

Dental TECHNOLOGIES

Kiss me!

Using nature as
a model example



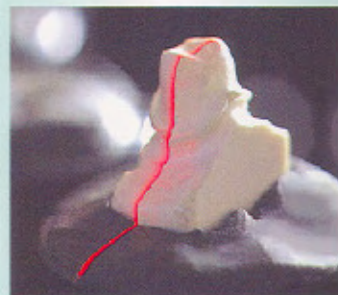
Natural beauty

Lifelike anteriors
for removables



Innovation

Combating
outsourcing abroad



Light curing wax...
for fast & consistent
Chromes

- ◆ What's on the grapevine? Technician's World has all the latest industry news
- ◆ Time for a change - look no further than the classifieds section

ISSN 1466-0083 - Annual subscription: Europe €100 - UK £50 - Canada \$145 - USA \$120 - Australia \$150 - Rest of World \$100

At last, chromes in 2 hours... thanks to Metacon

Metacon light curing wax has caused a small revolution due to the significant amount of time it can save dental technicians.

At first glance this product can seem a bit expensive, but reduced fabrication time aside, the product has many other advantages to offer, such as fewer technical steps, less risk of deformation, savings on materials and many more besides.

Whilst some light-curing waxes have a reputation for not being precise enough, this is not the case with Metacon, which is a tested product offering diverse applications, as the author demonstrates.

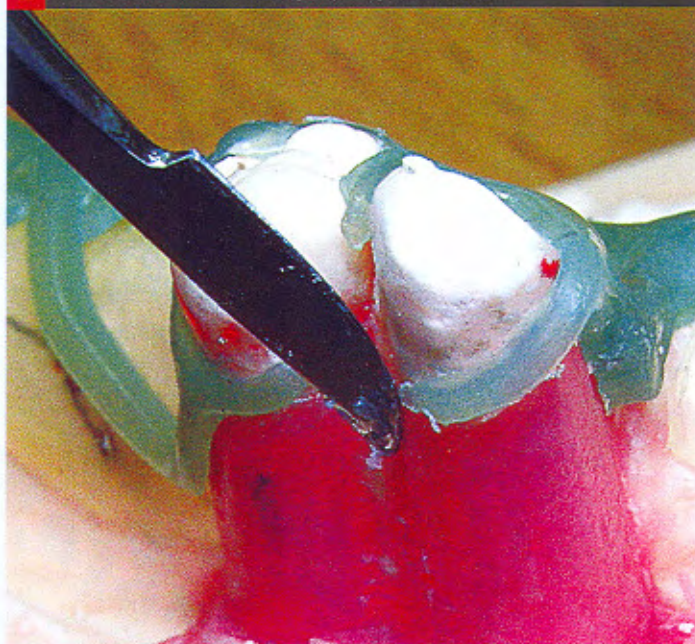
Simplify removables

Mandibular modelling as usual

1 Modelling the lower framework directly on the master model.



2 Buccal view: detach the clasps of the pattern first.



MASSIVE REDUCTION IN PROCEDURE TIME

The modelling of the wax-up can be started as soon as the model has been prepared and carefully trimmed.

The use of Metacon light curing wax saves considerable time: the pattern is modelled directly on the master model. Therefore it is not necessary to go through the steps of humidification of the model (10 mins), duplication (60 mins), casting and setting of the duplicate (40 mins), dehydration of the model (30 mins) or application of hardener and cooling (30 mins). This saves around 2 hours and 50 minutes. Compared to silicon duplication (which is faster but more expensive) you still save one-and-a-half hours!

It is worth noting that this light curing wax does not harden in natural light, nor due to heat from a wax knife.

To achieve a better quality wax-up, it is advisable to apply a sealant such as Isofix 2000, which renders the pattern waterproof. This prevents minor deformations caused by humidity.

Sealing in this way means that less specific isolating fluid is required. Time is also gained when cleaning the model, which is rapidly done by steam before delivery.

**“MODELLING IS DONE
DIRECTLY ON THE
MASTER MODEL”**

MANDIBULAR FRAMEWORK: MODELLING AS USUAL

Preformed components of this light curing wax are the same as those of conventional wax: nothing changes except the material used.

Making a wax-up for a mandibular framework is no different to modelling done in the classical way on a duplicate, excepting the light curing phase that takes between 5 and 15 minutes (depending on the framework volume, which determines the number of light exposures required).

The light curing phase transforms the wax into a solid and flexible plastified resin: the pattern can now be easily removed without risk, although certain delicate and meticulous precautions as described in the following procedure are necessary.

