

enigmalive⁺

Inspired by nature, designed for living



Technical Brochure

schoTTlander



Inspired by nature, designed for living

enigmalive+ denture teeth are truly inspired by nature. Our guide in their design was the beauty, detail and proportions that nature builds into our teeth and we sought to reproduce its miracle. Never before in a range of denture teeth has so much attention been paid to its natural beauty.

Not only do **enigmalive+** look and feel like your patients' own teeth, they help them to regain their appearance and function. Compare them to any denture teeth that you have used before, and you will see why they set the new standard. **enigmalive+** are the teeth of choice when you are seeking to provide the very best dentures for your patients.



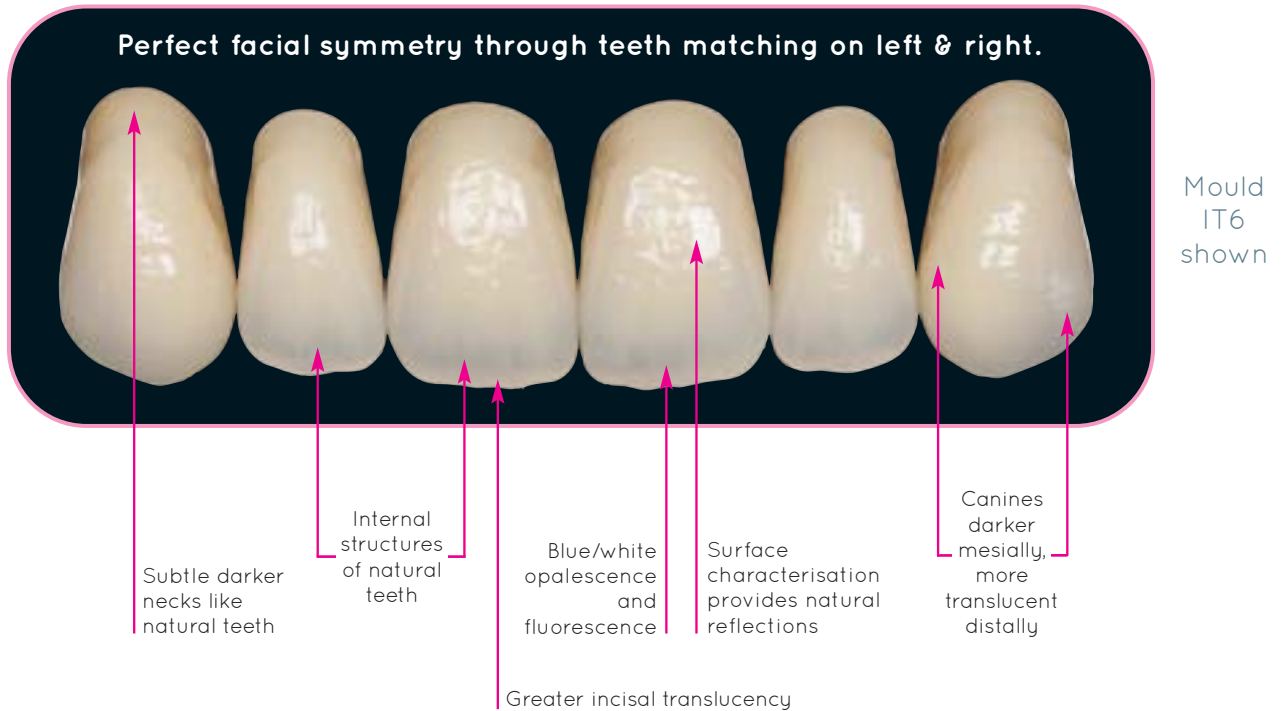
Some advantages of **enigmalive+** teeth are:

- Aesthetics never before achieved in a denture tooth.
- Natural opalescence and fluorescence.
- Laterals, canines and centrals are all true to nature.
- Advanced occlusal concept to improve stability and comfort.
- Can be set up to almost any occlusal arrangement.
- High strength and wear characteristics.
- Improved colour stability and plaque resistance.
- Strong bond to the denture base material.
- Eighteen beautiful shades including 16 A-D and two new bleach shades BL2 and BL3.



