



enigma

With enigma only you and your patients
need know they're wearing dentures

Technical Brochure





A happy enigma denture wearer.

Visually, I don't feel people are looking at me and saying "she's got false teeth"... I just wish this had happened years and years ago.

Denture appearance and prosthodontic privacy

It is impossible to overstate the importance of dentures to the wearer yet they remain one of the most challenging aspects of modern dentistry.

As dental health in the population improves, more patients feel embarrassed about wearing dentures and wish to keep the fact secret. Naturally, as dental professionals, we frequently notice patients who wear dentures – as do their family and friends.

Often the teeth chosen are too light for the patient's age, or too small for their face, or are set up in unnaturally perfect alignment; but just as much a give-away are teeth that look artificial or dead through lack of sufficient translucence, inadequate colour change from neck to body, unnaturally wide necks, or the absence of small imperfections.

These factors defeat privacy, reducing denture wearers' chances of feeling attractive. They lose confidence and smile and laugh less with friends, family and work colleagues; for instance they may cover their mouth with a hand while talking or smiling.

This is why lifelike denture teeth and gums, personalised tooth positioning and the resulting improved lip support are all essential for improved denture appearance – and also why the improvements in patient self-confidence and social freedom are so dramatic and rewarding to the dental team.

The enigma philosophy and system

The importance of dentures to the wearer and the goal of prosthodontic privacy, when only you and your patient know they're wearing dentures, lie at the heart of the **enigma** philosophy.

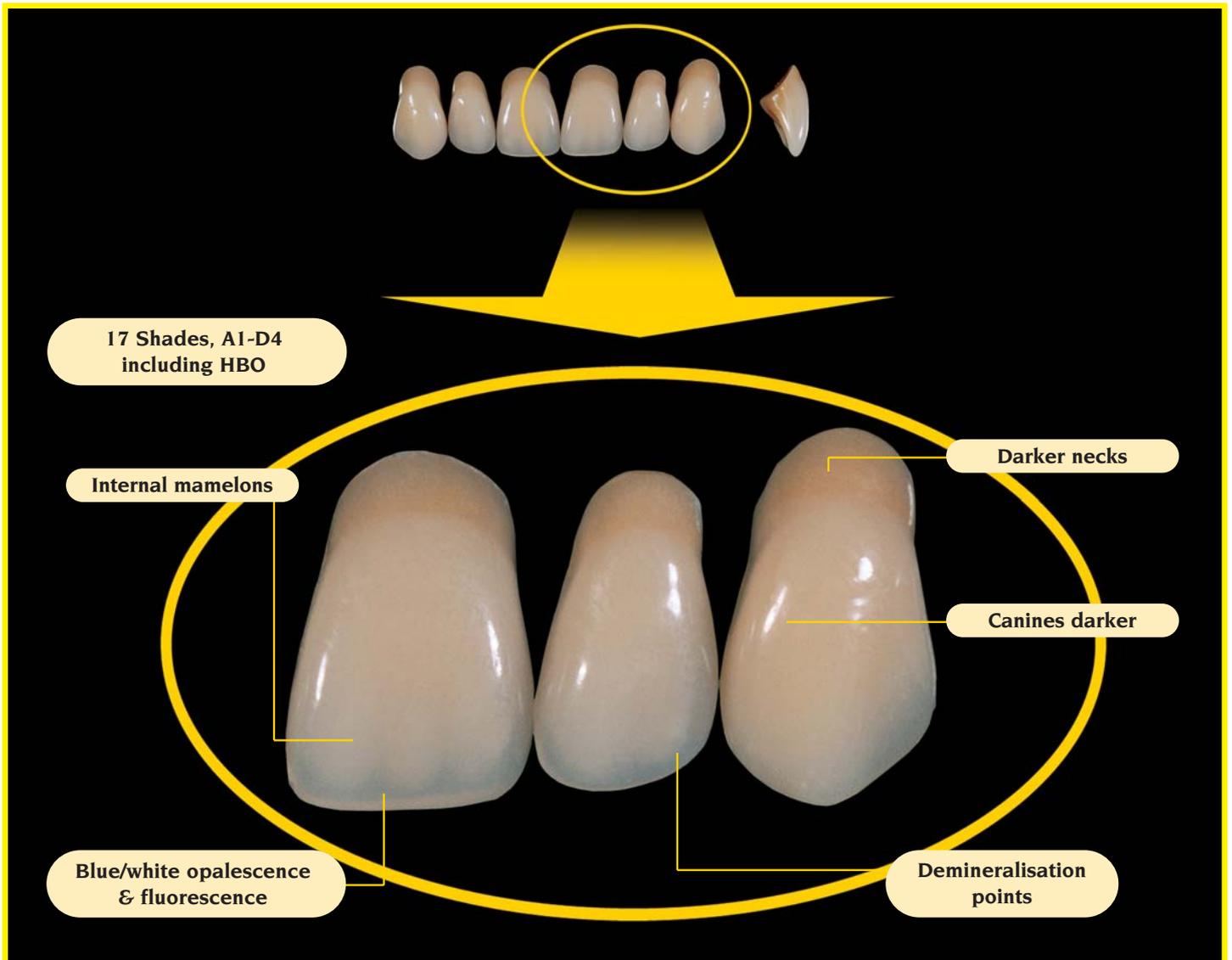
From this philosophy comes the **enigma** system created after more than five years research and development. At its centre is a range of denture teeth, exploiting advanced computer technology to achieve precise control of multiple colour-component layers and completely uniform polymerization. Also included are a highly impact resistant acrylic base material and a range of colour tone acrylics which replicate the natural gingival appearance. The resultant dentures both look exceptionally natural and possess outstanding strength and durability.



