



Apple Story



You're the Artist

Hands of an artist create something unimaginable.
When they work for people's sake, it could be more valuable.
You are the artist, not only dentist when you take care of people.
SPIDENT will be your partner at the moment with passion.

Introduction

SPIDENT CO., LTD. was founded in 1997 and we established R&D center in November 2004. Our manufacturing lines are certified by CE (MDD), FDA and ISO. SPIDENT CO., LTD. independently operates all the processes of R&D, quality control, product design & marketing, and finest customer services, aiming at your 100% satisfaction. Our strength lies in ideal quality with ideal price. This allows us to export over 90 countries at the moment.

History of SPIDENT

- **1997 Establishment**
 - Spident Co., Ltd. establishment
- **2010 The growth process**
 - Certified CE, ISO 9001, ISO 13485, FDA
 - Launched chemical products to overseas market
 - Established R&D Center
 - Awarded in recognition of \$1M in exports
- **2013 Overseas Branch**
 - SPIDENT USA INC. branch establishment
- **2014 Development**
 - Awarded in recognition of \$5m in exports
 - Launched NOP Needle
- **2015 Vacu-Mixer**
 - Launched Vacu-Mixer (World First Cordless Auto Impression Mixer)
- **2016 Glass Ionomer**
 - Research & Development of GIC (First manufacturer in Korea)
- **2017 20th Foundation Anniversary**
 - Selected as Global Strong Company
- **2018 Overseas Factory**
 - Established a factory in China
- **2019 Further Growth**
 - Awarded in recognition of \$10M in exports



SPIDENT
Apple Story

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SPIDENT Apple Story 🍏🍏🍏

Clinical Report

Core-it® Dual



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Clinical applications using Composite Resin Core :
'Core it' and 'Fiber Post'

Clinical applications using Composite Resin Core : ‘Core it’and ‘Fiber Post’

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Department of Conservative Dentistry, Yonsei University

Introduction

An increase in demand for esthetic dentistry has in turn 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’ as an indirect method for clinical application.

Core • it® Dual



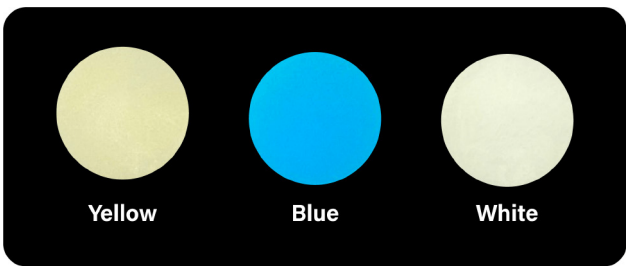
To briefly explain the characteristics of Spident Core it used in this clinical case:

Core • it® Dual is a dual-cure (self and light curing) composite resin core 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 feeling 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 operator's preference. In addition, it can be easily applied to the surgical site when the intraoral tip is installed.

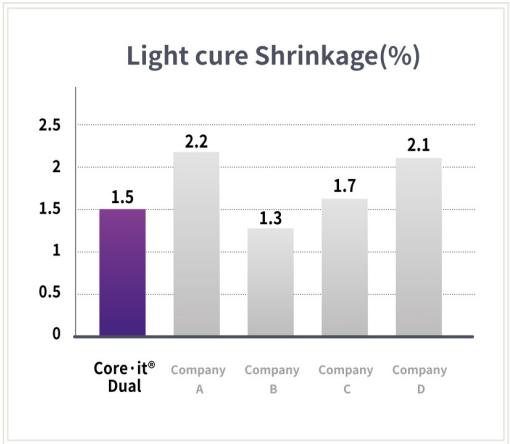
Characteristics:

- ① High compressive strength and low polymerization shrinkage
- ② Excellent thixotropy
- ③ Tooth preparation feeling similar to that of dentin.
- ④ 3 colors (Yellow=tooth color, Blue, White)