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enigmallife⁺ inspiration* upper anteriors



enigmallife⁺ inspiration anteriors are based on exhaustive studies of natural dentition.

Their design includes:

- Natural anatomical shapes and carefully sculpted marginal ridges provide a remarkable true to nature three dimensional appearance.
- Internal layering reproduces the complexity of a natural tooth and provides incredible vitality.
- A beautiful smile is symmetrical around the centre line of the face. enigmallife⁺ teeth are exact mirror images on each side of the mouth.
- Greater incisal translucency.
- Like natural teeth, enigmallife⁺ have a natural opalescent look and fluoresce under UV light, so appear vital even under different lighting conditions.
- Simulation of the perikymata on the labial surfaces provides natural reflections.
- Laterals are lighter than centrals. Canines are darker mesially with greater translucency distally.
- The necks of natural teeth are darker and this is also subtly reproduced in enigmallife⁺ teeth.
- enigmallife⁺ inspiration anterior teeth have long contacts to reduce the gum visible at the cervical margins

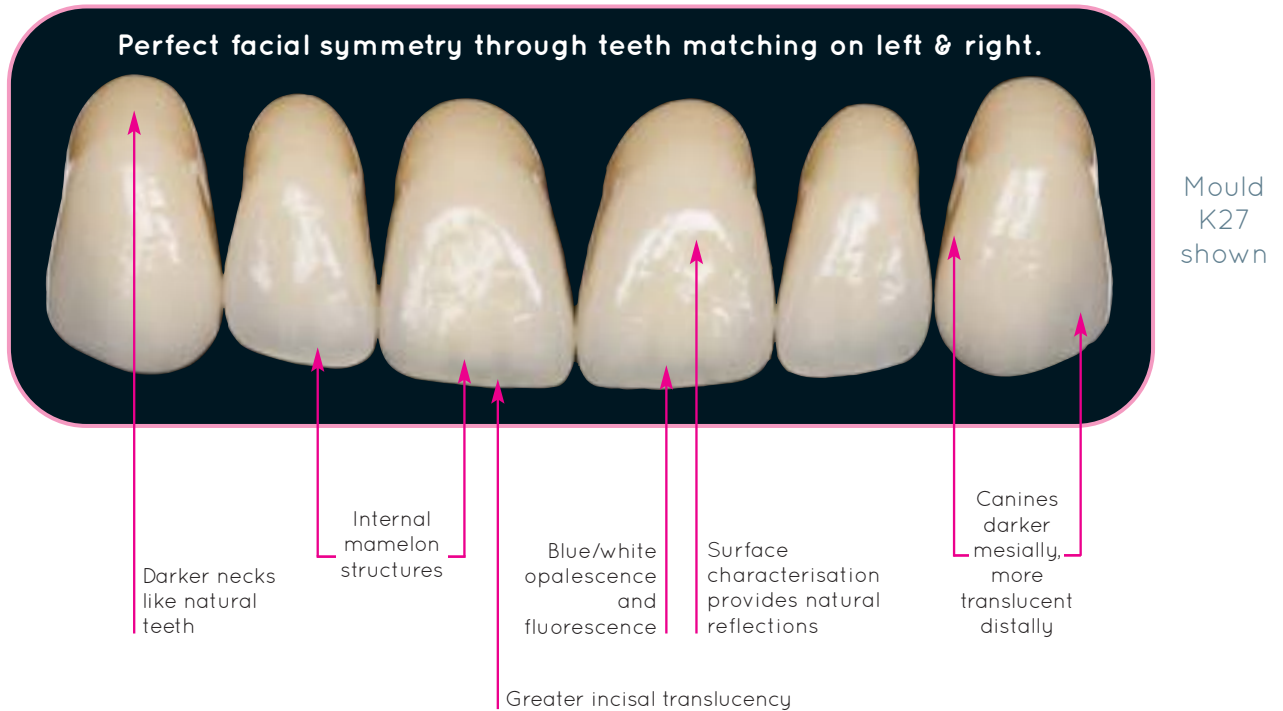


enigmallife⁺ inspiration anteriors are supplied in a series of three harmonious and lifelike shapes:

IS for square, IT for triangular and IR for rectangular.

There is even an extra large mould IR10 for those situations where an extra large but perfectly designed tooth, is required.

enigmallife⁺ character upper anteriors



enigmallife⁺ character upper anteriors

The **enigmallife⁺ character** range of anterior teeth are chosen from shapes that have proven themselves over time as natural favourites with both denture wearers and the clinical team. We have designed them incorporating the aesthetic advances of the whole **enigmallife⁺** range.

Compare the laterals and the canines and you will see just how much truer to nature they are compared to other denture teeth you have used before. Observe the labial surfaces and see how they provide natural reflections by breaking up the incident light. The incisal edges of both centrals and laterals have greater translucency with a blue white opalescence and with natural mamelons in both upper and lower sets. Some moulds in the range have longer darker necks, perfectly reflecting the relationship between anatomic root and crown.



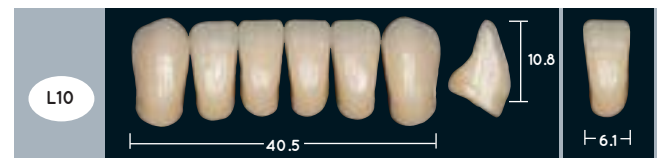
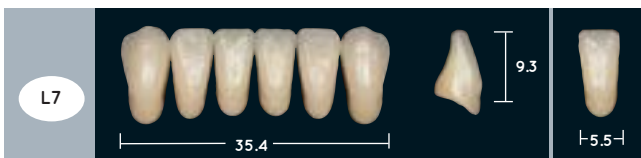
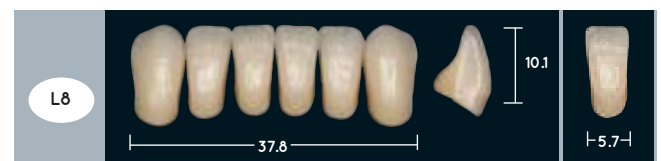
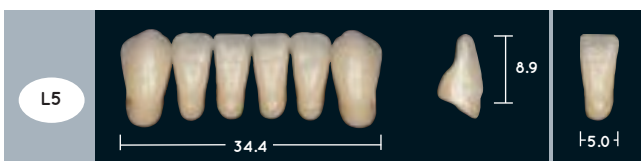
enigmallife⁺ character upper anteriors are supplied in a wide range of moulds. There are seven square **S** moulds, six **D** moulds and five **K** moulds in the range.

enigmalive⁺

aesthetic lower anteriors

For many people their lower teeth are just as visible as their upper ones, so we spent just as much time designing them. Look carefully at the modelling of these teeth and you will see that they perfectly reflect nature in their shapes, marginal ridges and buccal surfaces. Just as important are the lingual surfaces where lower teeth play such an important role in phonetics.

There are nine **enigmalive⁺** lower moulds giving a wide range of lengths and widths to suit all clinical situations. They include two attractive larger moulds L10 and L11 that are particularly useful for partials and implant stabilised dentures. A selection of moulds are shown below.



enigmalive⁺ beautiful shades

The **enigmalive⁺** shade system gives you a choice of sixteen A-D shades together with two bleach shades BL2 and BL3. Shade selection should be carried out with the patient either in daylight or defined lighting conditions (5500°K colour temperature). The **enigmalive⁺** shade guide enables consistent and accurate shade taking because it is made from the same materials and uses the same layering system as the **enigmalive⁺** teeth themselves.