Natural appearance of enigma denture in mouth

Natural Colour Blending in **enigma** Teeth

The **enigma** system uses advanced tooling and precise computer-control of multiple colour layers to reproduce the colour variations found in natural teeth. The photo below shows some of the features that help **enigma** teeth appear so alive and real.



- **Subtle mamelon effect.**
In both upper and lower centrals giving an appearance of depth.
- **Translucent incisal edges.**
In both centrals and laterals.
- **Greater opalescence of laterals.**
To add vitality and make the mouth appear more three dimensional.
- **Demineralisation points.**
Placed in some of the teeth out of every set to break up the uniformity.
- **Darker necks.**
As the root of a natural tooth is darker than its crown so the neck of an Enigma tooth contrasts with its body.
- **Longer necks.**
Many of the tooth moulds have necks which are longer and more naturally tapered than many denture teeth, allowing the simulation of gingival recession necessary to match adjacent natural teeth in partial denture wearers.

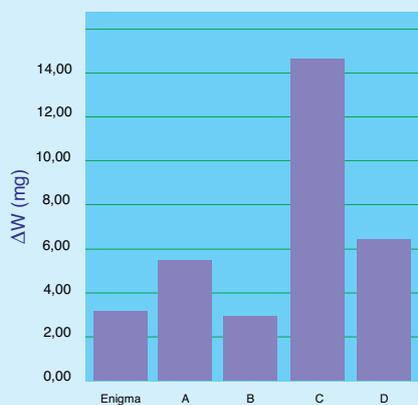
Hardness and Durability

The hardness and durability of **enigma** teeth are achieved through:

- a system of double cross linking using specially developed polymers and cross linking agents giving a network of interpenetrating polymer chains.
- precise computer dosing control of the layers required for each individual tooth in each mould.
- precise computer control of the polymerisation process.

enigma teeth are therefore manufactured to be extremely durable as can be seen from the comparisons below.