Fitting the pattern

3 *Roughing out the framework.*



4 *Double checking: the framework is put back on the model to ensure the fit.*



It is particularly important to gently prise away the edges of clasps and the retention saddle using a wax knife before removing the wax-up from the master model: this is imperative to avoid risk of breakage (figs. 1 and 2).

Finishing the wax pattern

Polish and finish the pattern, as you would do for metal, using fine-grained carbide burs (fig. 3), before finishing with a polisher for resin. The result is a well-adjusted wax-up that is similar to the final result (fig. 4).

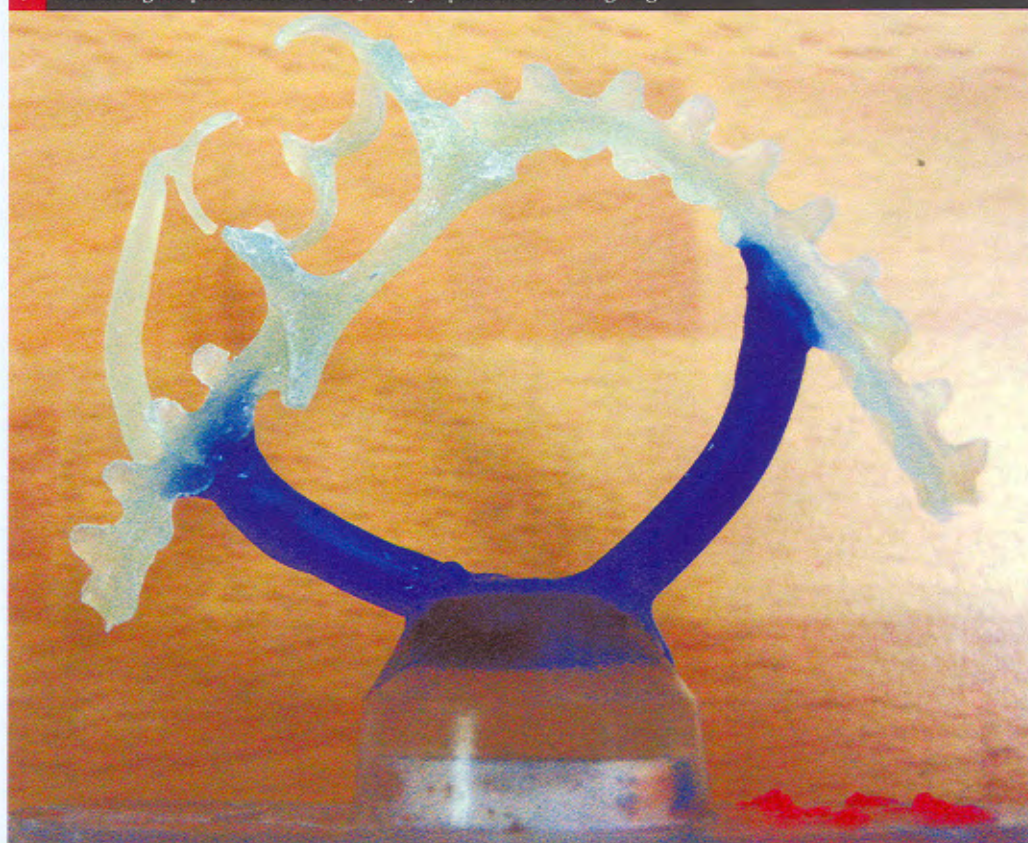
Figs. 5 & 6: Close up of the fitting of brackets and clasps.



Now replace the pattern on the master-model to check the fit and occlusion. This step, made possible by the hardening of the wax, is particularly beneficial with complex retention, extensions or cast cusps (figs 5 and 6).

Sprues and investing

7 Positioning the pattern on the base, ready to place in the casting ring.



"I GET EXCELLENT RESULTS WHEN USING A C&B INVESTMENT MATERIAL"

Modify as much as you like!

It is possible to modify the light cured pattern for correction if necessary.

Rectify by melting with an electric wax knife, by removing one part or by adding another. Should breakage occur, a specific light-curing adhesive allows for the joining of two light cured parts. The modifications done using these methods must be put back "under the lamp" to allow for the new light-curing to take place or for the adhesive to transform into resin.

At this stage, it is imperative to clean the pattern with soap in order to eliminate dust particles from grinding. The pattern is now ready for sprueing.

Sprues and investment procedure

Personally, I use traditional wax sprues. The procedure is virtually identical, regardless of the wax used, whether Metacon or conventional (fig. 7).

