Esthetic Reconstruction Using Glass Fiber Reinforced Composite

In the modern world we would be lost without fiber technology. All kinds of fibers are around us such as carbon fibers, aramid, polyethylene and glass, used in the construction of airplanes, ships, cars, yachts, surfboards, cables and many more everyday items. Fibers are light weight but have a very high loading capacity. Esthetic dentistry also takes advantage of the qualities of glass fibers. A single fiber of glass is flexible and soft, but when they are a bunch of fibers or a matt embedded in a synthetic resin matrix, they become extremely resilient for the duration and weigh almost nothing. Moreover, glass fibers are transparent therefore well suited for esthetic dentistry. Fibers are silanized as well as bonded and embedded into composite material; and after light curing without a separate layer, they form a solid laminate. This guarantees the best physical properties under exposure and good resistance in the oral micro flora because of their good adaptation and polishing. Glass fibers are used in modern esthetic dentistry for both direct and indirect applications. (Fig. 1)

Figure 1: Dentapreg™ system
Direct Technique

- Esthetic PA-splinting of loosened teeth - intra-dental, inter-incisal and external (Fig. 2, 3)
- Esthetic invisible retention after orthodontic treatment
- Reinforcement of composite restorations (Fig. 4)
- Provisional spontaneous bridges with extracted tooth (Fig. 5)
- Supported core build up with glass fiber endodontic posts
- Space maintainers in mixed dentures
- Para pulpal post and core with mini glass fiber pins
- Reinforcement of shattered dentures
- Reinforcement of provisional bridges

**Figure 2, 3:** Esthetic splinting of anterior (Fig. 2) and posterior (Fig. 3) teeth

**Figure 4:** Fiber reinforced filling

**Figure 5:** Provisional spontaneous bridges with extracted tooth
**Semi Direct Technique**

- Bridges as long term provisionals
- Maryland bridges (Fig.6)
- Inlay bridges (Fig.7)
- Reinforcement of resin dentures

![](image1)

*Figure 6: Maryland Bridges*

![](image2)

*Figure 7: Inlay-Onlay Bridge*

**Indirect Technique**

- Inlay-onlay-bridges
- Long term retainer in orthodontics
- Bite-guards in functional therapy
- Bases for denture - fiber frames replacing casting frames
- Metal-free telescope crown prosthesis on zirconia inner telescopes (Fig. 8)

![](image3)

*Figure 8: Metal-free telescope crown prosthesis on zirconia inner telescopes*
Excellent results can be achieved using the direct and indirect glass fiber technique, especially for esthetics and function and under the focus of modern dentistry, so this technology has become a major part of everyday use in the dentist’s practice.

With these indications the DENTAPREG™ system has proved the best balance of properties, handling and cost. With its uni-directionally aligned fiber (Fig. 9) and woven fiber resin pre-impregnated strips (Fig. 10), it is a sophisticated technical product with direct light polymerization based on the research of Professor Jancar from the University of Brno CZ, the pioneer of glass fiber technology in dentistry.

Products & Implementation

Dentapreg™ strips consist of smoothly structured, flexible glass fibers which are characterized by extremely high cohesiveness. They are coated with biocompatible light curing resin. This product was patent-registered and may be used either directly or indirectly. Dentapreg™ products are used in the dental practice as well as in the laboratory and do serve - among other things - for the solution of single tooth gaps and multiple tooth gaps, the reinforcement of long-term provisionals as well as the splinting of mobile teeth in periodontology and traumatology.

Dentapreg™ is ideal for setting up stress free posts, core build up and post orthodontic retainers.

Advantages And Features At A Glance

- Clinical reliability
- Outstanding esthetics
- Minimally invasive
- Desired minimum stress biomechanics
- Safe and simple application
- Competitively priced
- Treatment procedure without any additional auxiliary materials
- Compatibile with most light-cure filling and C&B composites
- Each Dentapreg™ product is characterized by its translucency and matches with the natural colour of the teeth
Dentapreg™ strips of variable width for specific applications are available.

**SFM (woven fibers)**
for splinting (2 x 0.3 x 50 mm, E-glass/ 7,300 fibers):
- Oral and vestibular splinting (periodontology; traumatology)
- Post-Orthodontic retainer
- Space maintainer in orthodontics

**SFU (uni-directionally aligned fibers)**
for splinting (2 x 0.3 x 50 mm, S-glass/ 4,200 fibers):
- Oral, vestibular and occlusal splinting (periodontology; traumatology)
- Post-Orthodontic retainer
- Space maintainer in orthodontics

**PFM (woven fibers)**
for prosthetics/ bridge anterior (3 x 0.3 x 50 mm, E-glass/ 10,700 fibers):
- Temporary and long-term provisional in front teeth region

**PFU (uni-directionally aligned fibers)**
for prosthetics/ bridge posterior & repairs (3 x 0.3 x 50 mm, S-glass/ 8,400 fibers):
- Temporary and long-term provisory in posterior teeth region
- Repairing and enhancement of prosthesis
- Anatomic endodontic posts
- Fiber reinforced frameworks

**UFM (woven fibers)**
for prosthetics/ bridge anterior (6 x 0.1 x 50 mm, E-glass/ 10,500 fibers):
- Strengthening of large restorations and composite crowns
- Repairing and enhancement of prosthesis

**PFUI (uni-directionally aligned fibers)**
for prosthetics (3 x 0.3 x 150 mm, S-glass/ 8,400 fibers):
- FRC support overdenture

In contrast to other products using dry fibers, which require pre-soaking in the practice to impregnate with resin, the Dentapreg™ products consist of resin pre-impregnated fiber strips similar to the composite pre-pregs used in the aerospace industry. When using Dentapreg™, it is not necessary to impregnate the strips with resin before use as they are pre-treated individually before they are packed. This means a simple and time efficient procedure for both the dentist and the dental technician, thus saving costs and an increased case load.