Evaluation of bond to Enigma High Impact Denture Base

1 Assignment

Evaluation of the bonding strength between each layer of artificial tooth material and denture base resin at the site of fracture after a tensile strength test.

The following materials were evaluated:

Evaluation	Denture Base Material	Teeth-Material
1.	Enigma High-Base	enigmalife Neck PMMA
2.	Enigma High-Base	enigmalife Dentine Composite
3.	Enigma High-Base	enigmalife Enamel Composite

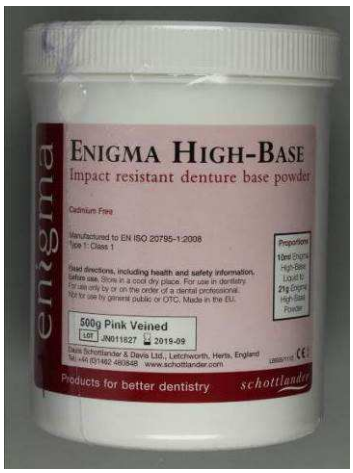
2 Materials

2.1 Denture Base Material

As Denture base Material was “Enigma High-Base” used.

The “Instruction for use” was observed, particularly:

“Thick dentures
Boil sufficient water to cover clamped flask, remove heat and place the flask into the water.
Add 200ml cold water for every 2 liters of water used and leave for 60 minutes.
Apply low heat to maintain temperature of water at about 70ºC for 30 minutes bring to the boil in not less than 10 minutes and boil for a further 20 minutes.
Residual monomer content <1.6%.
After all curing cycles bench cool the flask for 30 minutes prior to immersing in cold water before deflasking.“



2.2 enigmalife Anterior sets were manufactured from Neck- Dentine and Enamel Material

For the given Evaluation we prepared three sets of enigmalife Anterior teeth respectively completely from "Neck", "Dentine" and "Enamel" Material.

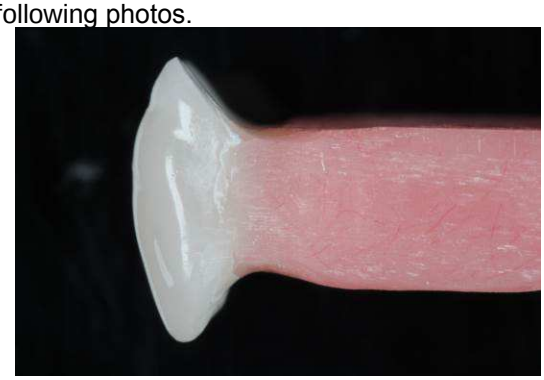
enigmalife Enamel
Material (Composite)

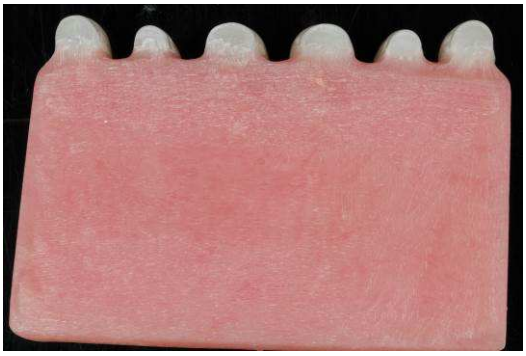
enigmalife Dentine
Material (Composite)

enigmalife Neck
Material (PMMA)

3 Specimens

All specimens were prepared according to the following photos.



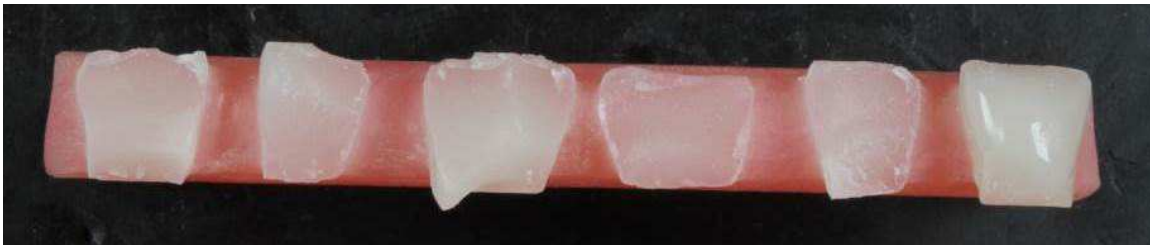


4 Tensile strength test

Bonding strength to denture resin was done in accord with ISO22112:2006-Point 5.3.1

