SCIENTIFIC INFORMATION

Amaris - Introduction

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With Amaris, VOCO has introduced an innovative, highly aesthetic composite for anterior restorations which has been optimised in all relevant aspects of optics, working characteristics and stability.

Profile of requirements

Optical properties:
- High visual base transparency for (highly) translucent shades
- Separately adjusted, natural fluorescence for enamel and dentine shades
- Based on a natural opalescence optimised particle system (refraction with translucence)
- Intelligent shade concept

Polishing properties:
- High gloss, minimal surface roughness, micro-particle hybrid
- Short polishing time and high gloss even with a soft polisher
- High abrasion resistance

Shade stability:
- High chemical shade stability (coffee, red wine etc.) even with translucent shades
- Additive and stabilizers for resistance to UV light (prevents yellowing)

Consistency:
- Smooth, non-sticky
- Slight difference in consistency between the dentine and enamel shades for precise modelling

Polymerisation properties:
- Short curing times for translucent and opaque shades
- Extremely high resistance to chair light even with translucent shades
- Extended modelling times in anterior

Physical properties:
- High transverse, compressive and tensile strength of modern hybrid composites
- Indications also include posterior restoration
- Minimal polymerisation shrinkage
- Universal application with all dentine adhesives

Amaris two-layer concept

Core from opaque material
- Dentine shade
- Not translucent

Shell/outside layer from translucent material
- Shade depth
- Variation
- Incisal edge

Translucency / Opacity

	Translucence
Amaris High Opaque	4 %
Amaris Opaque	8-10 %
Amaris Translucent	34-36 % (for incisal edges)
Amaris High Translucent	65 % (for masking)
Amaris – layered	13 %
Monolayer-Composite	ca. 20 % (often appears grey)

Active shade management, modification during the restoration

First step	Apply the opaque core layer
Second step	Check the shade impression
	If good, next layer TN = Translucent neutral
	If too light, next layer TD = Translucent dark
	If too dark, next layer TL = Translucent light
Third step	Finish restoration with chosen translucent shade

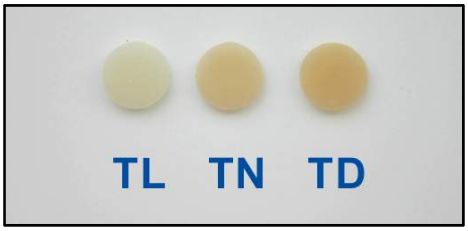
Intelligent shade concept

5 base shades (Opaque)

Amaris Opaque O1
Amaris Opaque O2
Amaris Opaque O3
Amaris Opaque O4
Amaris Opaque O5

3 enamel shades (Translucent)

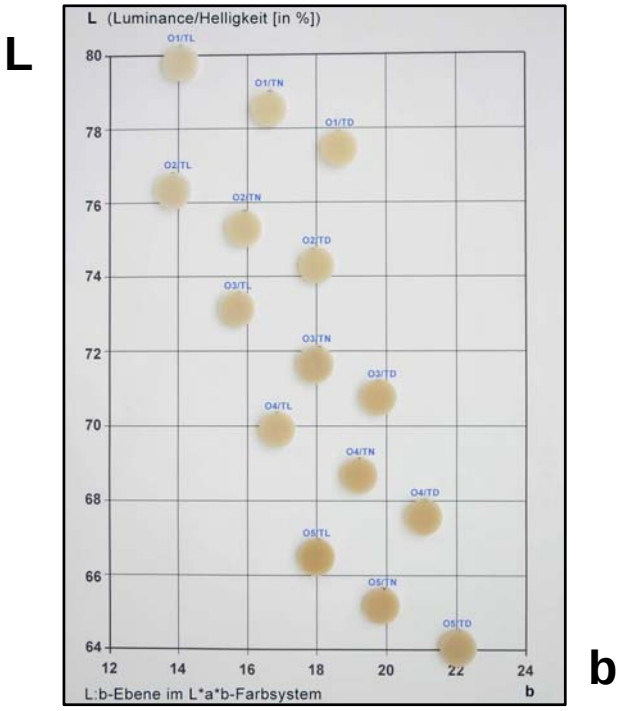
Amaris Translucent Light TL
Amaris Translucent Neutral TN
Amaris Translucent Dark TD