Although the manufacturer does not state that it is necessary, I apply a grease remover to prevent bubbles.

To avoid air pockets during investment, the pattern should be placed vertically or with the underlying surface facing towards the top of the casting ring.

In the case illustrated here, 150 grams of investment is sufficient for this oval casting ring (fig. 8).

Metacon wax does not need to be used with any specific investment material, and many produce excellent results (both rapid and classical ones).

The particular properties of C&B and removable investment materials are irrelevant here; I get excellent results and my work is greatly simplified when using an investment material for C&B (figs. 9 and 10).

Personally I use the "Universal" investment material for direct firing. The casting ring is fired at 850°C, and cast 45 minutes later (fig. 11). It is possible to put two or even three frameworks in one casting ring (fig. 12).

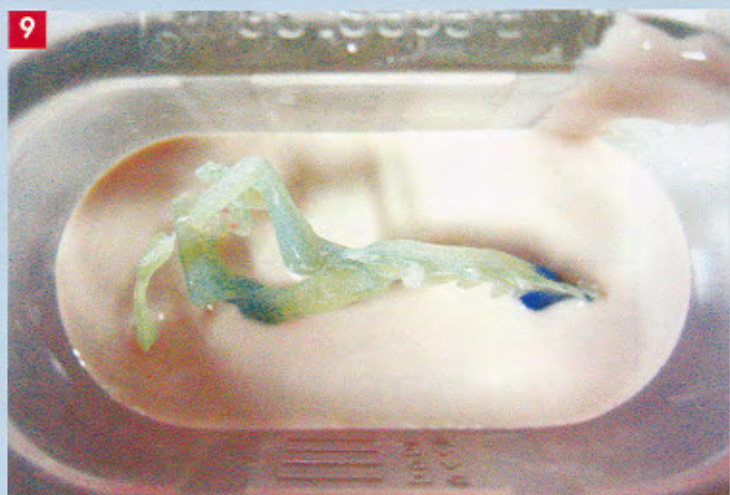
"ALL MODIFICATIONS REMAIN POSSIBLE"

8 View from above.

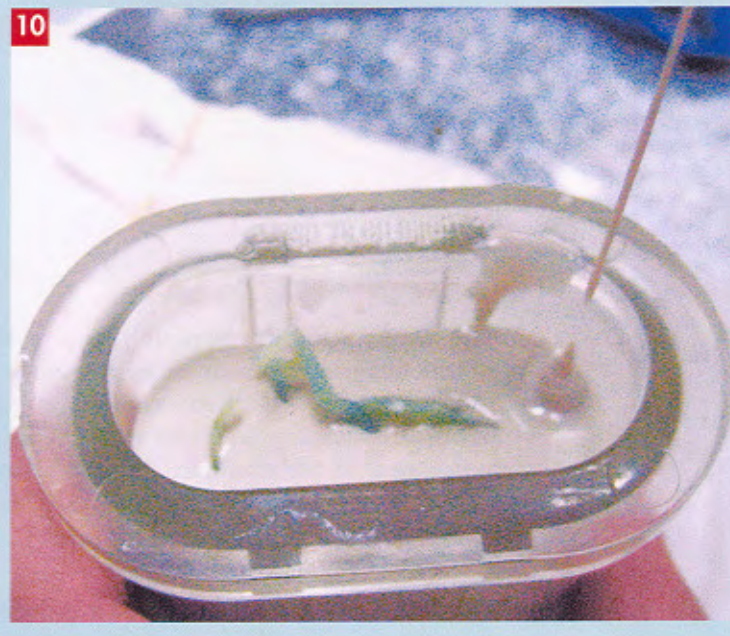


Figs. 9 & 10 : Pouring a C&B investment.

