

Impregum™

Polyether Impression Material



Clinical case studies
from around the world

3M ESPE

Introduction

Dear dental professional,

As the best known brand in impressioning, Impregum™ Polyether Impression Material meets the most demanding challenges of modern prosthodontics. Its intrinsic hydrophilicity, excellent flow properties, “snap set” characteristics and high dimensional stability contribute to the material’s extremely precise detail reproduction. Therefore, many dental technicians in Europe and in the U.S. recommend materials of the Impregum™ product family to their dentists.

This brochure presents an impressive array of recent clinical cases from dentists around the world. The documented examples range from veneers and single-unit crowns to complex cases with implant-based all-ceramic bridges.

The Impregum™ family offers a rich selection of polyether impression materials for the monophase and the 1-step heavy body/light body technique. Impregum™ Penta™ Soft Materials enhance patients’ comfort due to their fresh minty taste and more easy removal. Recently fast-setting Impregum™ Impression Materials were introduced that complement the range of regular setting products. Together with the new, fast Pentamix™ 3 Automatic Mixing Unit Impregum™ Penta™ Polyether Impression Materials form an excellent and highly reliable team that reduces stress and maximises clinical success.

Enjoy reading. Feel inspired by the subsequently presented treatment solutions. The nine cases demonstrate how Impregum’s legendary precision easily translates into excellent clinical results.

Best regards



Dr. Al Viehbeck
3M ESPE Global Technical Director

3M ESPE Seefeld, Germany/St. Paul, U.S.A., March 2010

From prep to crown: Impregum™ Impression Material in the daily practice

Gabriele Enderle, Martin Groten; Tübingen, Germany

Initial situation: The insufficient PFM bridges were more than 10 years old. The patient needed a prosthetic rehabilitation of the maxilla for functional reconstruction and occlusal harmonisation after orthodontic treatment of the mandible (Fig. 1).

Treatment plan: The insertion of temporary bridges was planned, followed by the final restoration with three 4-unit Lava™ Bridges for teeth 13–16, 23–26 and 12–22. After the removal of the old bridges, the abutments had to be extensively pre-treated (removal of caries; direct insertion of post abutments at 16 and 26). A precision impression was made using the double-cord technique (Fig. 2) and the 1-step tray/wash technique with Impregum™ Penta™ H DuoSoft™ and Impregum™ Garant™ L DuoSoft™ Polyether Impression Materials (Fig. 3) followed by a preliminary impression with Position™ Penta™ Quick VPS Alginate Replacement in a single-use Position™ Tray which served as key for the temporaries (all 3M ESPE). Protemp™ 3 Garant™ (3M ESPE) was syringed around the preparation on the model to ensure a complete reproduction of the preparation margins. Then the model was inserted into the impression which had been filled with Protemp 3 Garant (Figs. 4–5).

After removal, shaping (Fig. 7) and surface treatment with rotating instruments, the self-cured temporary was individually built up using Sinfony™ Light-Curing Composite (Fig. 8).

In contrast to the old restoration, the static and dynamic occlusal relations now are balanced after reconstruction with incisal/canine guidance (Figs. 11–12).



Fig. 1: Initial situation.



Fig. 2: Maxilla following preparation and before taking the impression.

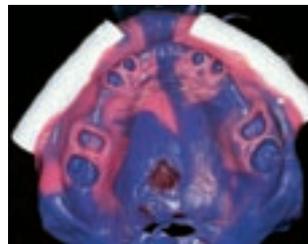


Fig. 3: Precision impression with Impregum™ Penta™ H DuoSoft™ and Impregum™ Garant™ L DuoSoft™ Polyether Impression Material from 3M ESPE.



Fig. 4: Protemp™ 3 Garant™ (3M ESPE) being dispensed into the preliminary impression.



Fig. 5: Preliminary impression with composite replaced onto the cast.



Fig. 6: Elastic phase of Protemp™ 3 Garant™ (3M ESPE).



Fig. 7: Trimming the temporary.



Fig. 8: Individualisation of the temporary.



Fig. 9: Light curing of added composite.



Fig. 10: Finally polished temporaries.



Fig. 11: Occlusal overview of the maxilla after placing the temporaries using RelyX™ Temp NE from 3M ESPE.



