Orthocryl® LC

the acrylic you've always dreamed of for your appliances

Stefan Kehlbacher

Cold-curing acrylics have been used and processed in orthodontics for decades and have proven themselves a million times over (e.g. Orthocryl®, tried and tested over 250 million times). And that is a good thing. Modern cold-curing acrylics feature low shrinkage, good stability and fracture resistance and, in the case of Orthocryl®, a proven biocompatibility. Acrylics for orthodontic purposes are available in countless colors, even in black and white. Thus young and grown-up patients can get their appliance in the color desired. Novel designs and glitter allow further customizing. However, what would the dental technician wish for when fabricating the appliance or processing the acrylic?

Let's take a white sheet of paper and write down the characteristics of the acrylic we've always dreamed of:

- No health hazards = no protective measures required
- Free of methyl methacrylate and dibenzoyl peroxide = extremely well tolerated, also suitable for people with allergies
- No odor nuisance
- Process the ready-to-use acrylic = no mixing required
- Less material consumption = less excess, cost-efficient
- Accurate application & modeling
- Polymerization starts whenever I want it = no time pressure during processing
- Short polymerization time = fast and efficient work
- Easy finishing and polishing
- Low shrinkage = good fit
- No hazardous substance = easy handling and storage
- No hazardous goods = easy and affordable shipment

Attempts to find an acrylic featuring all these properties have failed so far. With Orthocryl® LC, Dentaurum (Ispringen, Germany) is now offering for the first time a light-curing acrylic for the fabrication of expansion plates, bite plates, bimaxillary orthodontic appliances and drill templates for implantology, whose properties are perfectly in line with the mentioned requirements. For the fabrication of colorful appliances, Orthocryl® LC is available in popular colors such as red, green, blue, clear and yellow as well as transparent pink.

No protective measures required – since Orthocryl® LC is not a hazardous substance, no special protective measures are necessary during processing. Extraction can be dispensed with as well as ventilated rooms. There is no fire hazard when using this acrylic. For this reason, Orthocryl® LC can be processed right near a lab burner.

Suitable for people with allergies/ free of methyl methacrylate and dibenzoyl peroxide – Orthocryl® LC does not contain methyl methacrylate or dibenzoyl peroxide, which makes it particularly secure. Fabricating appliances in laboratories and wearing appliances do not present a health hazard. Orthocryl® LC is hence particularly suitable for patients and technicians.

No odor nuisance – unlike the doughing and the salt-and-pepper technique with cold-curing acrylics, there is no emission of irritating harmful vapors when processing Orthocryl® LC. Extraction can therefore be left out when applying this acrylic.

No mixing required / process a ready-to-use acrylic – since Orthocryl® LC is a ready-to-use single-component light-curing acrylic, neither mixing/doughing nor salt-and-pepper technique is required. Just accurately apply the acrylic directly from the cartridge.

