

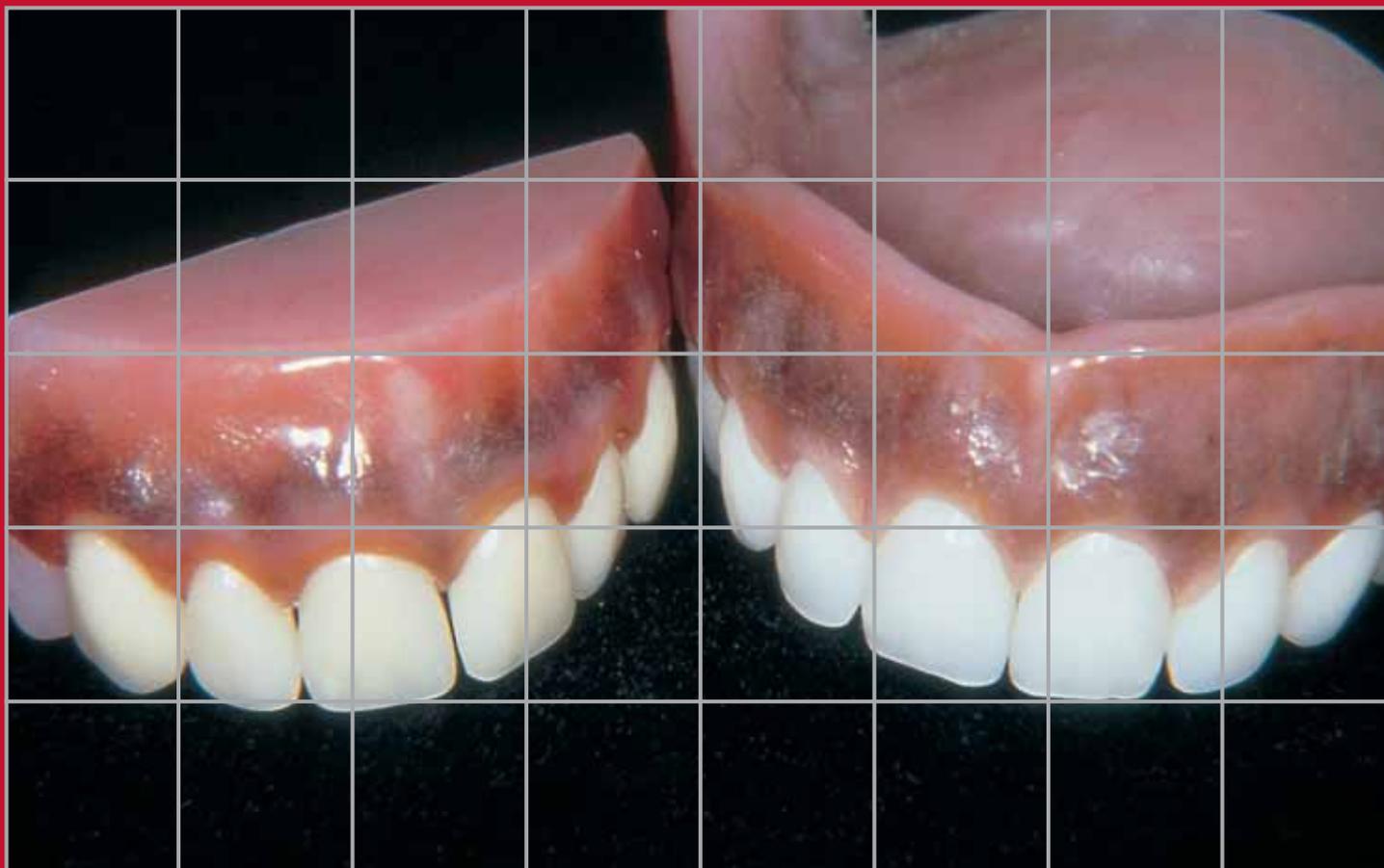
# Enigma Colour Tones

Part of the Enigma Denture System

A professional guide to custom shade matching of gingival tissue



THE QUEEN'S AWARDS  
FOR ENTERPRISE  
2004



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

It was in response to this need and challenge that Schottlander developed the Enigma Denture System, to put into the hands of the dental professional the materials and systems needed by them.

The Enigma Denture System has been so successful that its innovative programme has been officially recognised by the receipt of a Queen's Award – a unique occurrence in dentistry.

The Enigma Denture System comprises of Enigma Denture Teeth, Enigma High-Base impact resistant acrylic, Enigma Colour Tones (the subject of these articles), measuring instruments, World of Difference Training Seminars and Programmes and a growing range of support products, presenting you with a range of aesthetic possibilities which is almost endless.

To find out more about the innovative Enigma Denture System - see pages 18-21 or contact Schottlander on 0800 97 000 79

## Custom Shade Matching of Gingival Tissue, Part 1

In this first part, Ruth Bourke uses a case study to demonstrate Custom Shade Matching of natural gingiva using the application of Enigma Colour Tones on complete and partial dentures.

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## Custom Shade Matching of Gingival Tissue, Part 2

In this second part, Ruth Bourke describes matching and making custom shade guides for gingival tissue and suggested formulas for a generic set of guides as well as demonstrating techniques for the application of Enigma Colour Tones.