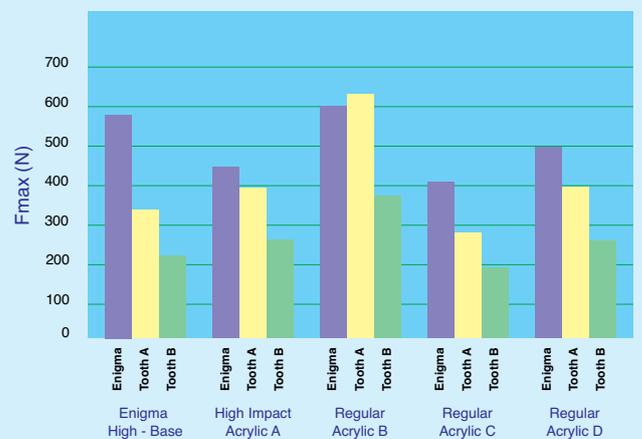
Comparative weight loss on abrasion (internal test method)



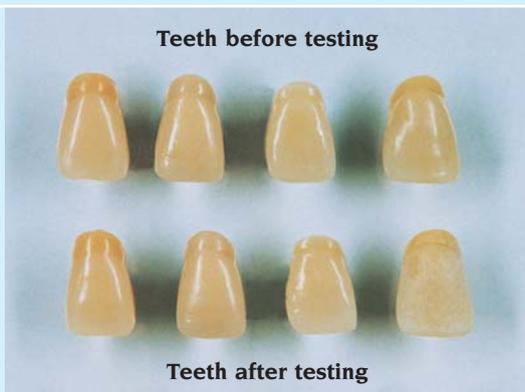
Bond to acrylic

Despite their outstanding hardness and durability **enigma** teeth exhibit excellent bond strength to methyl methacrylate denture bases. It should however be noted that some base materials have lower bond strengths to many brands of teeth. It is therefore recommended to use **enigma** High-Base which has been extensively tested with **enigma** teeth (see bond strength comparisons below).

Bonding test between different brands of teeth and acrylic. ISO 3336

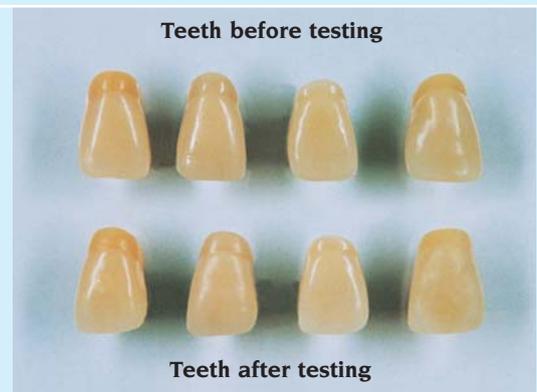


Solvent resistance (chloroform) test



Enigma A B C

Colour stability (heat) test



Enigma A B C

Anterior teeth also available in pairs

enigma anteriors are also available in pairs. 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 **enigma** teeth you can order exactly what you need from the wide range available. Ordering in pairs can also save money with partial dentures.



Please choose any shade combination. The following suggestions may prove helpful.

Suggested Combinations

Centrals/Laterals	Canine
D2	D3
A3	A3.5
B2	B3
B3	B4
C2	B3
A4	B4

Opalescence and fluorescence

Natural tooth enamel is opalescent, which adds to its translucency without making it look grey. This effect has been built into **enigma** tooth enamel. The natural healthy tooth also fluoresces under UV lighting as does **enigma**. So a denture made using **enigma** teeth reflects and refracts light arriving from different directions mimicking the beauty and vitality of natural living teeth.

Wide Shade Range

enigma teeth are provided in the 16 standard shades A1-D4 in every mould as well as the new Hollywood shade HBO, which reproduces bleached teeth whilst still retaining the **enigma** vitality. The same vitality can be found across the whole **enigma** shade range with even the very light shades HBO, A1 and B1 containing subtle variations in colour and translucency.