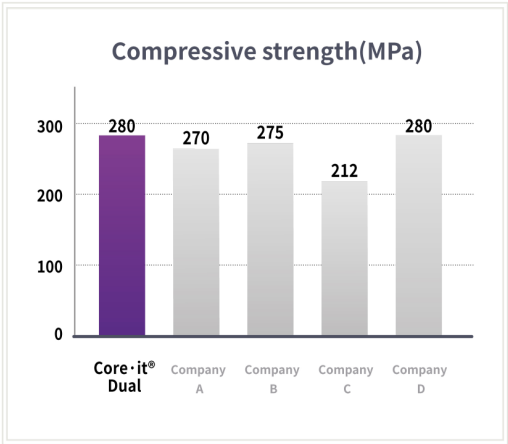


[Figure. 1] Three shades of Core • it® Dual

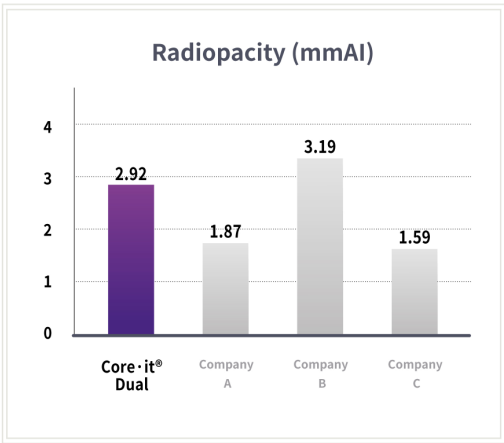
- ⑤ Dual Cure Type
- ⑥ Excellent Radiopacity
- ⑦ Auto-mix syringe type and Cartridge type



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



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



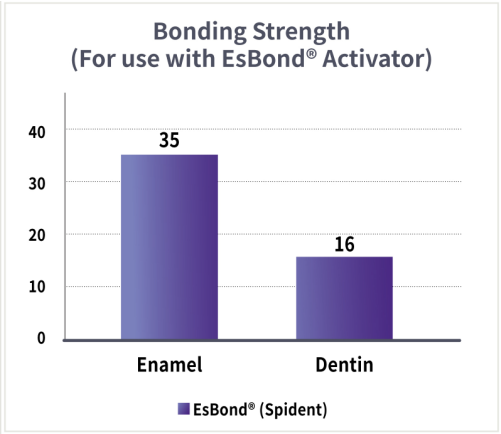
[Figure. 4] Radiopacity of Core · it® Dual

Core · it® Dual is a Dual-Cure product, so practitioner needs to be careful when choosing a bonding agent.

The polymerization initiator of self-curing composite resin is amine & BPO component and has basic properties, while 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, the amine & BPO component, which are 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.

That is, as the acidity of the adhesive (the lower the pH) 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 due to the strong acidity of the adhesive.

Core · it® Dual provides an activator dedicated to self-cure and guarantees optimum adhesion when used by mixing EsBond®, its own bonding material, and an exclusive activator in a 1:1 ratio.



[Figure. 5] Bonding Strength of Core • it® Dual

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 4th 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.

Fiber Reinforced Composite Post

Next, let's take a look at Fiber Reinforced Composite Post (FRC Post).

The characteristic is that it 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 to some extent by 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 cross section 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.

Next, we will talk about the clinical application method.
Clinical Procedure of FRC Post and Composite Resin Core build-up material.

1. FRC Post Selection and Surface Treatment



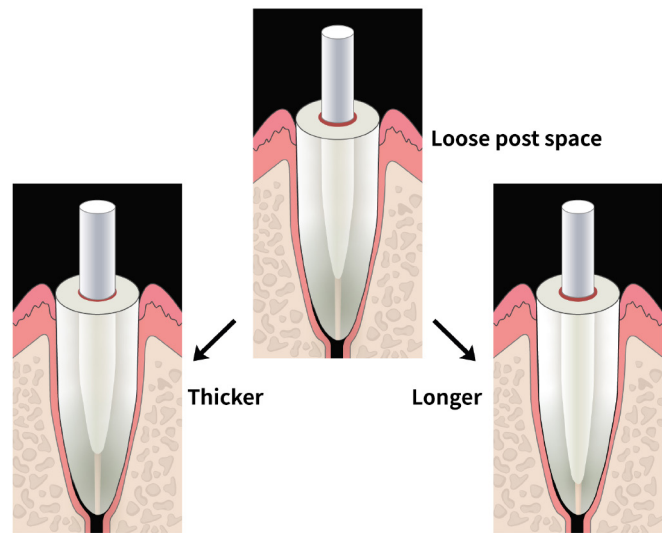
[Figure. 1]