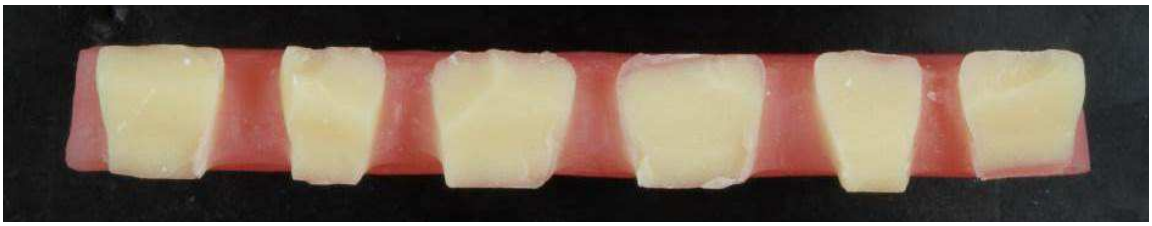
5 Results

5.1 enigmalife Composite Enamel



Conclusion:
We obtained optimal results regarding the bonding strength of artificial tooth enamel material to Enigma High-Base.

5.2 enigmalife Composite Dentine

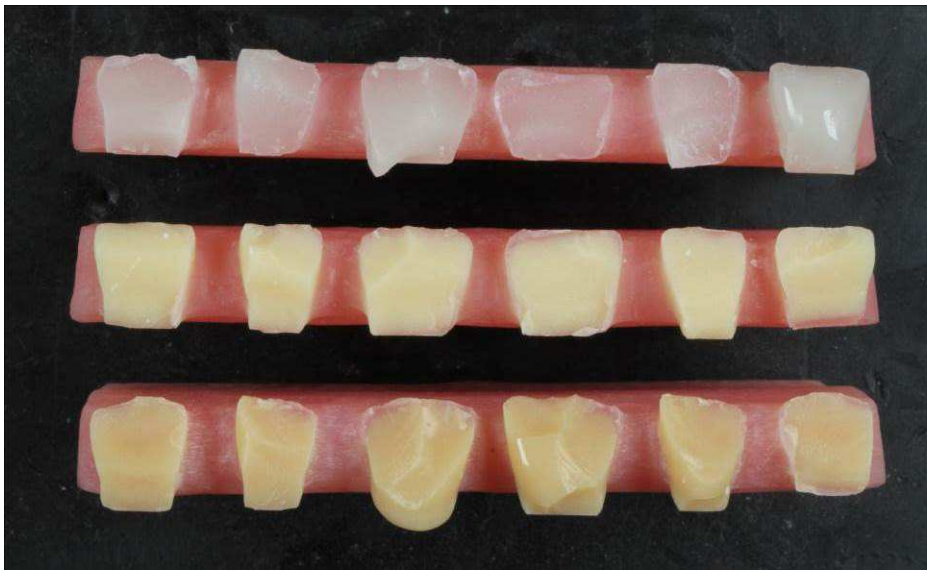


Conclusion:
We obtained optimal results regarding the bonding strength of artificial tooth dentine material to Enigma High-Base.

5.3 enigmalife Neck PMMA

Conclusion:
We obtained optimal results regarding the bonding strength of artificial tooth neck material to Enigma High-Base.

6 Comparison between enigmalife Neck, Dentine and Enamel Materials



Conclusion:
From the bonding properties point of view there was no visible difference between any of the tooth materials.

7 Conclusion

All materials show a very good bond to the base material.

Evaluation of bond to Enigma High Impact Denture Base together with "Schottlander Composite Bonder"

1 Assignment

Evaluation of the bonding strength between each layer of artificial tooth material and denture base resin at the site of fracture after a tensile strength test.