- 16 Shades A-D
- Bleach shades BL2 & BL3





Denture teeth designed for living

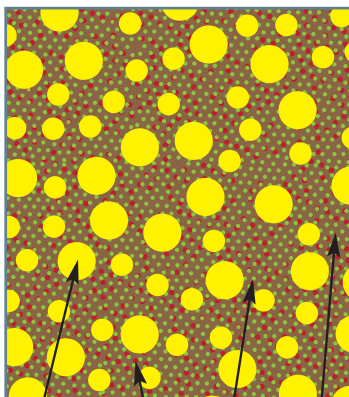
Just as important as the way in which **enigmalive⁺** teeth restore the beauty of your patient's appearance is the way in which they have been "designed for living". Along with appearance, the most important requirement of patients is for their dentures to help them to eat their favourite foods in comfort and without anxiety. **enigmalive⁺** dentures will serve them for many years since they have improved durability.

enigmalive⁺ teeth have been specially designed to take into account the real conditions in the mouth. Since different areas of the mouth subject denture teeth to different forces **one composition for all teeth is no longer a sufficient solution.**

At the front of the mouth teeth come under lateral forces and can chip but rarely wear. They need to have high resistance against chemical attack and minimise plaque adhesion or discolouration. **enigmalive⁺** anteriors are therefore made using a tough PMMA based copolymer using a double polymerisation process and incorporating PMMA pearls.

At the back of the mouth teeth will wear but rarely chip. **enigmalive⁺** posteriors have addressed this through a tough composite formulation combining a double cross linked acrylate copolymer, UDMA resin, nano hybrid fillers and PMMA pearls. **Resilience in the anteriors and incredible wear resistance in the posteriors.**

enigmalive⁺ composite posterior teeth



Pre-polymerised PMMA pearls
Hybrid filler system 1
Nano-hybrid filler system 2
Polymer matrix

The high quality, strength and wear characteristics of **enigmalive⁺** composite posteriors is the result of advanced materials development and highly advanced computer controlled manufacturing at every stage of the process.

Component	Function
Pre-polymerised PMMA pearls	Pre-polymerised PMMA pearls included in the composite have high resistance against plaque adhesion and/or discolouration. They also reduce the polymerisation shrinkage
Hybrid filler system 1	Very fine hybrid silanised silica particles provide the backbone for the material's hardness and wear resistance. Refractive index matched to that of the resin matrix to provide natural translucency and refraction combined with opalescence.
Nano-hybrid filler system 2	Highly dispersed nano particle sized silica fillers. Included to increase toughness and wear resistance. By adding to the composite's homogeneity, tooth surfaces stay smooth over the life of the denture.
Polymer matrix	Blended PMMA and UDMA resin provides a tough homogeneous matrix that resists wear, discolouration and plaque formation. Being free from porosity it has less effect on the opposing teeth and reduces bacterial invasion.
The components in combination	In combination the material formulation of enigmalive teeth form a tough, hard and homogeneous material that provides long life to the denture teeth.

Abrasion in chewing simulator

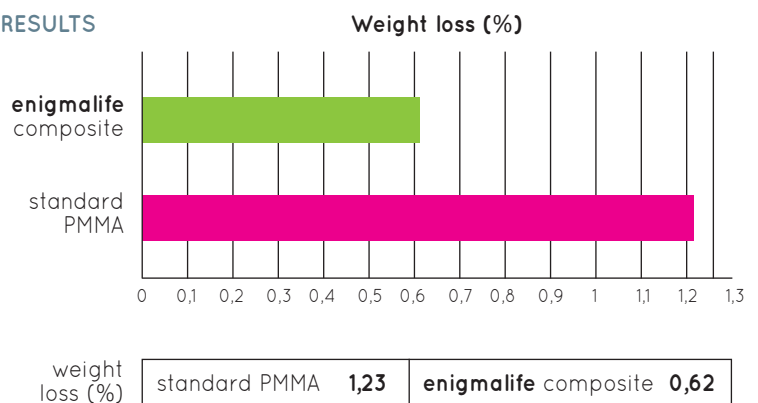
This test shows the superior abrasion resistance of **enigmalive⁺** posteriors compared to ones made from PMMA.

