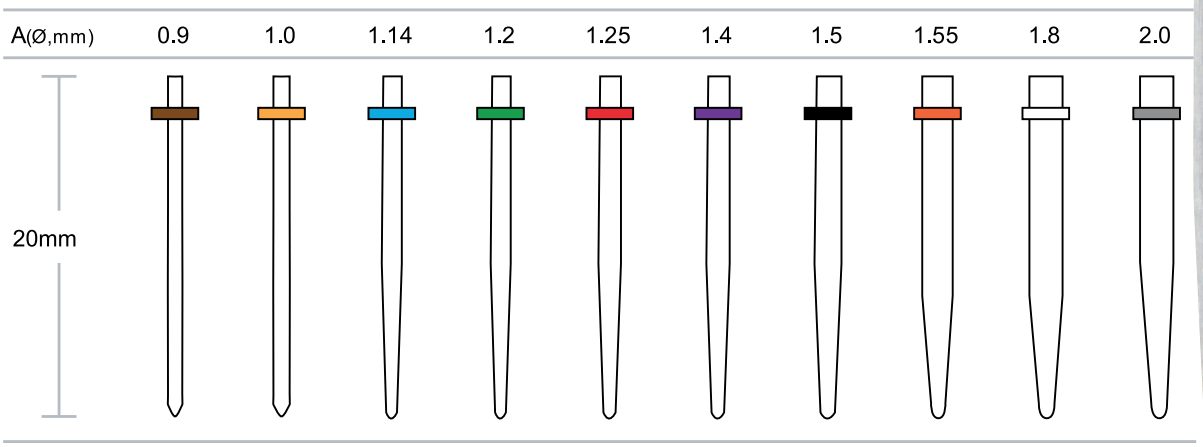
·Higher transparency provides superior aesthetic and light transmission

·10 different sizes are available

·Flexural modulus similar to dentin



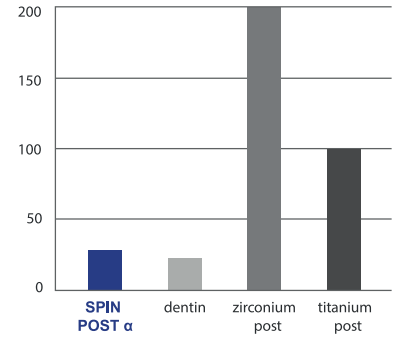
Post Diameters (mm)



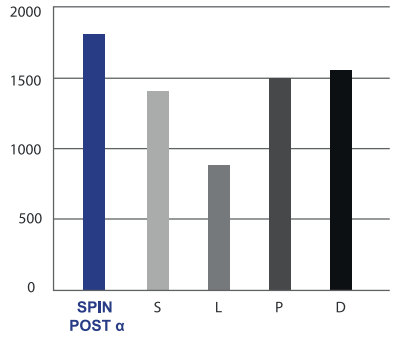
A(Ø,mm)	0.9	1.0	1.14	1.2	1.25	1.4	1.5	1.55	1.8	2.0
B(Ø,mm)	0.7	0.8	0.6	0.65	0.7	0.75	0.8	0.8	0.9	0.9
Model No.	SPA9	SPA10	SPA14	SPA20	SPA25	SPA40	SPA50	SPA55	SPA80	SPA200

Technical data

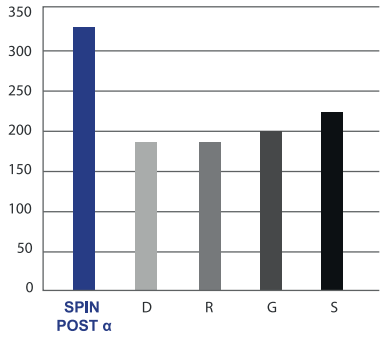
Elastic modulus[GPa]



Flexural Strength[MPa]



Radiopacity[% Al equivalent]



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