Schottlander Composite Bonder was only applied to “enigmalife Dentine” and “enigmalife Enamel”

The following materials were evaluated:

Evaluation	Denture Base Material	Teeth-Material	Bonder
1.	Enigma High-Base	enigmalife Neck PMMA	---
2.	Enigma High-Base	enigmalife Dentine Composite	Schottlander Composite Bond
3.	Enigma High-Base	enigmalife Enamel Composite	Schottlander Composite Bond

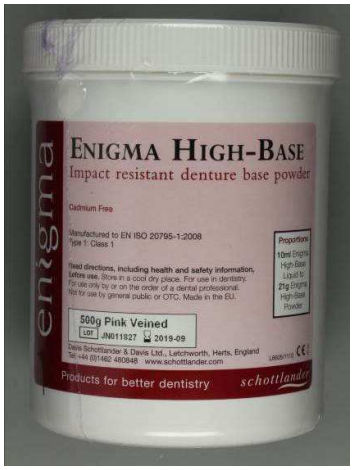
2 Materials

2.1 Denture Base Material

As Denture base Material was “Enigma High-Base” used.

The “Instruction for use” was observed, particularly:

“Thick dentures
Boil sufficient water to cover clamped flask, remove heat and place the flask into the water.
Add 200ml cold water for every 2 liters of water used and leave for 60 minutes.
Apply low heat to maintain temperature of water at about 70ºC for 30 minutes bring to the boil in not less than 10 minutes and boil for a further 20 minutes.
Residual monomer content <1.6%.
After all curing cycles bench cool the flask for 30 minutes prior to immersing in cold water before deflasking.“



2.2 Bonder

Only on “Dentine” and “Enamel”-material was “Schottlander Composite Bond” applied.

The “Instruction for use” was observed, particularly:

Preparation of the contact surface between teeth material and base material.
Sandblast the area to be connected with aluminum oxide with a particle size of 50 micron and at 2 bars pressure. Clean with oil-free compressed air.
Application of Schottlander Composite Bond
With a brush generously apply Schottlander Composite Bond and allow the solvents to evaporate for approximately one minute. Apply a second layer.
Polymerize each layer in accordance with the light curing unit employed (9 min in Labolight).

Polymerisation Device	**Bonding Opaque**	**Gingival Paste & High Chroma**		
		Intermediate Polymerisation	Final Polymerisation	Surface Treatment
Labolight LV-II/III	1 min.	0,5 min.	9 min.	9 min.

2.3enigmalife Anterior sets were manufactured from Neck, Dentine and Enamel Material
For the given Evaluation we prepared three sets of enigmalife Anterior teeth respectively completely from "Neck", "Dentine" and "Enamel" Material.

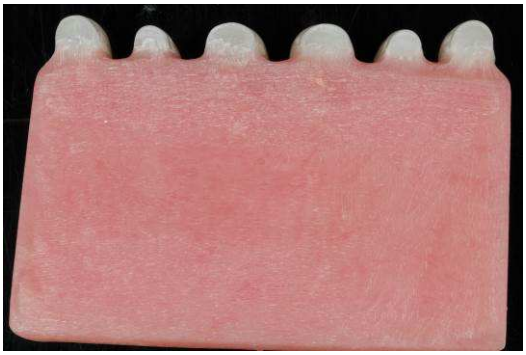
enigmalife Enamel
Material (Composite)

enigmalife Dentine
Material (Composite)

enigmalife Neck
Material (PMMA)

3 Specimens

All specimens were prepared according to the photos.

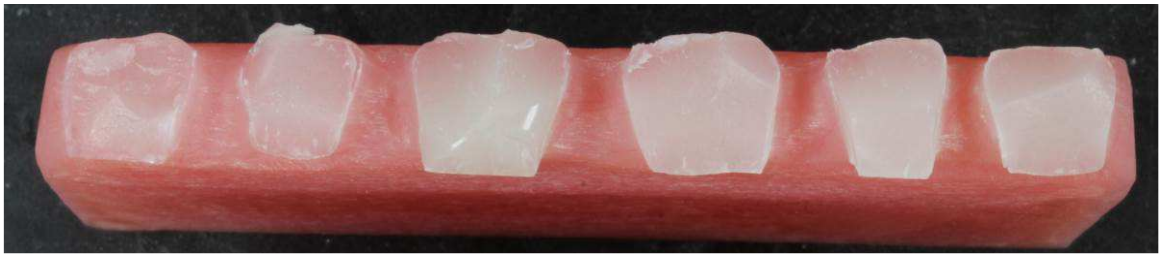


4 Tensile strength test

Bonding strength to denture resin was done in accord with ISO22112:2006-Point 5.3.1

