Achieving a nuanced interplay of colours in four easy steps

Processing the polychromatic e.max Press Multi ingot

By Michael Spiegel, Liechtenstein

For sometime, Vflo®/Vivadent has been offering a polychromatic, that is multi-coloured, ingot for the press technique: the IPS e.max Press Multi ingot. These innovative ingots integrate a smooth shade progression. Nuanced shade gradients from the enamel to the dentine allow multi-coloured restorations to be pressed in a single sequence. The polychromatic press technique is surprisingly simple, as can be seen below.

(Fig. 1) This ingot features a smooth shade progression, similar to the shade gradation of the natural tooth. Only one press sequence is required to achieve a high level of chroma in the cervical and dentine areas and the desired level of translucency in the incisal region. Restorations that impress with their nuanced, lively appearance are the result.

The press technique is a proven method for creating monolithic all-ceramic restorations. The IPS e.max Press Multi ingot. Before or after the teeth have been suitably prepared for the placement of a ceramic restoration, the tooth shade is determined. As the shade of the remaining tooth structure has a substantial effect on the final aesthetic outcome, the shade of the preparation should also be determined, for instance by means of the IPS Natural Dent Material Shade Guide. If, additionally, photographs of the preparations are taken, important information can be transferred to the laboratory with virtually no loss of data. On the basis of this information, the shade of the ingot is selected. An impression is taken and a working model fabricated—usually a model with detachable segments. Generally, the spacer coating on the die plays an essential role in the accuracy of fit of the pressed ceramic restoration, as the investment material (flowable Vivadent) is coordinated with precisely specified parameters. The procedure for applying the spacer is essentially different from the procedure applied for monochromatic restorations.

Contouring

The preliminary work is not essentially different from the known procedures used in the press technique. After or before the teeth have been relatively little space: a thickness of 1.5 mm is required in the central area and a minimum thickness of 2.1 mm in the incisal region. In posterior crowns, the layer thickness should not be less than 1.5 mm.

Contouring is performed following the conventional guidelines on shape, morphology and function. Contouring represents another fundamental aspect of the efficient manufacture of high-quality restorations. The more accurate and detailed the contouring of the re- storation, the less reworking will be required later on. Once pressed, the restoration generally only needs to be glazed fired or, optionally, it may be customised with stains.

Investing

The Multi ingots are clearly more chromatic in the lower area than in the upper third. This gradation follows the gradation found in natural teeth. The question arises as to how the shade layers of the ingot can be transferred to the restoration so that they are positioned in the correct place. From this point onwards, the procedure is different from the conventional press technique. A special wax unpacking and processing accessories have been developed for the polychromatic press ingots.

The waxed-up object is laterally sprayed on the investment ring. In contrast to the conventional procedure, no wax sprues are used. Instead, prefabricated precision wax parts (IPS e.max Press Multi Wax Pattern), which resemble small wax platelets, are utilised for spraying. Depending on the restoration, either Form A or B is employed. Form A is indicated for large wax objects, such as maxillary anterior crowns (Fig. 2a), and the smaller Form B for delicate restorations (Fig. 2b). After the appropriate size has been chosen, the Wax Pattern is sprayed on the wax-up. The waxed-up restoration should be left on the model die while spraying to avoid damaging the restoration margins. A drop of wax is applied on the side of the Wax Pattern without altering its geometry. The conical side of the Wax Pattern is aligned towards the incisal area of the wax-up and the wax-up is carefully pressed against the wax. It is recommended to align the wax-up to the centre of the Wax Pattern in the investment ring.

Since the shade gradation of the Multi ingot should be transferred to the visible part of the restoration, the vestibular surfaces of the wax-up have to be aligned accordingly. Posterior crowns are sprayed on the mesioocclusal surface. Finally, the gap between the Wax Pattern and the wax-up is closed with a small quantity of modelling wax.

The IPS Multi Investment Ring Base has been specifically designed for the polychromatic press technique. The Multi investment ring contains four openings, which are congruent with the shape of the IPS Multi wax platelets. As a result, the sprayed wax-up can be accurately positioned in the investment ring. The investment ring base and/or occlusal surface of the wax-up should face the investment ring base. Unused openings in the investment ring base are sealed with wax. Another accessory of the IPS Multi system then comes into play: the IPS e.max Press Multi Sprue Guide. Similar to a template, the Sprue
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Guide is held against the loaded investment ring to check the correct sprueing (Fig. 5). The wax-up to be pressed should be positioned within the marked area. The distance to the investment ring base must not be less than 3 mm (Fig. 6).

The investment materials (IPS PressVEST or IPS PressVEST Speed) are applied using a conventional method. Once mixed, a small quantity of investment material is brushed on to the occlusal surface and/or on to the screw channel of hybrid abutment crowns, and the insides of the crowns are filled with investment material using a suitable instrument to prevent air from being trapped. After the IPS Silicone Ring has been placed on the investment ring base, the investment material is slowly poured into the investment ring up to the marking on the silicone ring. The IPS Investment Ring Gauge is positioned with a slightly hinged movement and then pressed into position. The investment material is allowed to set in a resting environment (Figs. 7a–c). Once set, the investment ring is preheated using a conventional method.

Pressing

The IPS e.max Press Multi system includes the IPS e.max Press Multi One-Way Plunger, a single-use plunger, which is used in addition to the IPS e.max Alox Plunger. With the appropriate programme having been selected on the press furnace, the cold IPS e.max Multi ingot is placed into the preheated investment ring with the blank side facing downwards. Next, the cold One-Way Plunger and the Alox Plunger are positioned (Fig. 8). The loaded investment ring is placed in the preheated press furnace and the press programme is started. As known from the conventional press technique, the investment ring should be immediately removed from the furnace after the press process has ended and allowed to cool slowly. Divesting is performed in the familiar way. The investment ring is separated using a separating disc and carefully broken apart at the predetermined breaking point (Fig. 9). Blasting with polishing beads at 4 bar (58 psi) pressure and then at 2 bar (29 psi) is recommended for removing the investment material (Fig. 10). The reaction layer is removed using IPS e.max Press Invex Liquid. The pressed object is immersed in Invex Liquid in a plastic cup, cleaned in an ultrasonic cleaner for 10–30 min and then rinsed under running water. The white reaction layer can then be completely removed with aluminium oxide (100 μm) at 1–2 bar (14.5–29 psi) pressure without leaving any residue (Fig. 11).

Staining

Finishing is performed with grinding tools suitable for high-strength glass-ceramics. Work is carried out at low speed and light pressure. Overheating of the ceramic must be avoided. The restoration is tried in on the die (without a spacer) and the occlusion and articulation are...
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If required, the dental technician will customise the restoration. However, this is not desired in all cases, and even without stains, the restoration appears natural and closely resembles a layered crown. Glaze firing is the final step in the procedure.

We recommend using fluorescent glaze material. The glaze is applied in a thin, but covering, coating. If minor adjustments are required after the glaze firing, they may be applied using IPS e.max Ceram Add-On materials.

Conclusion

IPS e.max Press Multi affords a streamlined procedure that supports the need for economic efficiency in the dental laboratory and yet does not entail sacrifices in aesthetic quality. What is so delightful about this material is that it allows you to do all, but does not require you to do everything. With or without stains, the restorations exhibit a natural variation of shade and translucency from the dentine to the incisal region. High aesthetics and high efficiency are combined with the proven material properties of lithium disilicate (IPS e.max Press), such as high strength. These properties are incorporated into the IPS e.max Press Multi ingot.