Method description

The chewing simulator is the Model CS-4, developed by SD Mechatronik GmbH, Germany.

Plate samples were prepared with 15mm diameter and 2mm thickness. As antagonists, stainless steel orbs loaded with 50N force were used. The machine performed 640,000 cycles in water. After said 640,000 cycles, the samples were dried and their weight loss was measured. In the test series, the **enigmalive** composite material shows only half the abrasion of PMMA.

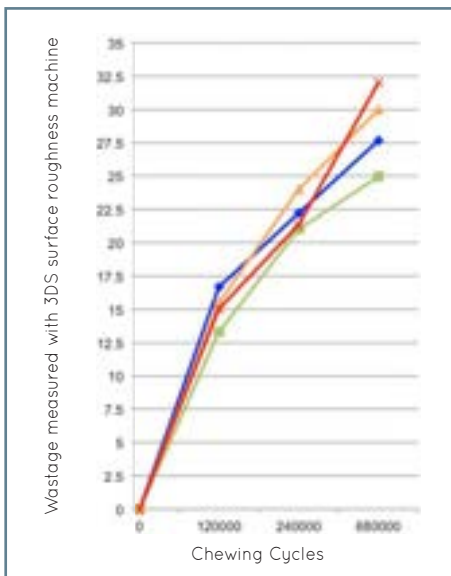
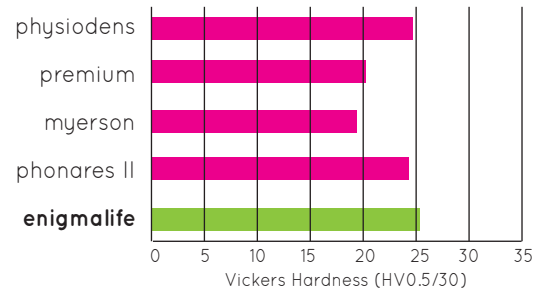
RESULTS



Vickers Hardness Tests - Best in Class

The hardness of the enamel of **enigmalive⁺** posteriors was tested in comparison to other brands of denture teeth. Hardness can be taken as a predictor of wear.

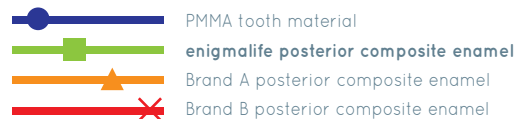
Posterior Enamel Layer



Wear tested in University of Zurich Chewing Simulator

Simulated chewing was carried out to test the wear of posterior tooth material opposing the mesio buccal cusps of human molar teeth as antagonists. A bite force of 50N was employed and the materials further stressed by thermal cycling between 5°C and 50°C every 30 seconds. The material loss was measured by means of a 3DS surface roughness machine. Figures shown are relative values.

Resistance to abrasion



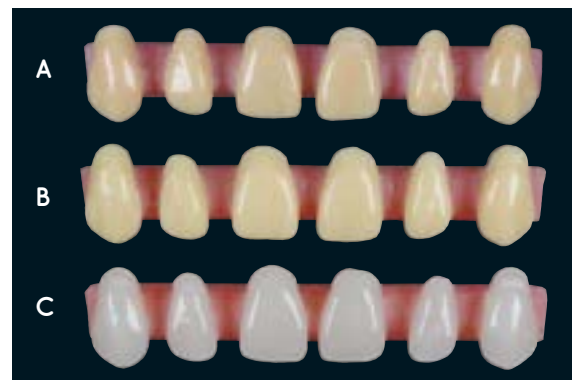
Bonding Test ISO 22112

In order to test the bond to denture base of the various layers of the **enigmalive** posteriors, teeth were manufactured from each layer in turn.