2 special shades

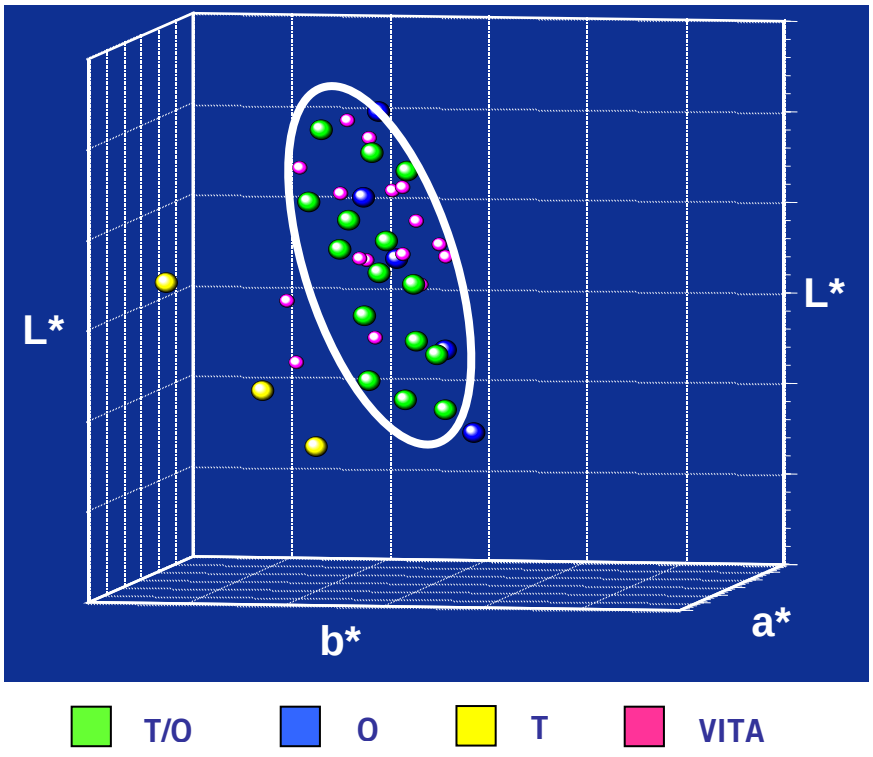
Amaris Flow High Translucent HT
Amaris Flow High Opaque HO

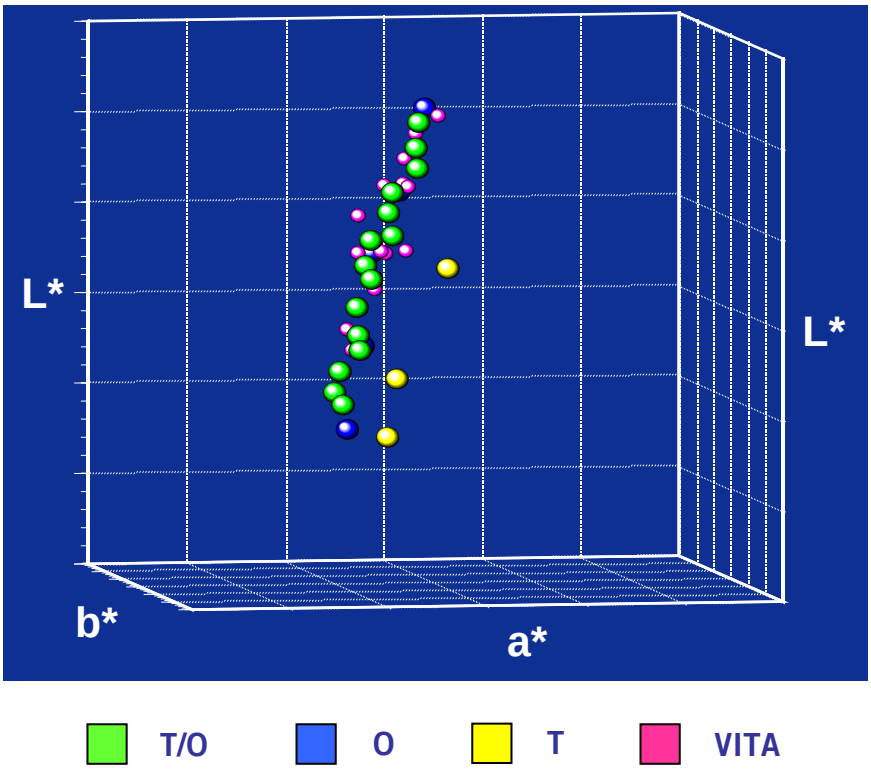
15 combinations – Evenly distributed in CIELAB colour space