FRC Post has 3 to 4 thicknesses, and in most cases, the Post with the minimum diameter. Drills suitable for each size of the Post is provided.

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 resin in the bonding of the FRC Post.



2. Formation of Post Space

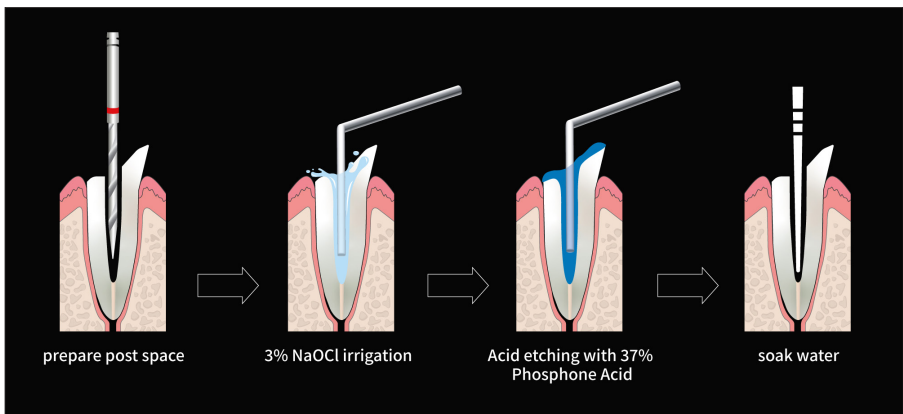


[Figure. 2]

Set the length in consideration of the length of the root and the retention of the post, and 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 lows peed rpm (100~5,000) under sufficient water to minimize the deformation of the tooth and sealer due to overheating. If there is insufficient compatibility with the root canal wall at the time of 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. 3]

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 NaOCl 3% 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 irradiation 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 FRC Post, the core material is made of composite resin. You can use the resin for the core build-up, or you can use the restorative resin on hand.

*** Characteristics of Composite Resin for Core build-up**

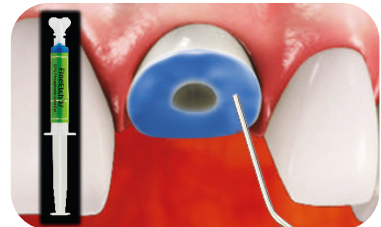
- ① **It must have sufficient physical properties and hardness.**
- ② **The curing depth must be deep.**
- ③ **It should be easy to use.**
- ④ **It should have radiopacity.**



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 technique.



4. Rinse and Dry.



5. Mix adhesive and activator, apply it in the root canal and dentin.



6. Prepare the fiber post according to the manufacturer's instructions.



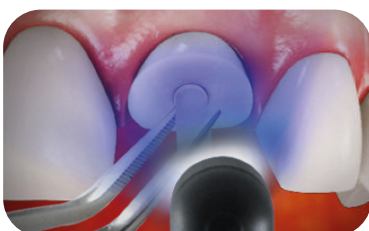
7. Dry with air.



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



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



10. Light cure each surfaces for 20 seconds (LED 1200mW /cm²).



11. Let the material set for 4 minutes.



12-1. Apply Core-it® Dual directly into the matrix.



12-2. Light cure (20 sec), or Self curing (4min).



13. Tooth preparation.



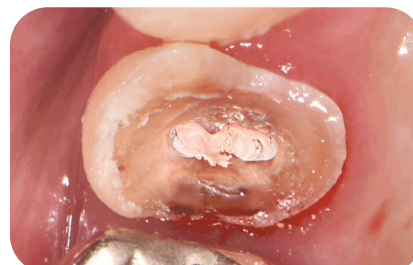
14. After treatment.



