Obtaining a high-quality impression with a new elastomeric material.

By Christopher J. Baer, DMD

One essential skill for every restorative dentist is the ability to produce a final impression accurately and quickly. Failure to do so can result in poorly fitting restorations, increased chairtime and costly remakes; however, this skill is not easily obtained and can often lead to frustration for the dentist, staff, and even the patient. It is up to the dentist to select the best impression material to produce the desired result, while taking into consideration the clinical objectives of the case.

There has been an evolution of impression materials—from the reversible hydrocolloid in the early half of the 19th century to the polyether materials introduced in the 1960s, and most recently the vinylpolysiloxanes (VPS) in the 1970s. The hydrocolloid was known for its accuracy, but the armamentarium required was often cumbersome and took up space in the operatory. Polyether impression materials were well liked because of its innate hydrophilicity, "snap-set" behavior, long working time, and good flow characteristics.

VPS impression materials were chosen because of its easy removal from the mouth, ability to recover after the deformation that occurs during removal, and their lack of taste and odor commonly experienced with polyether materials.

Advances in elastomeric chemistries have given birth to a new generation of impression materials: a combination of a polyvinyl and a polyether impression material, called Vinylsiloxanether® (VSXE®). It combines some of the most desired properties of both into one material. Identium®, a VSXE®, is produced by Kettenbach GmbH & Co. KG (www.kettenbach.us/dental) and combines these two chemistries to make an impression material that is extremely hydrophilic and has excellent flowability.

Flowability/Thixotropicity

When the material is syringed around a tooth, its smart thermosensitive-rheology system allows it to flow deep into the narrowest portions of the sulcus, allowing the material to capture detail below the prepared margin. While it is highly flowable, it remains where it is injected and does not drip from the teeth into the back of the patient's mouth.

Hydrophilicity

Hydrophilicity is one of the most desirable and essential properties of an impression material. Identium® impression material quickly develops its hydrophilicity and provides an accurate impression in the narrowest of spaces even in a moist sulcus and with the lowest achievable contact angle (less than 10°) after 1 second. Because the hydrophilicity is maintained throughout the entire working time of the material, it is able to produce a well-defined impression with crisp marginal details.

"Double-Snap" Behavior

The hybridization of the two types of impression materials allows for a long working time (a desired characteristic of polyethers) and a short set time (a desired characteristic of VPS). All three Identium® viscosities (medium, heavy, and light) have a total working time of 1 minute, 15 seconds, and an intraoral setting time of 2 minutes, 15 seconds. This "double-snap" behavior occurs at the end of the working time—first there is a noticeable viscosity snap, which is followed by a cross-linkage snap that minimizes the opportunity for distortion upon removal and maximizes the accuracy of the impression. As a result of the working time kinetics, the material can be used not only for single-unit impressions but also for much larger cases involving multiple units.

Case Presentation
A 55-year-old patient presented to the office for treatment of tooth No. 29. He had a large existing composite with recurrent decay. The patient requested that the shade of the new restoration be matched to the crown on tooth No. 30 (Figure 1). The existing restoration and decay were removed and a core build-up was placed. The tooth was prepared for a full-coverage NobelProcera® zirconia crown (Nobel Biocare, www.nobelbiocare.com). Once the tooth was prepared, retraction cord (Ultrapak® No. 00, Ultradent Products, www.ultradent.com) was placed to displace the tissue and gain access to the margins. A single cord was used in this technique, and was left in place during the impression.

To make the impression, the tooth was dried, and a non-perforated stock tray was painted with Identium® Tray Adhesive (Figure 2). Identium® Light fast-set impression material was syringed into the sulcus and covered the preparation (Figure 3). At the same time, the tray was filled using Identium® Heavy fast-set impression material. The tray was placed in the patient's mouth and held steady for 2 minutes, 15 seconds. Upon removal, the impression was inspected and sanitized (Figure 4). The impression was sent to the laboratory for pour-up and die fabrication (Figure 5), and the final restoration was delivered with minimal adjustment required (Figure 6).

**Conclusion**

The Identium® line of impression material is a combination of polyether and VPS impression material chemistry, resulting in a new category of impression materials—VSXE®. This new material has been optimized for the one-step impression technique or the monophase technique. Identium® is a multi-purpose type of impression material that can be used for impressions of implants, crowns/bridges, veneers, inlays/onlays and even full or partial dentures. Using proper technique and with a multi-purpose impression material such as Identium®, it is now easier to efficiently obtain predictable, accurate, high-quality impressions in the dental practice.

**Disclosure**

Dr. Baer received material support from Kettenbach GmbH & Co. KG for writing this article.

**References**


**About the Author**

Christopher J. Baer, DMD
Private Practice
Aurora, Colorado