Comparison of the shade distribution in CIE-Lab space

(White ellipse indicates range of natural tooth shades)





Technical Data

Table 1: Amaris and Amaris Flow technical data

	Amaris	Amaris Flow
Transverse strength (ISO 4049)	120 MPa	115 MPa
Compressive strength	375 MPa	367 MPa
Diametrical tensile strength (DTS)	51 MPa	-
Water absorption (ISO 4049)	18.4 µg/mm³	27.6 µg/mm³
Water solubility (ISO 4049)	< 1 µg/mm³	< 1.6 µg/mm³
Radiopacity (ISO 4049)	210 % Al	190 % Al
Curing depth (ISO 4049) Translucent shades (10 sec.)	> 2.5 mm	> 3.0 mm (HT 10 sec.)
Curing depth (ISO 4049) Opaque shades (40 sec.)	> 2.0 mm	> 1.5 mm (HO 40 sec.)

Shrinkage

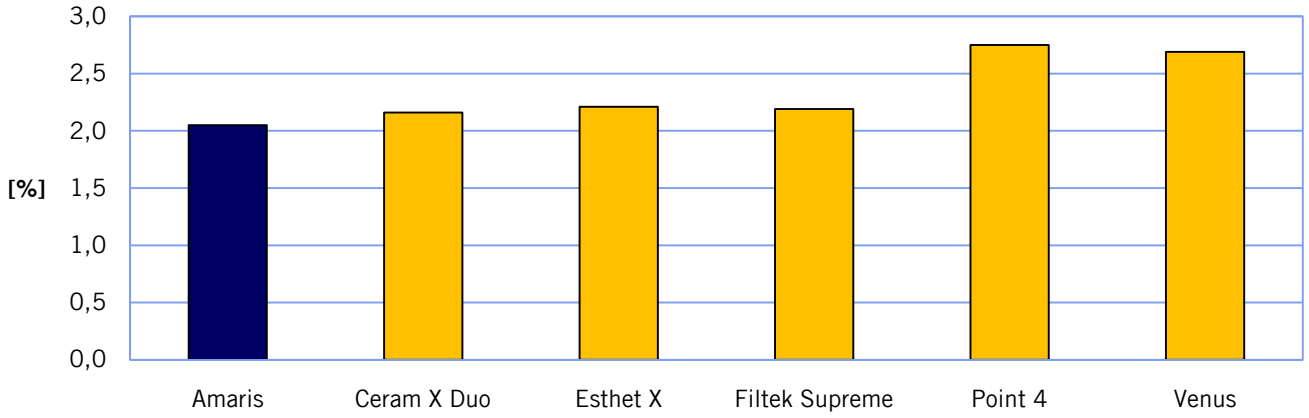


Figure 1: Polymerisation shrinkage, University of Manchester, UK [1]