Fig. 12: Anterior view after inserting the temporaries.

All-ceramic bridge

Martin Groten, Tübingen, Germany

Initial situation: Tooth 12 needed to be extracted. Recommended restoration: a full-ceramic bridge that replaces the existing crowns on teeth 11 and 13 (Fig. 1).

Treatment plan: After extraction of 12 and removal of existing full-ceramic crowns on 11 and 13 the preparations were adapted to the new situation. Using the vacuum foil technique a temporary resin bridge using Protemp™ 3 Garant™ (3M ESPE) was built with an extended pontic design to form the gingiva for the new bridge (Figs. 2–5). Complications in the healing process required a revision of the alveolus with an advanced gingival retraction. Therefore the temporary bridge had to be modified by the addition of resin (3M™ ESPE™ Sinfony™ Light-Curing Composite) to the bridge span to form a new pontic. Two weeks later (Fig. 6) a precision impression (Figs. 7–8) of the prepared teeth was taken with Impregum™ Penta™ DuoSoft™ Polyether Impression Material (3M ESPE) as well as an impression of the opposing jaw using Position™ Penta™ VPS Alginate Replacement (Fig. 9), followed by a bite registration with Imprint™ Bite VPS Bite Registration Material (Fig. 10) (both 3M ESPE). The stone cast shows the perfect quality of the precision impression (Fig. 11). Eight weeks later the final full-ceramic bridge could be temporarily cemented for the adaptation phase. Fig. 12 shows the final situation after two months.



Fig. 1: Initial situation: 12 to be extracted, new bridge from 11 to 13 necessary.



Fig. 2: Filling vacuum foil with Protemp™ 3 Garant™ from 3M ESPE.



Fig. 3: Protemp™ 3 Garant™ after setting featuring all details.



Fig. 4: Preparation of temporary resin bridge.



Fig. 5: Finished temporary resin bridge.



Fig. 6: Clinical situation after 2 weeks.

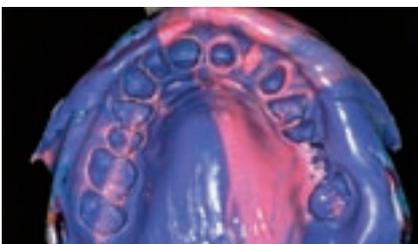


Fig. 7: Precision impression of upper jaw using Impregum™ Penta™ DuoSoft™ Polyether Material from 3M ESPE.



Fig. 8: Perfect precision impression.



Fig. 9: Impression of opposite jaw using Position™ Penta™ VPS Alginate Replacement (3M ESPE).



Fig. 10: Bite registration using Imprint™ Bite VPS Bite Registration Material from 3M ESPE.



Fig. 11: Exact stone cast.



Fig. 12: Final situation after 2 months.

Replacement of missing teeth

Luca Ortensi, Bologna, Italy

Initial situation: A 25 year old male patient manifested pain in the second left bicuspid. The clinical and radiographic examination revealed a metal-resin crown on the second bicuspid with an extension which replaced the first bicuspid. An amalgam restoration was present on the first molar (Figs. 1 – 2). The second bicuspid presented a carious lesion. The suggested treatment option was a fibre-reinforced bridge between the second premolar and the palatal surface of the canine as replacement of the metal-resin bridge, after curing of the carious lesion. An indirect composite restoration was proposed to replace the old amalgam filling on the molar.

Treatment plan: The teeth were isolated with a rubber dam. The amalgam restoration and the metal-resin bridge were removed with high-speed tungsten carbide burs (Fig. 3). The carious lesion on the second bicuspid was eliminated and a build-up was carried out with Filtek™ Flow Restorative from 3M ESPE (Fig. 4). The first molar was prepared with a diamond bur to obtain butt-joint margins and rounded internal line angles. The premolar was prepared with butt margin and rounded surfaces (Fig. 5). An impression of the prepared teeth was taken using Impregum™ Penta™ H/L DuoSoft™ Polyether Impression Material (3M ESPE) (Fig. 6). The impression was poured with high-strength dental stone for master model fabrication (Fig. 7). The fibre-reinforced composite bridge and the indirect composite restoration were constructed on the master model in layering technique using Sinfony™ Light-Curing Composite (3M ESPE) and Vectris® Fibre Reinforced Composite (Ivoclar Vivadent) (Fig. 8).