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**Introduction**

The success of complete dentures can be interpreted by the patient from two distinct view points: function and appearance. Most often the dentist's primary concern is with the function in the oral environment (e.g. stability, fit, retention and mastication), and aesthetic considerations such as the size, shade, and shape of the teeth, tooth position, denture base contours and colour become secondary. The patient, however, may view their relative importance quite differently, and in recent years a more 'patient-centred' treatment regime has evolved.

Today, Dr. John Besford, a specialist in dental aesthetics is perhaps the most well-known advocate of patient-centred

treatment in England and Europe and believes that denture aesthetics play a larger role in the patient's perceived needs. Dr. Besford's philosophy of treatment can be summarised in the concept of 'prosthodontic privacy', which he defines as follows: "A denture wearer should have the option of keeping secret from other people the fact of having to wear a denture."

**The Reproduction of Living Tissues in Dentures**

*The Emergence of Colour Pigments for Dentures*

In the 1950's the American Dr. Earl Pound innovated many techniques for creating natural looking dentures.

Adopting Frank Lloyd Wright's working philosophy that "form and function are one", Pound advanced the concept that function in the oral environment should not exist without aesthetic form, as is often seen in dentures. *Personalised Denture Procedures*, the manual Pound wrote to document his techniques, is still used as a reference today.

Dr. Pound cited three distinct characteristics of his 'new look dentures':

- (1) The natural setting of teeth,
- (2) The development of an entirely new concept of denture form, and
- (3) The reproduction of the natural colour of living tissues. (ref; 1)

**Notes on Gingival Pigmentation**

The gingivae are the most frequently pigmented of the intra-oral tissues, as well as the most readily seen. Dummett (1968) questioned the frequently used description of normal gingiva as 'coral pink' and suggested a more accurate statement of the patterns of normal gingival pigmentation in the following definition:

"The colour of healthy gingivae varies from a pale pink to a bluish purple. Between these limits of normalcy are a large number of colours which depend primarily upon the intensity of melanogenesis, the degree of epithelial cornification, the depth of epithelisation and the arrangement of gingival vascularity. Moreover, colour variations may be uniform, unilateral, bilateral, mottled, macular, or blotched, and may involve the gingival papillae alone or extend throughout the gingivae and into other oral tissues. Non-pigmented gingivae are found more often in fair-skinned individuals, while pigmented gingivae are usually seen in dark-skinned persons" (1,2 & 3)

1. Light pigmentation (Case P)



2. Caucasian pigmentation (Case E)



3. Dark pigmentation (Case K)



## 4. The eight shades of the Enigma Colour Tone System



With the renewed interest in providing custom stained gingiva, this article discusses Dr. Pound's third phase, assuming that phases 1 and 2 have been completed and that a denture with the correct tooth positions has been anatomically waxed.

### Surface Layer Stains

Dr. Pound introduced Replident stains along with a staining technique that applied the pigmentation onto the surface layer of the denture base and was processed as an integral part of the denture. This became one of the most widely used of all the documented systems and later became known universally as Dr. Earl Pound's Kayon Staining Kit (consisting of 5 colours and named after Kay See Dental, the company that produced them commercially). Kayon stains are quality products still available today.

### Employment of Rare-Earth Pigments for a Greater Range of Shades

Various other techniques were developed that frequently incorporated or modified Pound's original technique: Winker et al., Gerhard, Choudhary et al., Johnson, and Kemnitzer. Though the system Pound described was the most universally accepted, its colour range was inadequate for rendering darker pigmentations. The result was that doctors and technicians supplemented

the Kayon system using complicated recipes of rare-earth pigments, as described more recently by Zimmerman et al. (1982). Because the techniques for producing such pigmentations are somewhat complex, only a small number of patients have received dentures that match their unique gingival pigmentation.

### Enigma Colour Tones

The author's own experience confirms this deficiency in the Kayon staining system. In 1995 the author, in working partnership with Dr. John Besford, consulted with Davis Schottlander & Davis Ltd to develop a new product for internal staining that includes darker pigmentation colours. This collaboration resulted in the creation of the Enigma Colour Tone System (fig 4). The Enigma System consists of eight colours designed to yield consistent results across the spectrum of gingival pigmentation without the need for rare-earth pigment recipes. These colours are:

- IP Ivory Pink
- LP Light Pink
- MP Medium Pink
- NP Natural Pink
- DP Dark Pink
- BP Blue Pink
- LB Light Brown
- DB Dark Brown

## 5. Existing TRPD



Part I of this article presents a clinical case study which illustrates the use of the darker pigments in heavily pigmented gingival tissue. Part II of this article, will explain the laboratory techniques and materials used to produce custom shade tabs to match the colour of the patient's natural gingival tissue.

## Clinical Case Study

### A Challenging Patient

The patient presented with a poorly-matched existing temporary removable partial denture (TRPD) (fig 5) that replaced teeth # 9, #10 and #11 lost due to trauma. The new cast partial framework had already been fabricated and the clinician treating this patient (Dr. Val Lim D.D.S., MSc) consulted with the author to achieve a custom match of the gingiva.

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