Surface hardness

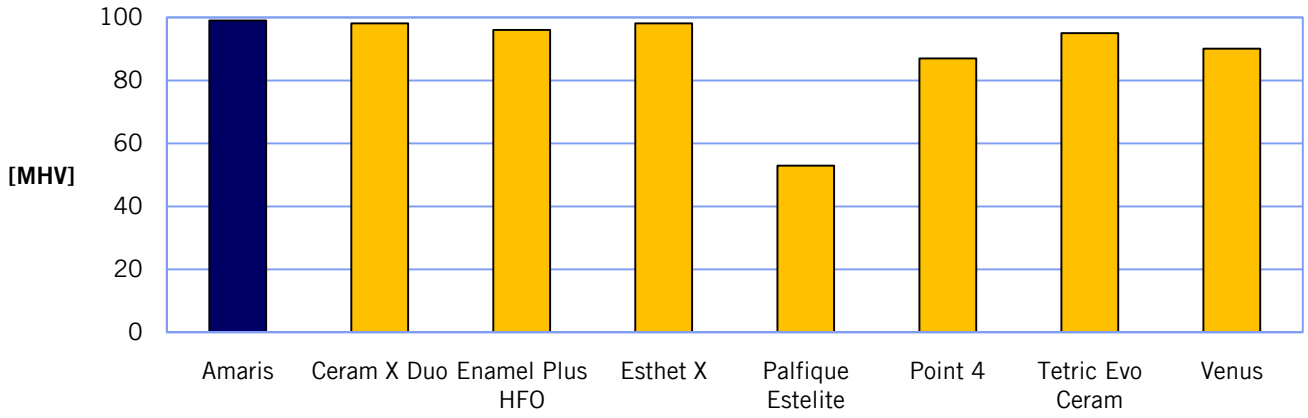


Figure 2: Micro-Vickers hardness, University of Rostock [2]

3-Body abrasion

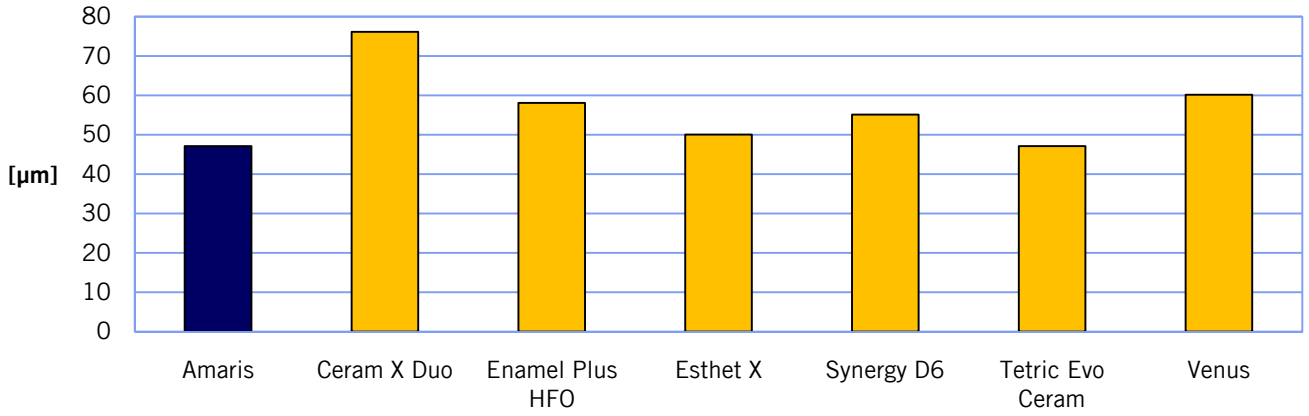


Figure 3: 3-Body-abrasion analogue J Dent Suppl 1, 22 (1994), S. 21-27, data on file, VOCO GmbH.