The abutments were sandblasted with 50 microns aluminium oxide to obtain a clean surface. The overlay was cemented with RelyX™ Unicem Self-Adhesive Universal Resin Cement (3M ESPE). The fibre-reinforced composite bridge was cemented with two different systems at the same time. We used RelyX Unicem cement for the premolar and RelyX™ ARC Adhesive Resin Cement (3M ESPE) for the canine, due to the large amount of enamel present on the canine preparation. Before the cementation, the palatal surface of the canine was acid-etched for 30 sec. and treated with Adper™ Scotchbond™ 1 XT Adhesive (3M ESPE). The luting composite was light-cured for 120 sec. Following the removal of the rubber dam, the occlusion was adjusted with diamond finishing burs (Fig. 9).



Fig. 1: Pre-operative view shows metal-resin bridge and amalgam restoration to be removed.



Fig. 2: X-ray shows infiltration of the carious lesion at the margin of the crown (distal zone).



Fig. 3: The operative area was isolated with rubber dam. It is possible to see the carious lesion in the distal zone of premolar.



Fig. 4: Build-up of the first molar with Filtek™ Flow Restorative (3M ESPE).



Fig. 5: Preparation of the premolar. An adhesive preparation was made with butt margin and rounded surfaces.



Fig. 6: Precision impression made with Impregum™ Penta™ H/L DuoSoft™ Polyether Impression Material (3M ESPE).



Fig. 7: Master model. It is possible to see the preparation of the distal surface of the canine.



Fig. 8: The external aspect of the fibre-reinforced composite bridge was completed and returned to the clinician for try-in.



Fig. 9: Post-operative occlusal view of the fibre-reinforced composite fixed partial denture. Note the good integration and the natural effect obtained by the restoration.

Core build-up with fibre posts and zirconia crowns

Carlos Sabrosa, Brazil

Initial situation: Four large fillings in the posterior area are insufficient and need to be removed (Fig. 1).

Treatment plan: After removal of the fillings, preparation, root canal treatment (Fig. 2) and core build-up with RelyX™ Fiber Posts (Fig. 3) the teeth are prepared for four Lava™ Zirconia Crowns (Fig. 4) (both 3M ESPE). Lava™ Zirconia Crowns allow a perfect fit. To achieve optimal results the precision impression for the zirconia crowns is made with the wash material Impregum™ Garant™ L DuoSoft™ Polyether Impression Material and the tray material Impregum™ Penta™ H DuoSoft™ Polyether Impression Material (Fig. 5) (both 3M ESPE). The Lava™ copings from the milling center were first tried in (Fig. 7) before they were sent to the lab for finishing. In a last step the crowns are cemented with RelyX™ Unicem Self-Adhesive Universal Resin Cement (Figs. 9–10) from 3M ESPE.



Fig. 1: Initial situation: Insufficient fillings need to be removed.



Fig. 2: Clinical situation after placement of rubber dam, preparation of the teeth and root canal treatments.



Fig. 3: The core build-ups are made with glass fibre reinforced RelyX™ Fiber Posts (3M ESPE).



Fig. 4: After the core build-up, the teeth are prepared for the Lava™ Zirconia Restoration.



Fig. 5: Precision impression made with Impregum™ Garant™ L DuoSoft™ and Impregum™ Penta™ H DuoSoft™ Polyether Impression Material (both 3M ESPE).

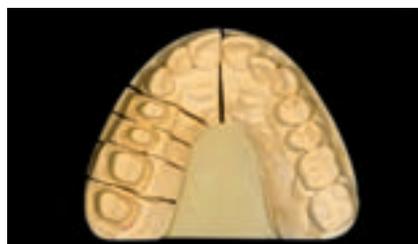


Fig. 6: A stone model is produced in the dental lab.



Fig. 7: The Lava™ Zirconia copings fabricated in the milling center are tried in.



Fig. 8: The finished restorations are placed on the model.



Fig. 9: RelyX™ Unicem Self-Adhesive Universal Resin Cement from 3M ESPE is applied.