9

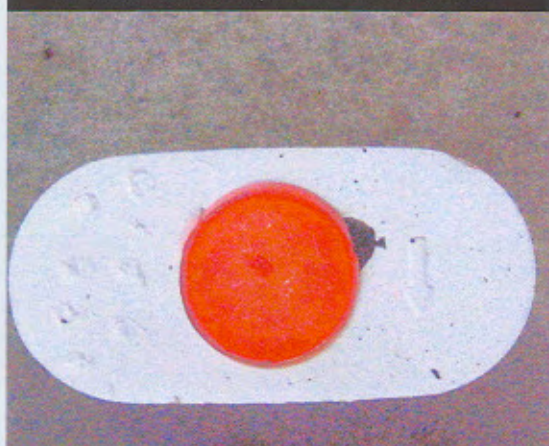


10



You can put two or three frameworks in one casting ring

11 View from above of the casting ring after casting. NB the small amount of investment material used.

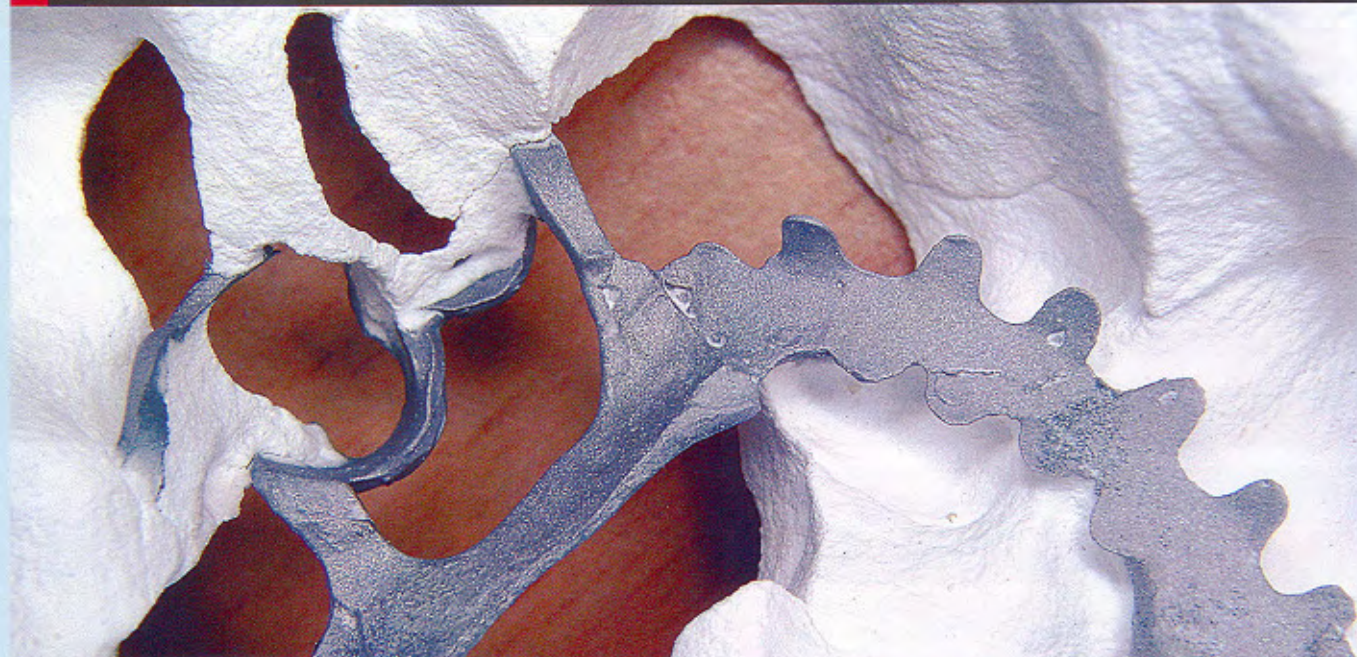


12 Two frameworks in one casting ring.



No more grinding

13 Figs. 13-15: The investment is removed. Note the casting quality and the surface aspect, due to the superior wax-up finish that the material offers.



**“AFTER SANDBLASTING,
JUST CUT THE SPRUES
AND POLISH”**

NO MORE GRINDING

As the temperature drops rapidly due to the small amount of investment material used, it is possible to sandblast the framework around ten minutes after casting (figs. 13 - 20). This is demonstrated in the example; the sandblasted investment reveals that the framework's surface condition is good and fitting on the model can take place without alterations.

Now just cut the sprues, place in an electrolytic bath, and polish (fig. 21).

16 Framework after sandblasting: now just cut the sprues and polish.



17 View of the flawless underlying surface.

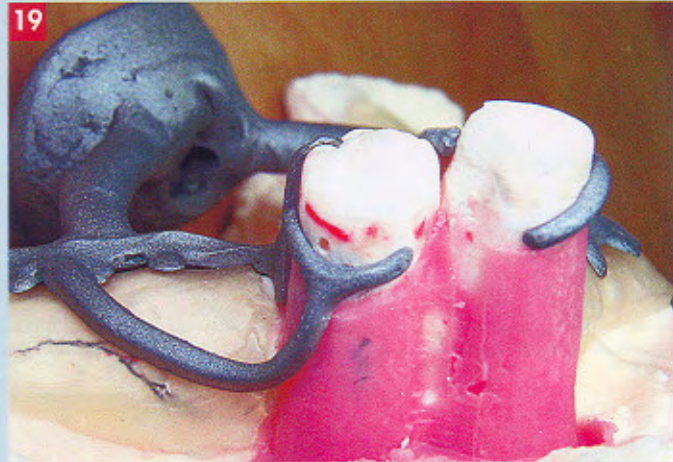


Figs. 18 & 19: The cast and sandblasted framework is placed on the master model: note the precise fitting.