Polish

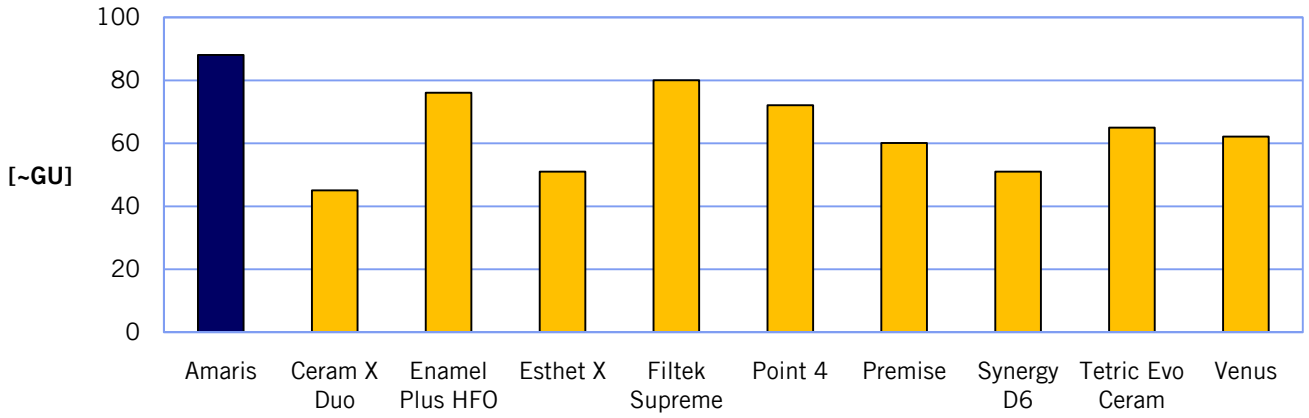


Figure 4: Polish results, measurement of lustre according to DIN ISO 2813, data on file, VOCO GmbH

Surface roughness

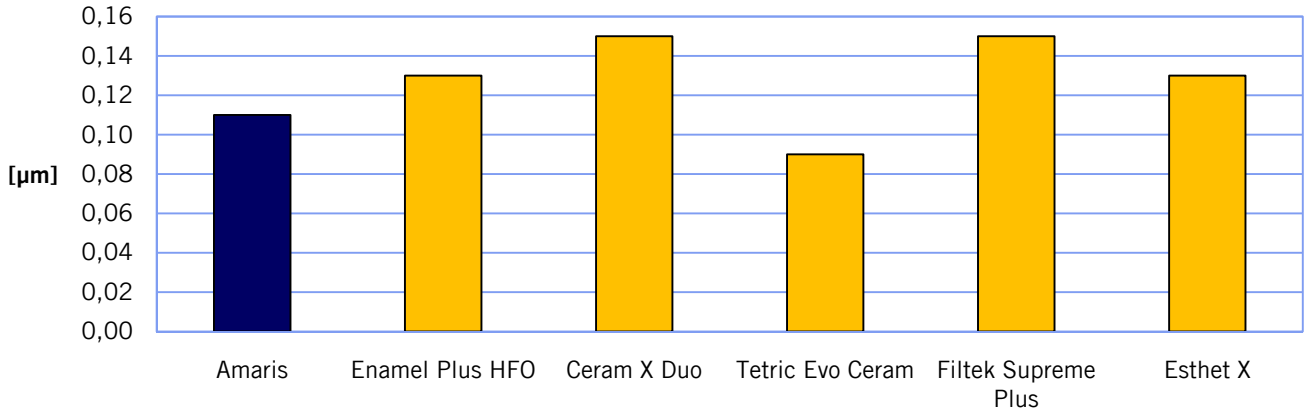


Figure 5: Average surface roughness after polish (Easygloss) acc. to ISO 4287, University of Tübingen [3]