Fig. 10: Crowns are cemented in the mouth.



Fig. 11: Final result.



Fig. 12: Occlusal view of the final restoration.

Impression-taking during all-ceramic rehabilitation

Martin Groten, Tübingen, Germany

Initial situation: A patient, around 50 years of age, requested new restorations to cure the problem of exposed dark crown margins (Fig. 1). Chronic marginal periodontitis with gingival recession caused by inflammation had become established, not at least due to the insufficient crown margins. The patient was not aware of this disease.

Treatment plan: In order to treat the periodontitis, the anterior crowns were removed and deep scaling was performed (Fig. 2). In the healing phase the approximately prepared stumps were restored with a directly fabricated acrylic temporary restoration. Fig. 3 shows the anterior overview prior to taking the impression using the double-cord technique. The two retraction cords, sizes 0 and 1 (Ultrapak® Cord, Ultradent) with styptic (Septodont) lie on top of each other in the periodontal space. With the cords in place the bite was taken with Dimension™ Bite VPS Bite Registration Material (3M ESPE). Fig. 4 shows the impression site after removal of the upper cord (size 1). Then, a precision impression was made using Impregum™ Penta™ and Permadyne™ Polyether Impression Materials (both 3M ESPE) (Fig. 5). On the plaster cast all preparation margins are clearly visible. The gingiva was reliably held back by the retraction cords. The patient wore the temporary anterior restorations for a period of nine months while the posterior restoration was being completed. The entire arch was then reconstructed and harmonised with all-ceramic crowns and bridges (Fig. 6).



Fig. 1: Pre-operative view showing discoloured anterior teeth.



Fig. 2: After removal of the crowns deep scaling was performed to treat the periodontitis.



Fig. 3: Bite registration with placed retraction cords using Dimension™ Bite VPS Bite Registration Material (3M ESPE).



Fig. 4: Impression site after removal of the upper cord.



Fig. 5: Precision impression made with Impregum™ Penta™ and Permadyne™ Polyether Impression Materials (both 3M ESPE) shows good detail reproduction.



Fig. 6: Final restoration with all-ceramic crowns and bridges.

Implant-based all-ceramic crown

Carlos Sabrosa, Brazil

Initial situation: The gap caused by a missing tooth needs to be closed. The recommended solution is an implant-based Lava™ Zirconia Crown.

Treatment plan: After gingiva forming (Fig. 1) and insertion of an impression transfer post (Fig. 2) a precision impression is made (Figs. 2–3). Impregum™ L DuoSoft™ Quick and Impregum™ Penta™ H DuoSoft™ Quick Polyether Impression Materials (both 3M ESPE) are the materials of choice. They offer reliable rigidity as well as excellent flow properties and high hydrophilicity to obtain a very precise impression of the surrounding tissue. The all-ceramic abutment and the 3M ESPE Lava™ Zirconia Crown from the lab (Figs. 4–5) are cemented with RelyX™ Unicem Self-Adhesive Universal Resin Cement from 3M ESPE (Figs. 6–8).



Fig. 1: Clinical situation after gingiva forming.



Fig. 2: Impregum™ L DuoSoft™ Quick Polyether Impression Material (3M ESPE) is placed around the inserted impression transfer post.



Fig. 3: An accurate final impression is achieved with the wash material in combination with Impregum™ Penta™ H DuoSoft™ Quick Impression Material (3M ESPE).

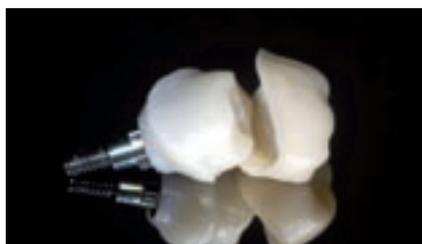


Fig. 4: The all-ceramic abutment and the Lava™ Zirconia Crown (3M ESPE) are produced in the lab.



Fig. 5: The all-ceramic abutment is placed on the implant.



Fig. 6: Cementation of the Lava™ Zirconia Crown with RelyX™ Unicem Self-Adhesive Universal Resin Cement (both 3M ESPE).



Fig. 7: Placement of the crown on the abutment: Excess cement is visible and needs to be removed.