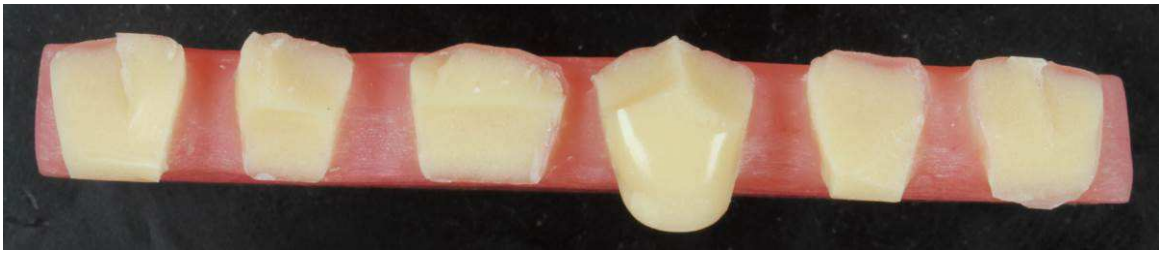
5 Results

5.1 enigmalife Composite Enamel



Conclusion:
We obtained optimal results regarding the bonding strength of artificial tooth enamel material to Enigma High-Base.

5.2 enigmalife Composite Dentine



Conclusion:
We obtained optimal results regarding the bonding strength of artificial tooth dentine material to Enigma High-Base.

5.3 enigmalife Neck PMMA

Conclusion:
We obtained optimal results regarding the bonding strength of artificial tooth neck material to Enigma High-Base.

5.4 Comparison between enigmalife Neck-, Dentine and Enamel Material

Conclusion:
From the bonding properties point of view there was no visible difference between any of the tooth materials.

6 Conclusion

All materials show a very good bond to the base material.

Evaluation of bond to "Pegasus" Pourable Cold Cure Denture Base

1 Assignment

Evaluation of bonding strength between each artificial teeth material and “Pegasus” pourable cold cure denture resin at the site of fracture after a tensile strength test.

Following material mix was evaluated:

Evaluation	Denture Base Material	Teeth-Material
1.	“Pegasus” Pourable Cold Cure	enigmalife Neck PMMA
2.	“Pegasus” Pourable Cold Cure	enigmalife Dentine Composite
3.	“Pegasus” Pourable Cold Cure	enigmalife Enamel Composite

2 Materials

2.1 Denture Base Material

Denture Base Material was “Pegasus” Pourable Cold Cure used.
Directions are as shown.

2.2 enigmalife Anterior sets from full Neck Dentine and Enamel Material

For the given Evaluation we prepared three sets of enigmalife Anterior teeth respectively from full “Neck”, “Dentine” and “Enamel” Material.

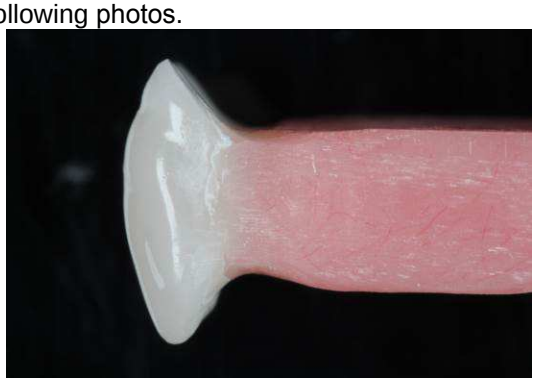
enigmalife Enamel Material (Composite)