- A) **enigmalive** PMMA Neck Material
- B) **enigmalive** composite dentine material
- C) **enigmalive** composite enamel material

As specified in the standard, anterior teeth, which provide a smaller bonding area than posteriors, were used. The wax was removed with boiling tap water and no further preparation of the teeth was carried out (such as sandblasting or cleaning with monomer). All teeth, including those made from **enigmalive** composite, bonded perfectly to the denture base (enigma high-base). There was no discernible difference between the bond to **enigmalive** PMMA or to **enigmalive** composite. This demonstrates that grinding through the **enigmalive** PMMA neck does not affect the strength of the bond between tooth and denture base.

In a further series of tests, to confirm whether enigmalive teeth could be bonded to composite, a bonding agent (Schottlander Composite Bond) was applied according to the manufacturer's instructions. After application of the bonding agent to them, all teeth including those made from enigmalive composite also bonded perfectly.



enigmalive⁺ S Posteriors**

designed by Professor Rudolph Slavicek



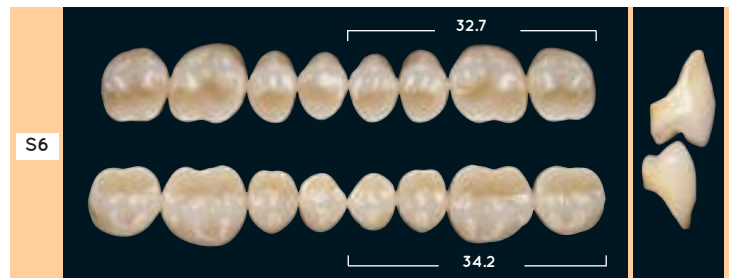
Created by the world leading gnathological expert, Professor Rudolph Slavicek, they reproduce the form and function of natural teeth. The 30° cuspal inclination of the upper first molar accords with his detailed research on the natural dentition.

They are designed not only for full dentures but also for implant stabilised and partial dentures where their fuller form enables them to be easily adapted both to the underlying implant structures and to the remaining dentition. **enigmalive⁺** S posteriors look so real because they are modelled on nature's own creations, honed by millennia of evolutionary development. Truly inspired by nature and designed for living.

While Professor Slavicek recommends that teeth be set up in lingualised occlusion because this occlusal scheme directs the forces towards the remaining bone, **enigmalive⁺** can also be set up in balanced occlusion or cross-bite. Whatever the occlusal arrangement they have amazing function, with only minimal, if any, adjustments needed and with contact being maintained across protrusive and side shift movements.

The palatal stamp cusps of the uppers have precise natural relationships with the corresponding fossa and marginal ridges of the lowers. This relationship enables the dentures to have maximum stability when the patient bites together and improves their comfort. Denture set up is made more positive and the requirement for clinical adjustments is reduced.

A typical mould is shown opposite.

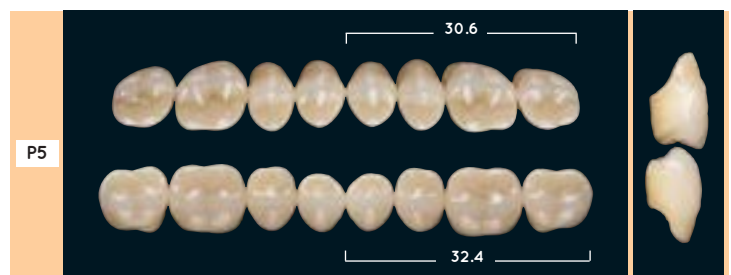
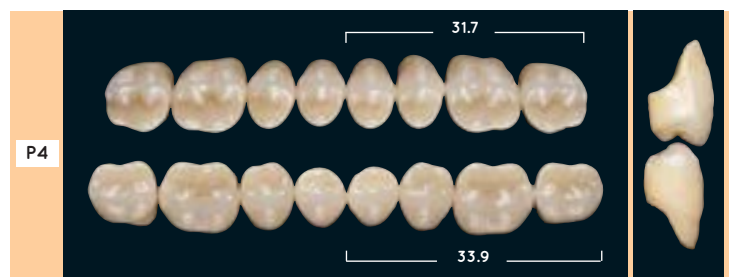