Fig. 8: Final clinical situation with the highly aesthetic Lava™ Zirconia Crown in situ.

Implant-based Lava™ Crowns

André Piwowarczyk, Germany

Initial situation: Free-end gap in the fourth quadrant with missing teeth 44, 45, 46 and 47 (Fig. 1): The patient favoured a restoration with four implant-based single-unit Lava™ Zirconia Crowns from 3M ESPE.

Treatment plan: After insertion of the four Astra Tech implants an orthopantomogram (Fig. 2) is made. For the subsequent precision impression with the pick-up impression technique an individual tray is used (Fig. 4). The selected 3M ESPE Impregum™ Penta™ Polyether Impression Material is a monophasic material that offers high hydrophilicity and high-end hardness which is important for this technique: When the set impression is removed the impression posts stay in the impression material (Fig. 5). The four finished Lava™ Zirconia Crowns (3M ESPE) from the dental lab (Figs. 6–7) finally are cemented with Durelon™ Carboxylate Luting Cement from 3M ESPE (Fig. 8).



Fig. 1: Free-end gap in the fourth quadrant with missing teeth 44, 45, 46 and 47.

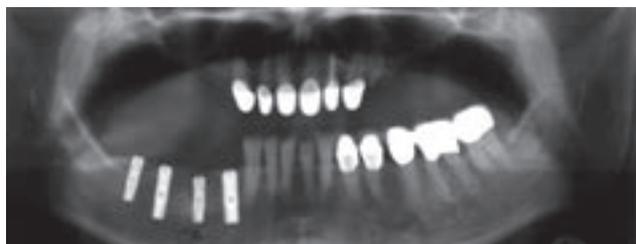


Fig. 2: Orthopantomogram after implantation (Astra Tech implants in region 44/46 with 4.0 mm diameter and 13 mm length, and in region 45/47 with a diameter of 3.5 mm and a length of 11 mm).



Fig. 3: The periimplant soft tissue is free of inflammation.



Fig. 4: Try-in of the individual tray for the pick-up impression technique, the screw thread holes of the impression posts are covered with wax.



Fig. 5: After loosening the fixing screw, the impression posts remain in the impression material (Impregum™ Penta™ Polyether Impression Material, 3M ESPE).



Fig. 6: Finished single Lava™ Zirconia Crowns (3M ESPE) in regions 44, 45, 46 and 47 on the master cast.



Fig. 7: Facial view of the finished crowns on the model.



Fig. 8: All-ceramic crowns permanently cemented with Durelon™ Carboxylate Luting Cement (3M ESPE).

Implant-based zirconia crowns and bridges

André Piwowarczyk, Germany

Initial situation: The first clinical requirement was a bilateral sinus floor elevation in the maxilla. Thereafter a completely implant-based restoration was recommended, including two anterior Lava™ Zirconia Crowns and two posterior Lava™ Zirconia Bridges (3M ESPE).

Treatment plan: After the bilateral sinus floor elevation six CAMLOG® implants are placed, two in regions 12 and 22 for the crowns and four in region 16, 14, 24 and 26 for the two bridges (Figs. 1–2). The precision impression (Fig. 3) is made with the reposition technique. The reposition aids of the two-piece transfer posts remain in the set impression material. In this especially challenging case accurate reproduction is mandatory. The impression material needs uncompromised hydrophilicity and a rigidity that resists any disturbance. The material of choice is the monophasic material Impregum™ Penta™ Polyether Impression Material from 3M ESPE. The Lava™ Restorations (Fig. 4) are cemented with Durelon™ Carboxylate Luting Cement (both 3M ESPE) (Fig. 5).



Fig. 1: Initial clinical situation in the maxilla. A bilateral sinus floor elevation was planned with subsequent placement of CAMLOG® implants with a diameter of 4.3 mm and a length of 13 mm in region 16, 14, 24, 26. For regions 12 and 22, CAMLOG® implants with a diameter of 3.8 mm and 13 mm length were stipulated.



Fig. 2: In accordance with the treatment protocol, the implants are positioned with vestibular orientation of one groove in each case.