18



19



20 View from above.

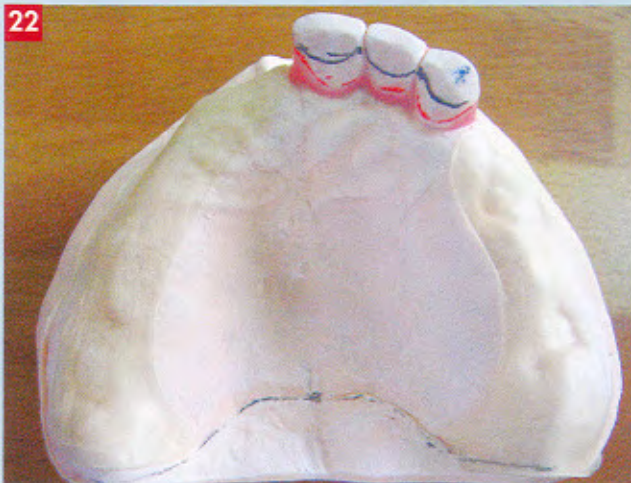


21 The framework after polishing.



Vacuum plating the palatal section

Figs. 22 & 23: Maxillary partial: preparation of the master model and placing the cast.



MAXILLARY: VACUUM PLATING AND LIGHT CURING THE PALATAL SECTION

This additional step is a system that guarantees the perfect fit of the pattern to the master model.

Wax modelling of the maxillary framework

A The plate

In the given example, immediately after preparation (figs. 22 and 23) a 0.5mm plate is applied and trimmed to the pencilled limits, allowing two posterior extensions for the sprues (fig. 24).

Some prefer to use two wax plates of different thickness, which is also possible due to the proposed range (from 0.35mm to 0.65mm).

24 In no time at all the plate is ready, with posterior extensions for the casting sprues.



Figs 25 & 26: Due to the vacuum system, the plate takes on the exact shape of the model, without being squashed.



B The vacuum

The application of pressure by an air vacuum pump and membrane device means the wax-up takes the exact shape of the the palate, which is impossible with a traditional method or another light curing system.

The vacuum created initially is maintained during light curing for total contact, so as to obtain an excellent fitting (figs. 25 and 26).

Clasps must never be put in a vacuum; they are placed afterwards, as the pressure exerted by the membrane device would misshape them.

C Placing the clasps

After this initial light-curing, the modelling of the pattern proceeds with additions that are progressively light cured (fig. 27).

Place the brackets, retention grooves, clasps and margins and proceed to do the junction points by fusing with an electric wax knife (figs. 27 to 33).

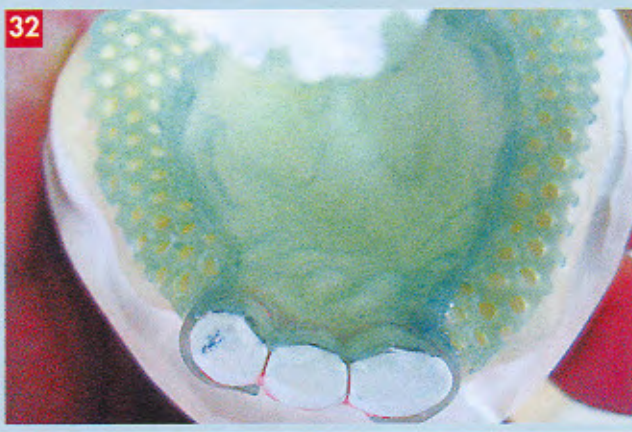
27 The light-curing device. This one is a 12 lamp, thermo-regulated model. It is possible to place an articulator, or the vacuum recipient, inside it.



28 Framework without clasps after light curing.



Figs. 31 & 32: After each addition and subsequent light curing, the pattern can be removed and replaced as much as you like.