Curing times

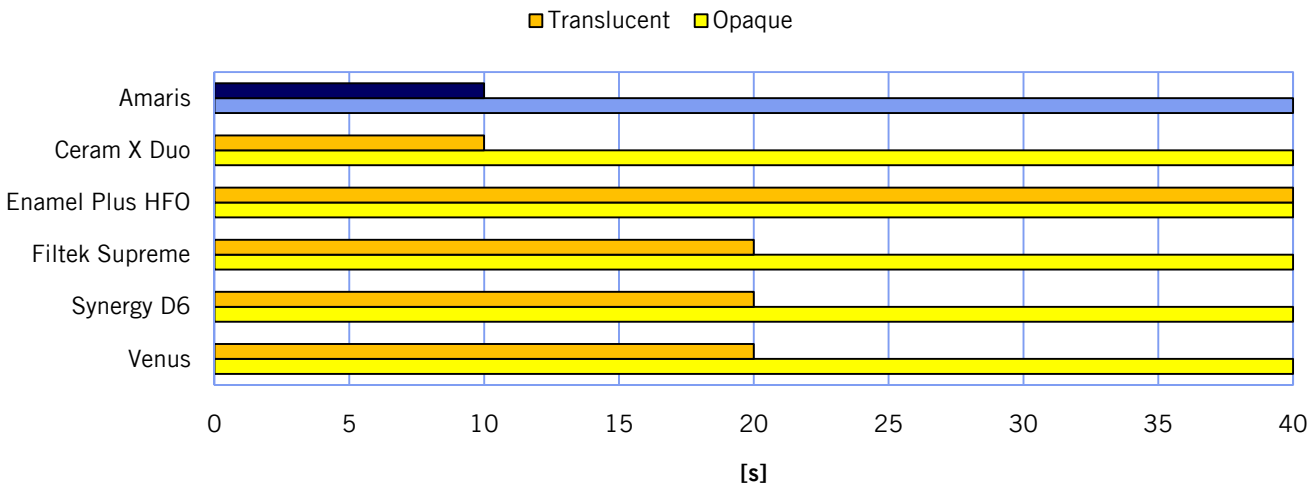


Figure 6: Curing times according to manufacturers' instructions for use

Photosensitivity

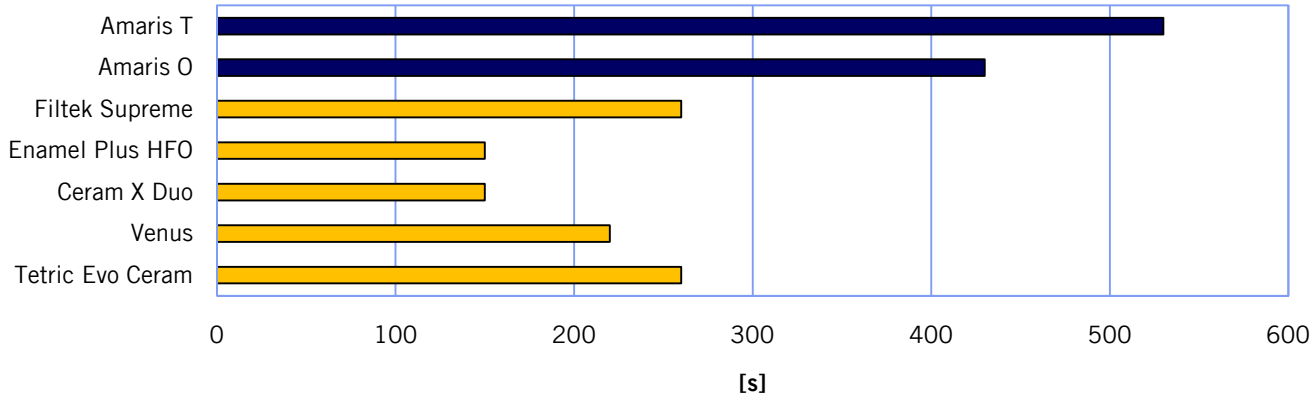


Figure 7: Photosensitivity according to ISO 4049, data on file, VOCO GmbH

Conclusion: With Amaris, a system is available which allows invisible and durable anterior restorations without an additional course of study. It unites the consistent improvement of all requirements of indication with a logical and manageable shade system.

[1] Prof. Watts, University of Manchester, 2007, data on file, VOCO GmbH.
[2] Prof. Behrend, University of Rostock 2007, data on file, VOCO GmbH.
[3] Prof. Geis-Gerstorfer, University of Tübingen 2007, data on file, VOCO GmbH.