Fig. 3: In two-piece transfer posts, the reposition aids remain in the impression material if the reposition technique is used. In this case, Impregum™ Penta™ Polyether Impression Material (3M ESPE) is used.



Fig. 4: Finished Lava™ Zirconia Crowns in region 12 and 22 and posterior bridges (3M ESPE) with three units on the master cast.



Fig. 5: All-ceramic restorations in the maxilla permanently cemented with Durelon™ Carboxylate Luting Cement (3M ESPE).

Veneer restoration

Elie Zebouni, Lebanon

Initial situation: The 40 year old female patient presented because she was not satisfied with the appearance of her front teeth (Figs. 1–2). The diagnostic stage was achieved in a two-step approach including the elaboration of a diagnostic wax-up and the production of a corresponding template to be evaluated in vivo by the patient and the clinician.

Treatment plan: The wax-up starts by defining the vertical dimension of the teeth. Basic tooth shapes are determined by the vertical proximal crests, the differential placement and contouring of the transition line angle can easily generate the illusion of a shorter or wider tooth. The second step of the wax-up procedure is to create the horizontal component of surface topography (Fig. 3). Also a diagnostic mock-up is performed. On the wax-up, a highly accurate silicon index is made and placed on the unprepared teeth with self-curing composite material (Figs. 4–5). Subsequently a heat-processed acrylic provisional is fabricated on the basis of the wax-up. After the preparation, a chamfer finish line and a palatal butt margin are created which provide the margin of the restoration with a strong bulk of porcelain. Due to the original prominence of the teeth, dentin exposure can not be avoided (Fig. 6). Prior to the precision impression the dentin is immediately sealed with adhesive. Two retraction cords are placed and the 1-step impression technique with Impregum™ Penta™ Soft Polyether Impression Material (3M ESPE) provides an exact reproduction of the preparations and the surrounding tissues (Fig. 7). The heat-processed provisionals are relined and cemented with RelyX™ Temp NE Temporary Cement (3M ESPE). To cement the veneers RelyX™ Veneer Cement (3M ESPE) was applied, followed by gentle air thinning. Each restoration is seated with gentle finger pressure while excess cement is removed from the margin. Light curing starts at the palatal aspect followed by the buccal aspect. Subsequently an air barrier is applied to the margin. The sequence is repeated incrementally for one veneer after the other. The margins of the final restorations are polished and the occlusion is checked (Figs. 8–9).



Fig. 1: Initial smile.



Fig. 2: The female patient desired an aesthetic improvement of her smile.



Fig. 3: Diagnostic wax-up.



Fig. 4: Markings on the mock-up indicate necessary coronal corrections.



Fig. 5: Finished diagnostic mock-up.



Fig. 6: Finished preparation.



Fig. 7: Impression made with Impregum™ Penta™ Soft Polyether Impression Material (3M ESPE).



Fig. 8: Clinical result.



Fig. 9: A strong improvement of the patient's smile is achieved.

Our Espertise™ guidebooks – your resource for optimum results.

→ Espertise™ Impressioning Compendium

A formula for success: All about impressioning – with expert theoretical and practical knowledge that provides valuable guidelines on achieving a perfect professional outcome.

→ Espertise™ Impressioning Trouble Shooting Guide

Based on our experience, know-how and clinical input, this guide helps to identify common problems when making an impression and provides you with solutions.

→ Lab Handling Guideline

Brief guideline how to treat impressions made of either VPS or polyether impression material.

→ Scientific Booklet

Comprehensive collection of data demonstrating the performance of renowned Impregum™ Polyether Impression Material.



3M ESPE

3M ESPE AG
ESPE Platz
82229 Seefeld · Germany
E-Mail: info3mespe@mmm.com
Internet: www.3mespe.com

You + 3M ESPE =

Groundbreaking ideas for dentistry

Adper, Dimension, DuoSoft, Durelon, Espertise, Filtek, Garant, Impregum, Imprint, Lava, Penta, Pentamix, Permadyne, Position, Protemp, RelyX, Scotchbond and Sinfony are trademarks of 3M or 3M ESPE AG.

CAMLOG, Ultrapak and Vectris are not trademarks of 3M or 3M ESPE AG.

© 3M 2010. All rights reserved.

01 (03.2010)