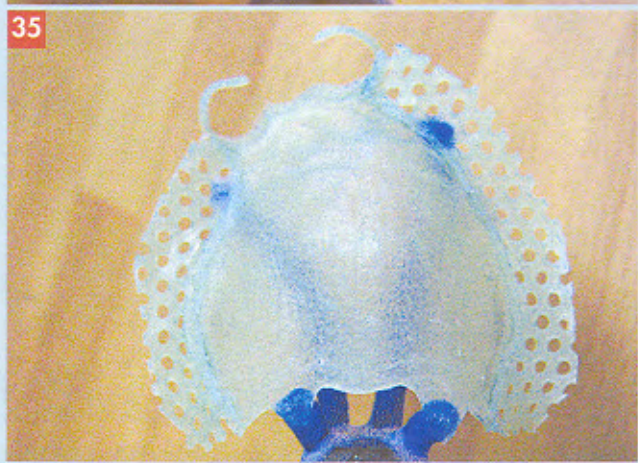
Figs. 29 & 30: The clasps are fixed using an electric wax knife.



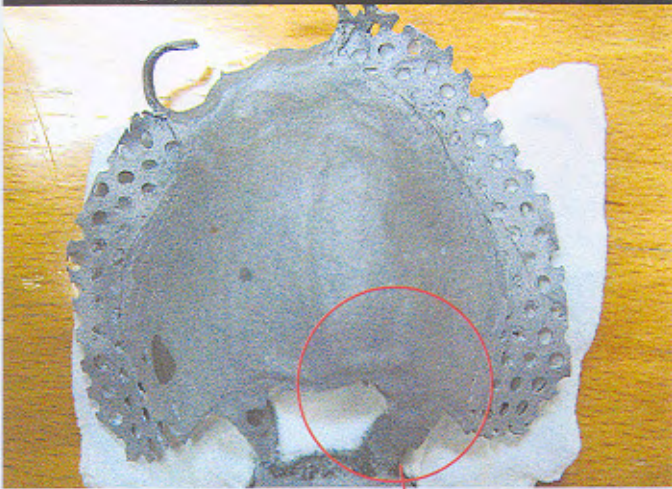
33 Use an electric wax knife for addition junction points.



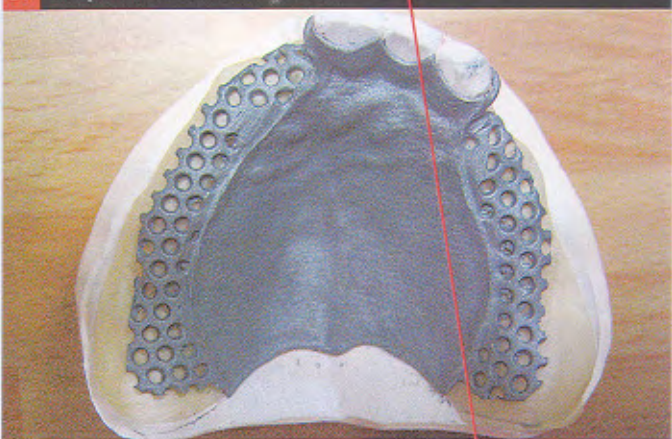
Figs. 34 & 35: Take a look at the precision and design. The technique of positioning the sprues enables the use of a small casting ring (with little investment material).



36 The same case after casting and partial sandblasting...
The casting is flawless.



37 The pattern on the master model.



About the Author



PY Besse

After passing his CDT in 1980, PY Besse worked in several different dental clinics, perfecting his understanding of dentist and patient relations.

In 1987 he set up his own lab, which gradually expanded from a one-man show to 14 people in 2005. Today, he has decided to concentrate his business locally, and had orientated his production towards profit; he now has only 12 employees.

"The production of precise metal frameworks in our lab represents 10% of our turnover, with around 50 units per month produced. After having tried out several different light-curing wax systems on the market, I chose Metacon in May 2005, and now I only use this technique. Getting used to the product took around three weeks, and during that time I tested the various options the system has to offer. For the moment, I only use the system for chromes, but I plan to do training courses to master the other possibilities."

Cut extensions
(thinner than the
sprues).



