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The Thermafil System

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The Thermafil Obturation Technique was derived from an original idea by Dr. W.B. Johnson who first described it in an article published in the *Journal of Endodontics* in 1978. Commercialized in the beginning of the 90's, the first Thermafil obturators were similar to steel K files with the file covered in a uniform layer of gutta-percha; this was then heated in the blue part of the bunsen burner flame (the coldest part) and then placed in a canal already filled with sealer and sectioned at the level of the pulp floor. However, the final obturation was characterized by the presence, in the center of a sealer and gutta-percha layer, of a solid steel core that could cause operative difficulties in post placement and especially in retreatment. After about ten years of first appearing on the market, currently Thermafil obturators are completely modified and form an integral part of a complete and sophisticated system of root canal obturation that, when used correctly, can give optimal results.

COMPONENTS OF THE THERMAFIL OBTURATION SYSTEM

Thermafil Obturators

The Thermafil obturator consists of two parts, the carrier and the gutta-percha (Fig. 26.1).^{6,10,12,28}

The carrier (Fig. 26.2) is similar to a manual endodontic instrument without the blades, made from a special radio-opaque plastic; it is distinguished by a coloured grip and a 25 mm extension with a groove along its length which has two functions:

- to increase the flexibility of the carrier while reducing its mass
- to facilitate retreatment by creating a space between the carrier and canal walls.

Along the shaft and grip at 18, 19, 20, 22 and 24 mm from the tip, there are circular reliefs, which are a useful reference to check the penetration of the obturator (Fig. 26.2).

The colour of the grip indicates the diameter of the carrier tip using the ISO classification. The plastic of the carrier is a derivative of polysulfone perfectly inert and biocompatible if it should accidentally come into contact with the periapical tissues;^{22,25} its flexibility allows it to adapt as well to very curved canals with maximum ease. The Thermafil obturators are available in two different versions based on the characteristics of diameter and taper:

- Classic Obturators, are available in 17 sizes with the tip diameter from 0.20 to 1.40 mm with taper between 4 and 5% (Fig. 26.3). These obturators are very versatile: the variety of diameters at the tip in fact allow their use in most variations of endodontic anatomy while their taper adapts to the canal preparation obtained with the use of most Nickel-Titanium instruments currently commercially available.
- GT Thermafil Obturators were introduced by L.S. Buchanan to complement the GT Endodontic files. The GT Thermafil corresponds exactly to the GT

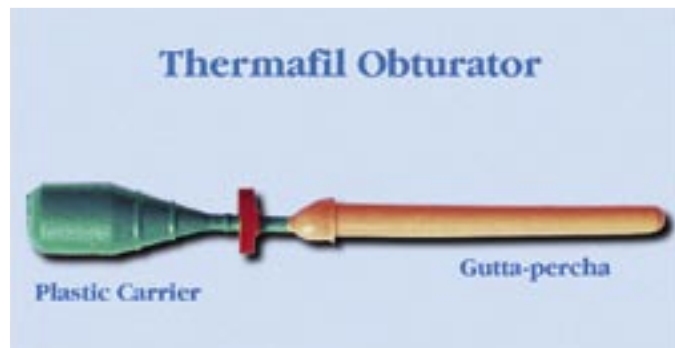


Fig. 26.1. Thermafil Obturator: The carrier in plastic is roughly wrapped in gutta-percha for about 16 mm.

rotary files with the only exception that the carrier taper is slightly less than that of the GT file to prevent contact of the carrier with the canal walls and to leave space for the flow of gutta-percha and sealer (Fig. 26.4). The GT Thermafil are available in the following four series (Fig. 26.5).

- Series 20 consisting of 4 obturators with taper .04, .06, .08 and .10 with the tip diameter of 0.20 mm and a maximum diameter of 1.00 mm.
- Series 30 consisting of 4 obturators .04, .06, .08 and .10 with the tip diameter of 0.30 mm and a maximum diameter of 1.00 mm for the GT Thermafil 30 .04, .06
- and .08 and 1.25 for the GT Thermafil 30 .10.
- Series 40 consisting of 4 obturators with taper .04, .06, .08 and .10 with the tip diameter of 0.40 mm and a maximum of 1.00 mm for GT Thermafil 40 .04, .06 and .08 and 1.25 mm for the GT Thermafil 40 .10.
- Large series consisting of three obturators: 35 .12 with tip diameter of 0.35 mm and maximum diameter of 1.25 mm, 50.12 with tip diameter of 0.50 mm and maximum of 1.50 mm, and 70.12 with tip diameter of 0.70 mm and maximum diameter of 1.50 mm.

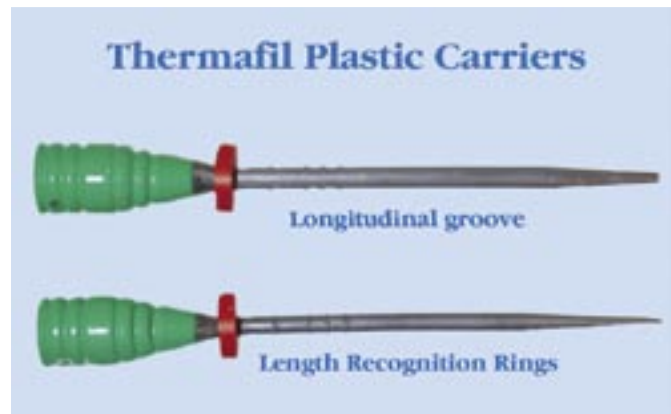


Fig. 26.2. Plastic carrier characterized by a longitudinal groove and circular reliefs which are depth reference points to check depth of insertion of the obturator. There is also a rubber stop.



Fig. 26.3. The classical Thermafil obturators are available in 17 sizes and in packs of 6 or assorted sizes for anterior and posterior teeth.

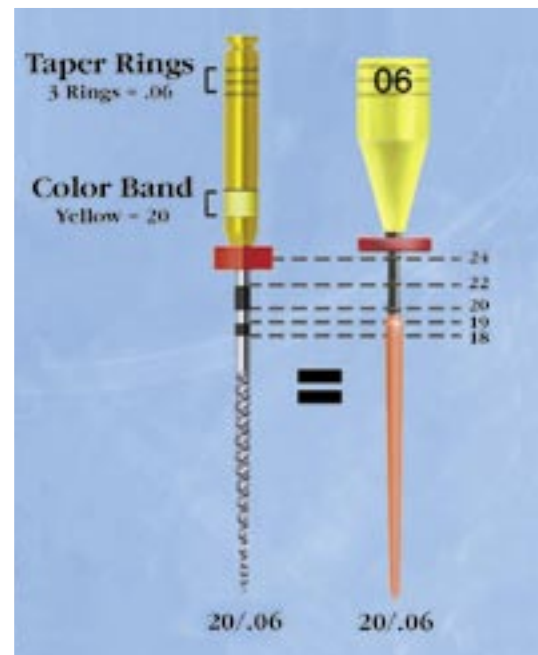


Fig. 26.4. The GT Thermafil obturators are available in 4 series perfectly corresponding to the taper and diameter of the GT Rotary file.