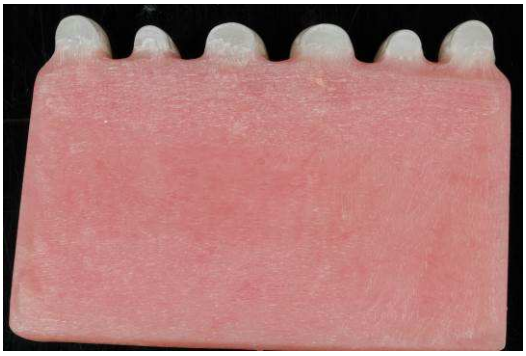
enigmalife Dentine Material (Composite)

enigmalife Neck Material (PMMA)

3 Specimens

All specimens were prepared according to the following photos.



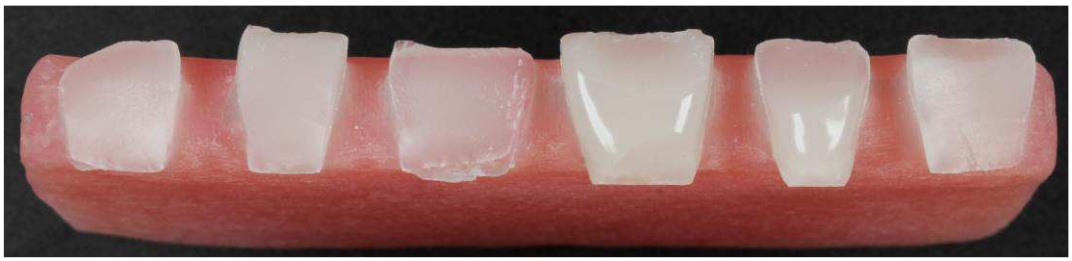


4 Tensile strength test

Bonding strength to denture resin was done in accord with ISO22112:2006 Point 5.3.1

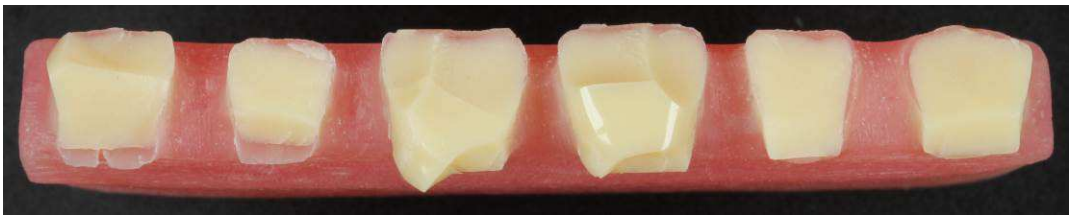
5 Results

5.1 enigmalife Enamel



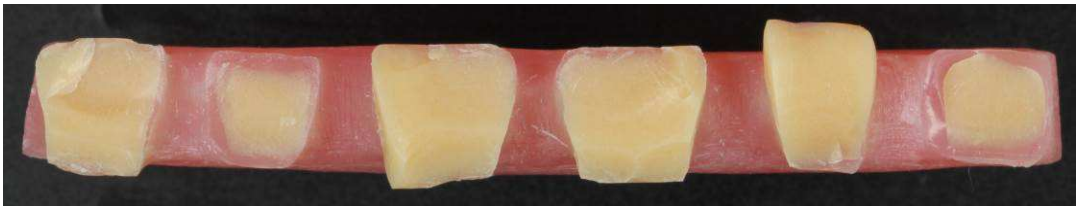
Conclusion:
We obtained optimal results regarding the bonding strength of artificial tooth enamel material to “Pegasus” Pourable Cold Cure.

5.2 enigmalife Dentine



Conclusion:
We obtained optimal results regarding the bonding strength of artificial tooth dentine material to “Pegasus” Pourable Cold Cure

5.3 enigmalife Neck



Conclusion:
We obtained optimal results regarding the bonding strength of artificial tooth neck material to “Pegasus” Pourable Cold Cure

6 Comparison between enigmalife Neck, Dentine and Enamel Material

Conclusion:
From the bonding properties point of view there was no difference between any of the tooth materials.

7 Conclusion

All materials show a very good bond to the “Pegasus” Pourable Cold Cure base material.

13.04.2015