D Casting

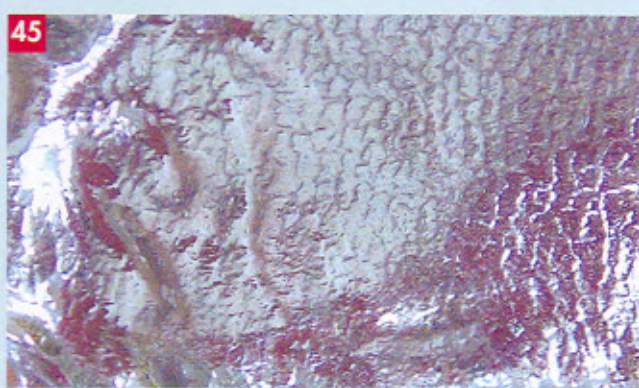
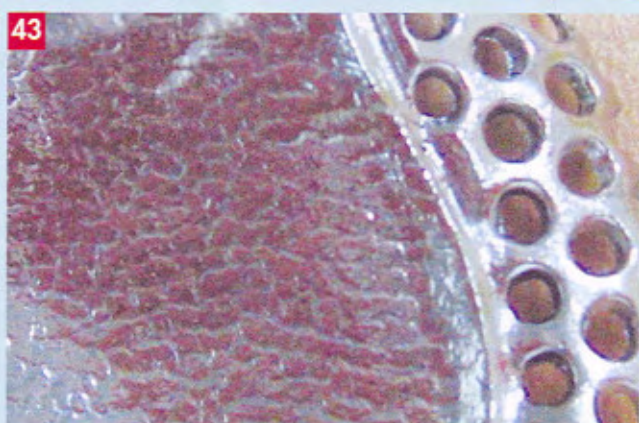
Remove the pattern carefully, then follow the same procedure as in the mandibular case described previously (figs. 34 to 37).

Last step: sit back and admire the precise fitting of the finished piece (figs. 39 to 47).

Figs 38 to 41: The lines have precision, purity and finesse. After sandblasting, the job is flawless from every angle.



Figs. 42 to 45: Framework after polishing. Zooming in on the image gives an idea of the precision.



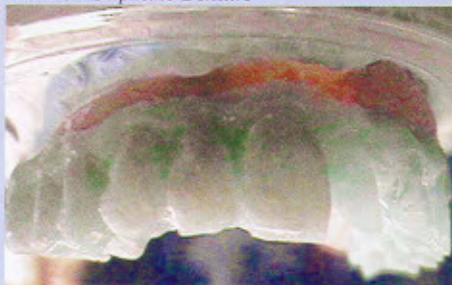
SPEED OF PRODUCTION AND QUALITY

Metacon wax has precision, dimensional stability and physical memory. This makes it easy to handle and facilitates work.

Due to the genuine time saved, the use of this technique allows you to meet shorter deadlines without compromising on quality. Above all this system increases productivity and helps with the management of production flux.

PY Besse
Dental Technician

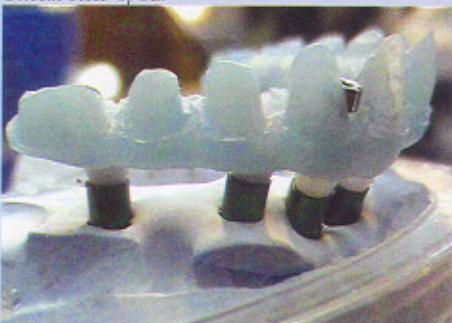
Metacon Duplicate Denture



Implant born bar with 12 prepped single abutments



Buccal view of bar



Cast Framework



Framework Try-in



Metacon Product Review

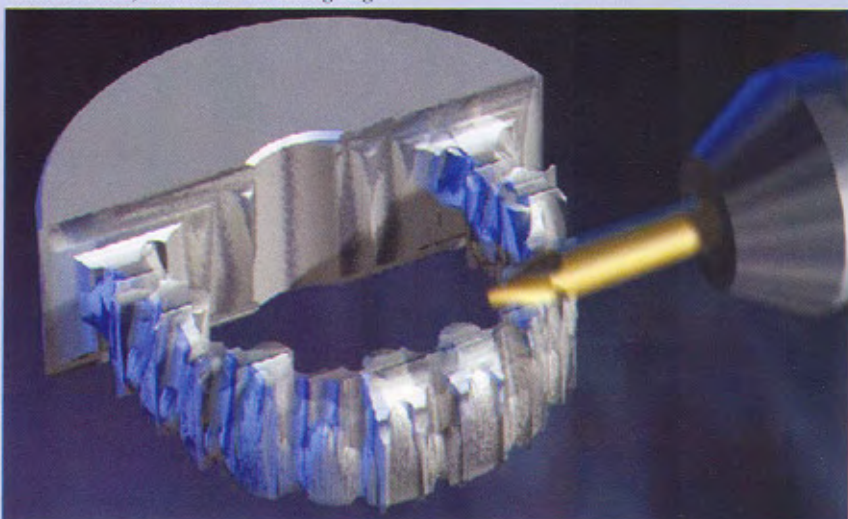
*Sven Jesse
Laboratory Owner
Jesse & Frichtel Inc.*

I came over to the US from Germany 11 years ago and set up the laboratory with my partner, Mr. Frichtel. We focused from the beginning on high-end restorations and esthetics. I believe we are now the leaders on implants and esthetics on the East Coast. Currently we have 45 Technicians in our Pittsburgh lab and 115 in our Shanghai lab as well as a partnership with a Korean lab.