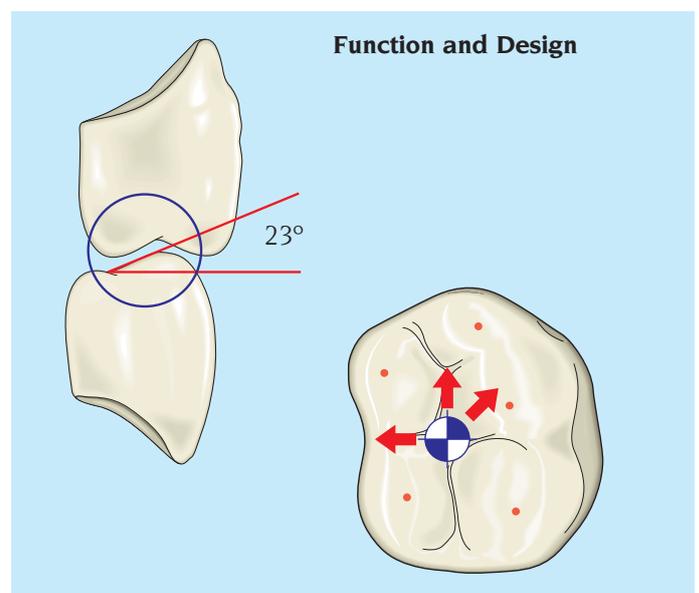
Matching Posterior Teeth

The complex colour blending of the anteriors is carried through to the posteriors so that their cusps mimic those of natural teeth. The darker neck colour adds to the feeling that here too a superior tooth is being used. **enigma** posteriors have high strength, high resistance to wear, and the same bond strength to the denture base as the anteriors.

Function and Design

The importance of correct function cannot be overstated. Well defined points of initial contact between working cusps and fossae as well as defined excursive pathways between the opposing cusps ensure a stable denture and efficient mastication.

Enigma posteriors have been designed with a 23° cuspal angle and comply with the above principles of occlusion. A well defined mastication zone and reduced lingual cusps increase tongue space and lower the occlusal forces.



The **enigma** Range

Wide range of anterior moulds

Within the **enigma** tooth range there are 7 square 'S' moulds, 5 oval 'O' moulds, and 15 triangular moulds. The latter are divided into 2 sub ranges with 7 moulds in the 'K' range having laterals with greater height to width ratios than in the 8 moulds of the 'D' range.

For the full range of moulds see the separate **enigma** mould chart, examples of one mould out of each range are shown below.



There are eight 'D' moulds in the range



There are seven 'K' moulds in the range



There are seven 'S' moulds in the range



There are five 'O' moulds in the range



Enigma teeth and the application of enigma colour tone.

Acrylic Base - framework to the teeth

Beautiful teeth are only shown off to their best advantage when framed by an equally beautiful acrylic base which replicates the appearance of the natural gums.

Natural gingival tissue

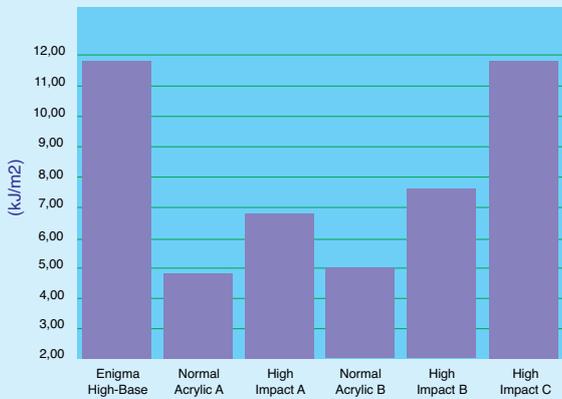


Natural gingival tissue is, however, not uniform in colour. For instance the thicker epithelium on bound gingivae or the bone showing through thin mucosa is ivory pink in colour. Areas of greater vascularity, where the epithelium is thinner and papillae are all a darker pink and the gingival tissue of many ethnic groups have a bluish or brownish tinge. To reproduce this colouration **enigma** Colour Tone has been produced as a range of eight colours for application in the denture flask. **enigma** Colour Tone is particularly recommended for use with **enigma** High-Base, an impact resistant denture base with outstanding physical properties wch is available in a variety of shades.