enigmalive⁺ P posteriors

enigmalive⁺ P posterior have been designed for dentures where increased tongue space is required. Lower teeth are flatter but upper teeth have 23° cuspal angles to aid mastication. Whether being set up in balanced or lingualised occlusion this range interdigitates easily. Side shift and protrusive movements are free of interferences with only minimal case specific adjustments required.

All moulds in the range have longer premolars so that a natural visual transition from the adjacent canines can be achieved. Their natural morphological form, details on the buccal surfaces and vital colour layering gives them life and outstanding vitality.

With five mould sizes from the petite P1 to the extra large P6, a choice can be made for every clinical situation. Examples of typical moulds within the range are shown opposite.





Anterior teeth also available in pairs

enigmalive+ anteriors are also available in pairs for improved aesthetics. In the natural dentition, canine teeth often appear darker than – or of a different shade to – neighbouring incisors and premolars. To reproduce this using other brands often requires buying two sets and wasting one of them.

With **enigmalive+** teeth you can order exactly what you need from the wide range available.



Suggested combinations

Centrals/Laterals	Canines
A1	A2
A2	A3
A3	A3.5
A4	B4
B1	B2
B2	B3
B3	B4
C2	D3
D2	D3

enigmalive+ inspiration combination table

Upper Anteriors	Lower Anteriors	P Posteriors	S Posteriors
IR4	L5/L6	P3/P5	S4
IR6	L7/L8	P4/P5	S6
IR8	L9/L10	P4/P6	S8
IR10	L10/L11	P6	S8
IS4	L5/L6	P3/P5	S4
IS6	L7/L8	P5	S6
IS8	L9/L10	P4/P5	S8
IT4	L6/L7	P3/P5	S4
IT6	L7/L8	P4/P5	S6
IT8	L10/L11	P4/P6	S8

enigmalive+ character combination table

Upper Anteriors	Lower Anteriors	P Posteriors	S Posteriors
D36	L5/L6	P3/P5	S4
D56	L6/L7	P3/P5	S4
D76	L6/L7	P3/P5	S6
D77	L7/L8	P4/P5	S6
D88	L7	P4/P5	S6
D99	L7/L8	P4/P5	S8
K22	L3/L4	P1/P3	S4
K24B	L4/L5	P3/P5	S6
K25	L7/L8	P4/P5	S6
K27	L8	P4	S8
K41	L3/L4	P3/P5	S4
S11	L3/L5	P1/P3	S4
S12	L5/L6	P1/P3	S4
S13	L4/L5	P3/P5	S4
S14	L6/L7	P5	S6
S15	L8/L9	P4	S8
S17	L9/L10	P6	S8
S66	L5/L6	P3/P5	S6

Schottlander Support & Training Courses

Dentistry is becoming more technically demanding as materials and techniques become more sophisticated, enabling improvements in patient care. At Schottlander we believe in continuing education and training as well as in providing technical support to our customers. Schottlander run courses at our purpose built Training Centre in Hertfordshire, and throughout the UK, as well as worldwide through our distributor network.

All Schottlander courses are listed on www.schottlander.com or alternatively please contact the Schottlander Events & Education Coordinator on email: courses@schottlander.co.uk or Freephone 0800 97 000 79.



On our journey to achieve perfection we are indebted to so many clinicians and technicians who have helped us with their comments and advice.

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