AVOIDING SILICONE DUPLICATION

We first came across the Metacon system 4 years ago at the Cologne trade show in Germany. This light curing wax immediately caught my attention, as I was looking for a way to avoid expensive silicone duplication (other duplication materials are not as accurate, and they were therefore not an option for our lab). The system allows us to do a direct cast of the pattern, which subsequently gives a better fit result.

Titanium Cad/Cam block in milling stage.



"WE USE IT FOR IMPLANT BORN BARS AND SUBSTRUCTURES BECAUSE THERE IS NO SHRINKAGE IN THE MATERIAL ITSELF"

THE SYSTEM PAYS FOR ITSELF

After 4 years of using the Metacon system, I would say it pays for itself due to the money we have saved on silicone and less internal remakes. I have tested multiple other systems, which do not come near to the quality of the result produced with Metacon.

NO SHRINKAGE

I mainly took this system for partial frameworks. However, we now also use it for implant born bars and substructures

"I USE IT FOR TELESCOPIC CROWNS, PROCERA IMPLANT BRIDGES (PIB) IN TITANIUM AND ZIRCONIUM AND BIGGER C&B FRAMEWORKS ON IMPLANTS"

because there is no shrinkage in the material itself. Although many other manufacturers claim there is no shrinkage with their products, I have frequently had problems, as even minor shrinkage causes complications in our profession.

C&B AND OTHER APPLICATIONS

I also use it for telescopic crowns, Procera Implant Bridges (PIB) in Titanium and Zirconium as well as bigger C&B Frameworks on Implants. Light curing wax is also useful for all kinds of repairs on partial frameworks, which can't be done using conventional wax due to the risk of bending.

SPEED OF PRODUCTION

Another aspect I appreciate is the speed of production. This is critical in modern lab because customers want their restoration immediately, and we have been able to satisfy this demand with same day production.

ADAPTING TO METACON

For a person who is used to using conventional wax, the system takes a few days to get used to. Metacon is stickier, but actually quite easy to manipulate all the same. I would recommend getting a good electric wax knife; this does not come with the system, but it will be much easier to use if you have one. Do not try to work with an open flame.

APPLYING THE PRODUCT

The case illustrated here is an implant born bar with 12 prepped single abutments. The material does not shrink, which makes it ideal for this kind of application.

I would recommend this product to all labs, as it can be applied to removables, C&B and implants.

Completed case



Finished case with cemented crowns and imitation tissue



Patient Smile



Sven Jesse, Lab owner
Jesse & Fichtel Inc.
Pittsburgh

Sven Jesse



Pittsburgh Lab





metaconSystem

by primotec®

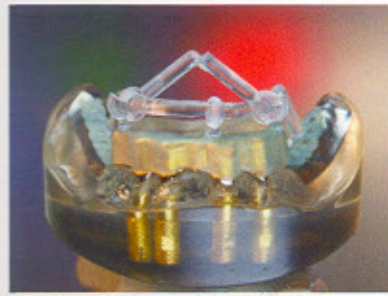
besides partials
- what else you can do ...



crowns & bridges



implant bars



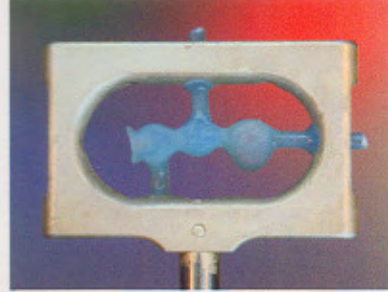
implant superstructures



implant bridges



captek / galvano connectors



cercon scanning

Your domestic distributor:

UK

Prestige Dental

☎ +44 0207 486 3881

✉ paul@prestige-dental.co.uk

USA/CAN

dentation LLC

☎ +1 866 643-3129

✉ curist@dentation.net

Australia

Argibond Dental

☎ +61 03 9583 4900

✉ Jason@argibond.com.au

Thermo-controlled light curing units:



metalight mini



metalight trend

metalight classic



primotec®

Tannenwaldallee 4 • D-61348 Bad Homburg

☎ +49 06172 99 77 0 - 0 ☎ +49 06172 99 77 0 - 99

✉ primotec@primogroup.de 🌐 www.primogroup.de

www.primogroup.de