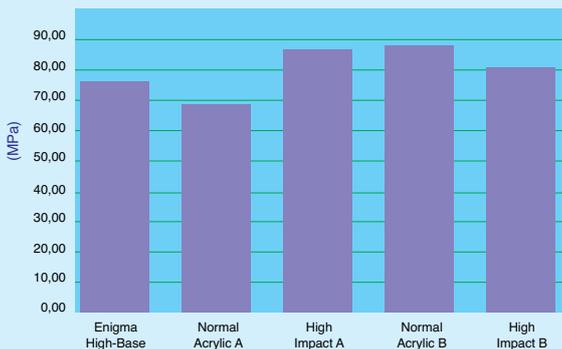
enigma denture



Acrylic Impact Strength to ISO 179



Acrylic Flexural Strength to ISO 1567



The Schottlander Alma Gauge

The positions of denture teeth are not just important for the patient's smile and the function of their dentures. They also enable clear speech and, when placed to support the lips, can make a difference of five or ten years to the apparent age of the face.

An initial estimate of the tooth position should be established during the first appointment and confirmed at the occlusal record stage when speech can also be tested.

The Schottlander Alma Gauge not only helps in the provision of better dentures but also saves you time. Simply use the Alma Gauge to take horizontal and vertical readings of the existing denture referenced to the incisive papilla.

Simplified Procedure

At the first visit assess horizontal position of central incisors and, if required, modify lip support with sheet wax. Take an Alma Gauge reading. Next assess the vertical dimension relative to the existing denture and record both readings on the sleeve together with an outline of the denture.

In the laboratory the technician produces an occlusal rim of precise dimensions using the working impressions, the sleeves provided and the laboratory Alma Gauge.

At the next surgery visit the usual occlusal records are taken. In addition, because the rim is so precise, with minimal excess thickness, tooth position can be checked and speech tested at this early stage, reducing patient visits for re-tries and the subsequent need to reset teeth. Any adjustments are recorded using the Alma Gauge.

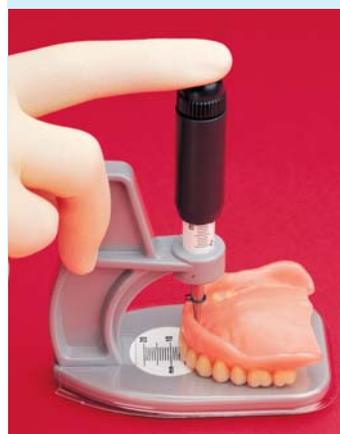
This straightforward procedure ensures a set-up that will require fewer adjustments, saving not only time, but also resulting in greater patient satisfaction.



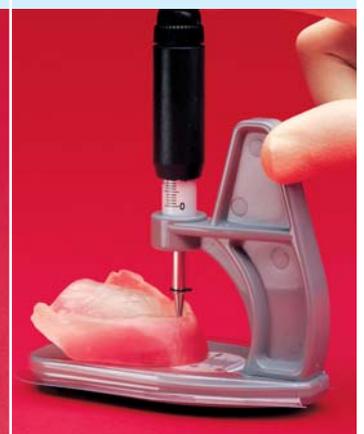
The Schottlander Alma Gauge

- Facilitates early checking of tooth position and speech
- Transfers information as numerical readings between surgery and laboratory
- Saves both surgery and laboratory time
- Helps reduce re-tries

Schottlander Alma Gauge with dimensions on sleeve



Assessing the existing denture



Checking the occlusal rim



In 2004 Schottlander were honoured to receive the Queen's Award for the Enigma and Natura teeth and denture systems.

Schottlander's Innovation Recognised

The official citation from the Queen's Awards Office read:

"The award to Davis Schottlander & Davis Ltd recognises this company's success in continuously improving a range of teeth and dentures.

The Company has created Enigma and Natura, two ranges of teeth and dentures that not only look more natural but also function better. This has been achieved by using advanced acrylic materials, a wider range of colours and better mechanical design, to give an improved "bite". Options available now take account of the different characteristics of ethnic groups. Continuous innovation in design and professional marketing have enabled this award winner to achieve a substantial share of the market and considerable commercial success whilst providing customers with better looking and performing dentures".

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