[Figure. 1] Radiography of root canal endo treated tooth.



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



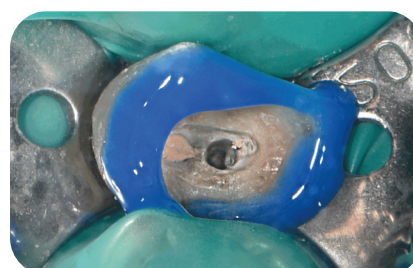
[Figure. 2-2] Use a drill suitable for the size of the selected post to form the post space.



[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.



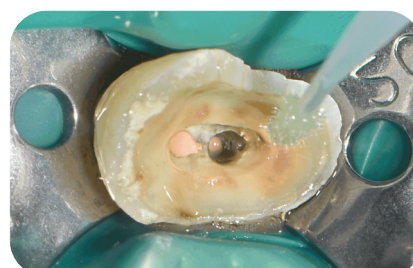
[Figure. 4] 37% phosphoric acid etching. After apply etchant for 10 seconds, rinse thoroughly with water.



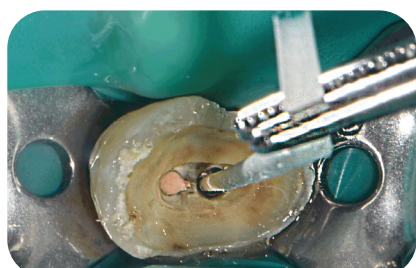
[Figure. 5] Remove excess moisture with Paper Point.



[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.



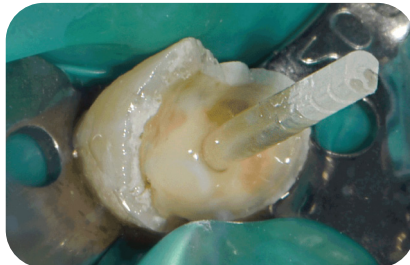
[Figure. 8] Light curing for 20 seconds.



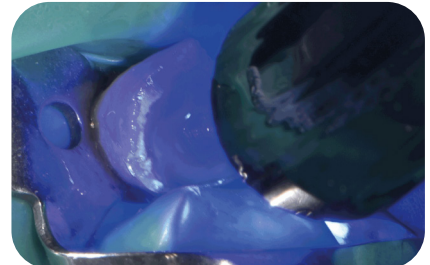
[Figure. 9] After cleaning the surface of the post with an alcohol sponge, apply Silane to the surface.



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



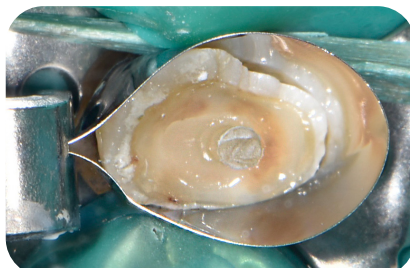
[Figure. 11] Insert the post immediately into the post space within 1 min after resin cement application.



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



[Figure. 13-1] Cutting fiber post with diamond bur.



[Figure. 14] Put the matrix on the post.



[Figure. 15-1] Build-up it with Core-it® Dual slowly so that there are no air bubbles.



[Figure. 15-2] Light curing for 20 seconds.



[Figure. 16] Remove matrix and perform final preparation.



[Figure. 1-17] After treatment.

The End

The major difference from the metal core is that it has anisotropy in strength by using 'Core it' and 'Fiber Post' 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.

You're
the Artist



Core·it

No Worries of Slumping

Core·it® Dual

Dual Cured Flowable Core Build Up Resin

Advantages

- Excellent flow and thixotropy
- Low polymerization shrinkage
- High compressive strength
- Cuts like dentin
- Excellent radiopacity
- Convenient operation without slumping
- Available shade : Tooth(Yellow), Blue, White
- Working time : 1m 30s / Setting time : 4m

Cartridge
type