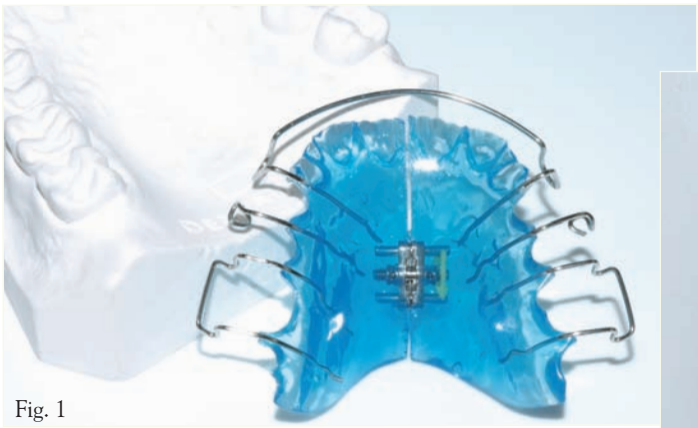
Fig. 1

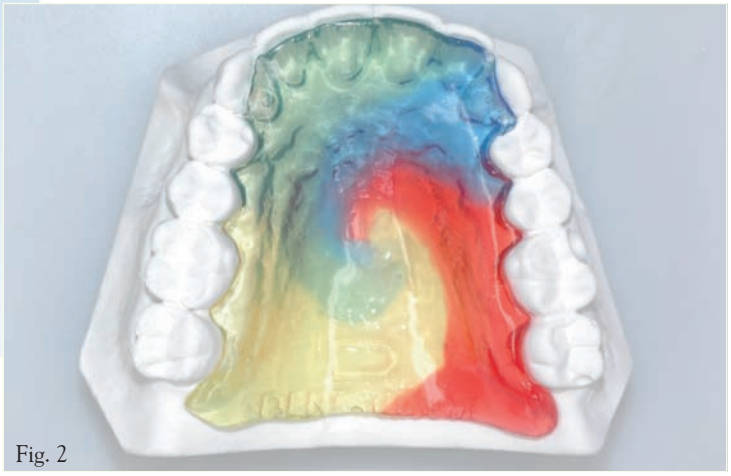
Fig. 2

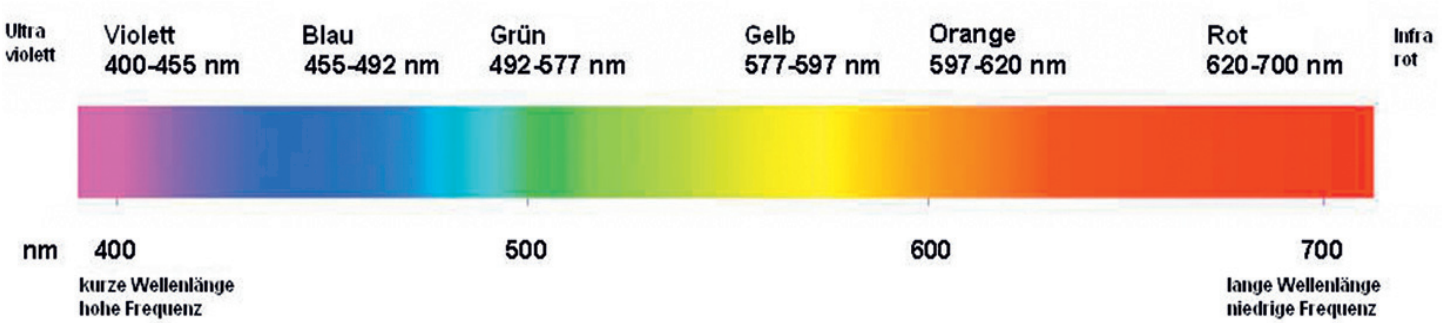

Figure: wavelength visible light

Less excess / less material consumption – Orthocryl® LC is available ready for use in cartridges and can be easily and accurately applied with the accompanying injector. This represents a saving in terms of time and material costs.

Accurate application and modeling – Orthocryl® LC features good viscosity and optimal stability. This enables the easy conception of various orthodonctic appliances. When doing this, you can even play with different colors and create fabulous patterns that cannot be achieved with an acrylic that has been spread (Fig. 1)

No time pressure during processing / polymerization starts whenever I want it – The polymerization of Orthocryl® LC starts when light occurs with the appropriate wavelength. This usually happens when the appliance is inside the light-curing unit and helps control the hardening process right at the beginning.

Fast work / short polymerization time – Orthocryl® LC is hardened using light at a wavelength of 480 nm, whereas the polymerization takes between 3 and 9 minutes depending on the appliance to be produced. Light-curing units that are used for the polymerization of veneering acrylics can also be used for hardening.

Easy finishing and polishing – Orthocryl® LC can be processed with common burs and polishers for acrylics. Prepolishing is carried out by means of pumice powder in a way similar to the one use for cold-curing acrylic. High shine is achieved with cloth polishing brush and liquid polishing agent (e.g. Edelweiß / Dentaurum)

Good fit - low shrinkage – Orthocryl®LC features very low shrinkage and thus a much better fit. Expansion plates made from Orthocryl® LC optimally fit the tooth allowing an optimal force transfer during the active treatment phase (Fig. 7).

Fig. 4

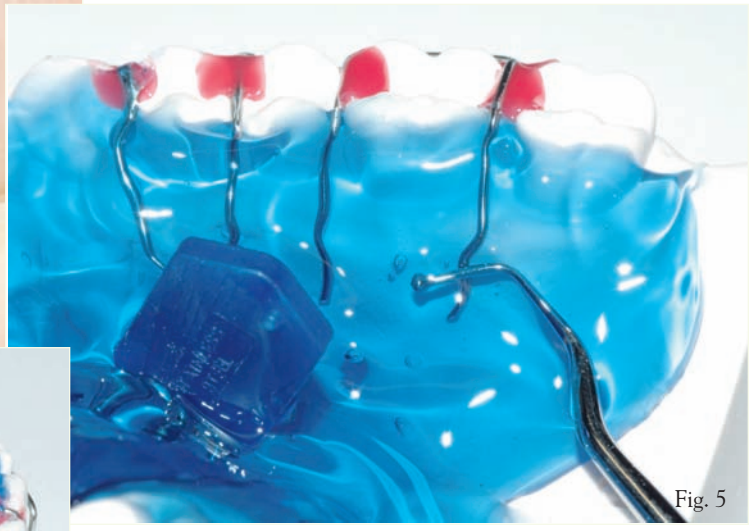

Fig. 5

Fig. 6

The fabrication of an expansion plate with Orthocryl® LC differs only in a few steps from the common method with cold-curing acrylic and is carried out as follows:

The models are prepared as usual and the curved wires are fixed with sticky wax. Soaking the model can, unlike the use of cold-curing acrylic, be left out. With Orthocryl® LC, a separating medium against acrylic is applied on the dry plaster model. A hole is drilled in the plaster model to position the expansion screw and filled up with wax. Dentaurum expansion screws have a plastic adapter with a pin on the bottom, which enables easy fixation and removal of the screw from the hole with the wax coating. This pin ensures precise positioning without drifting and makes work much easier. After the wax has hardened, the screw can be removed and fully surrounded by Orthocryl® LC (Fig. 2). It is important to ensure that the screw is completely embedded in the acrylic and does not have any air bubbles.

With wire retentions, apply Orthocryl® LC to the bottom first and then embed the complete wire (Fig. 3). Next, apply Orthocryl® LC until the desired form and thickness of the appliance is achieved.

To prevent air bubbles between the layers, slightly dip the tip of the cartridge in the lower layer before applying further material. Glitter effects can be achieved with Disco glitter, by spraying directly from the spray bottle on the first layer of Orthocryl® LC and then covering it with another layer of Orthocryl® LC. Air bubbles in the applied material can be opened and filled up with a pointy instrument or a probe (Fig. 4). You can also apply additional Orthocryl® LC below the air bubble so that it moves towards the surface and disintegrates.

The polymerization of the acrylic takes place in a light-curing unit, whose lamps emit rays at a wavelength of 480 nm (e.g. Solidite V, Shofu) (Fig. 5). During the first 180 seconds, the appliance is hardened on the model. Afterwards, carefully remove the appliance from the model and cure its basal side.

As with all light-curing acrylics that

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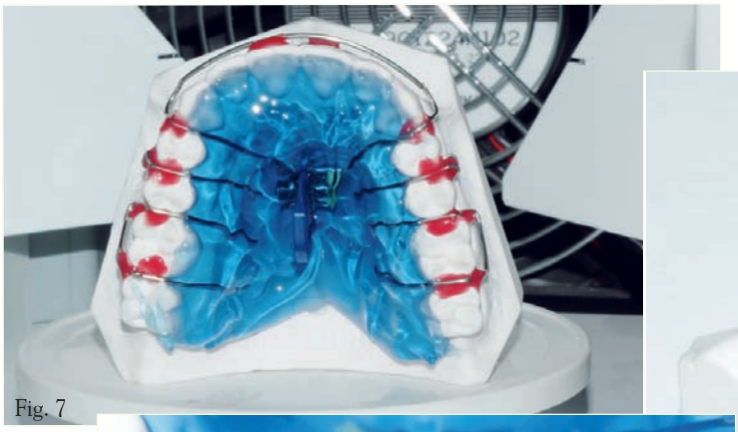

Fig. 7

Fig. 8

Fig. 9

are not hardened under vacuum, an air-inhibition layer (smear layer) also appears with Orthocryl® LC and has to be removed. For this purpose, just apply an alcoholic cleaning liquid on a piece of fabric and remove the smear layer. This can also be achieved through milling, finishing and polishing. When finishing Orthocryl® LC appliances, proceed as with cold polymer appliances. Burs for soft acrylics can be used for this operation. Tried and tested materials such as silicon polishers and fine sand paper are suitable for prepolishing. A high polish finish can be achieved with a polishing paste for acrylics (e.g. Edelweiß/Dentaurum) and a cloth polishing brush.

Repairs and extensions of appliances made from Orthocryl® LC can be carried out as usual. To this end, grind and enlarge the area concerned, roughen it with sand paper and clean it. Then, apply Orthocryl® LC on the cleaned area – a coupling agent is not necessary – and harden it in compliance with the described parameters.

Conclusion

With Orthocryl® LC Dentaurum is offering a light-curing acrylic that is suitable for people with allergies and that can be processed in a modern laboratory without special protective measures due to its compatibility. Thanks to its simple and time-saving processability and efficient dosage, this acrylic can be integrated in laboratory processes cost-efficiently and without any difficulty. Orthocryl® LC can be used to fabricate expansion plates, bimaxillary orthodontic appliances and bites plates as well as drill templates for implantology. SD

It's great when dreams come true.

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About The Author

Stefan Kehlbacher, *is a Dental Technician specialized in Orthodontics. He is a self employed and owns Orthodontic Laboratory in Essen/Germany.*