Achieving a nuanced interplay of colours in four easy steps

Processing the polychromatic IPS e.max Press Multi ingot

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For sometime, Ivoclar 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 multicoloured restorations to be pressed in a single sequence. The polychromatic press technique is surprisingly simple, as can be seen below.

The press technique is a proven method for creating monolithic all-ceramic restorations in the dental laboratory. Many technicians enjoy the efficient procedure that allows them to choose between using their artistic manual skills or the digital wax probe, depending on their preference. Impressively good results can be achieved, especially in conjunction with lithium disilicate glass ceramics (IPS e.max Press). Exact accuracy of fit, high strength, homogeneity and an efficient procedure are the advantages offered by this method. Refinements of morphology and function can be applied in a targeted fashion for several months now, the multicoloured IPS e.max Press Multi has been available.

The Multi ingot enhances the family of the proven IPS e.max Press lithium disilicate materials. It is supplied in nine A–D shades and a bleach shade. The natural shade progression of the ingot allows users to create polychromatic restorations using an efficient procedure, whether veneers, crowns or hybrid abutment crowns. Customisation is optional and is achieved with the staining technique, very much in keeping with the spirit of many technicians.

Contouring

The preliminary work is not essential differently from the known procedures used in the press technique. 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 Die 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 sections. 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 (Ivoclar Vivadent) is coordinated with precisely specified parameters. The procedure for applying the spacer is essentially no different from the procedure applied for monochromatic restorations.

After the dies have been prepared, we recommend checking the minimum thickness available for the restoration. As the Multi ingots are mainly used for monolithic restorations, the layer thicknesses specified for the staining technique should be observed. If a veneer is to be created, the layer thickness of the central area should be 0.3–0.6 mm, and the incisal third between 0.2 mm and 0.7 mm. Excellent results can be attained in anterior crowns using the IPS Multi investment ring base. The incisal edge of the wax-up restoration should be transferred to the model die while preparing the wax-up technique and processing according to the IPS Natural Die Material Shade Guide.

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-up technique 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 utilized 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 sprued to 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. If, additionally, photographs of the investment ring base have been taken, the investment ring is allowed to sit in a quiet place.

The IPS Multi Investment Ring Base has been especially designed for the polychromatic press technique. The Multi investment ring contains four openings, which are congruent with the shape of the IPS Multi Wax Patterns (Form A and B) (Fig. 3). The IPS Multi investment ring base contains four openings, which are congruent with the shape of the IPS Wax Pattern. The Multi investment ring contains four openings, which are congruent with the shape of the IPS Multi Wax Pattern. The IPS Multi investment ring contains four openings, which are congruent with the shape of the IPS Multi Wax Pattern.
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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

Fig. 8: With the blank side facing downwards, the cold Multi ingot is placed in the preheated investment ring.—Fig. 9: Once pressed and cooled, the restoration is carefully divested.—Fig. 10: Careful removal of the investment material with polishing beads.
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At this stage, the restoration can be prepared for the glaze firing (or optional stain-firing) cycle IPS e.max Press Multi. Ingot. If required, the restoration can be additionally customised with stains.

The stains are then applied to characterise the restoration according to individual requirements. The characterisations can be intensified by repeating the staining and firing procedure. Even before the stains are applied, the incisal area appears clearly more translucent than the other parts of the restoration. The effect can be intensified by brushing on a small quantity of IPS e.max Ceram Shades Incial.

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 and, as a result, the shade of the restoration looks very natural.

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Fig. 11: Pressed restoration after divesting. The smooth shade progression from the cervical to the incisal is clearly noticeable. — Fig. 12 & 13: Work in progress. The natural shade progression of the two crowns is the result of the IPS e.max Press Multi ingot. If required, the restorations can be additionally customised with stains.

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