

POLO DENT[®]

COMPOSITE

Nano XPE

ESTHETIC LOW SHRINK LIGHT CURE COMPOSITE
with nano-filler technology



Technical Product Information

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Nano XPE syringes

4 g

REF:

38 23 55	A1
38 23 60	A2
38 23 65	A3
38 23 70	A3.5
38 23 75	A4
38 23 80	B1
38 23 85	B2
38 23 92	C1
38 23 95	C2
38 24 05	BW



Nano XPE capsules

20x 0,3 g

REF:

38 24 15	A1
38 24 20	A2
38 24 25	A3
38 24 30	A3.5
38 24 35	A4
38 24 40	B1
38 24 45	B2
38 24 52	C1
38 24 55	C2
38 24 65	BW



Nano XPE is a light cure nano-filled composite for anterior and posterior restorations. Beside its low shrink and low abrasion **Nano XPE** shows superior handling features and excellent mechanical properties.

Nano XPE is based on urethanedimethacrylate resin and inorganic filler particles <math><1.0 \mu\text{m}</math>. The total filler content is 82 % (wt).

The composite material meets the requirements of DIN EN ISO 4049.

Features and Benefits

Features:

- low shrinkage
- improved wear resistance
- wax-like consistency
- excellent gloss polishability
- higher filler load

Benefits:

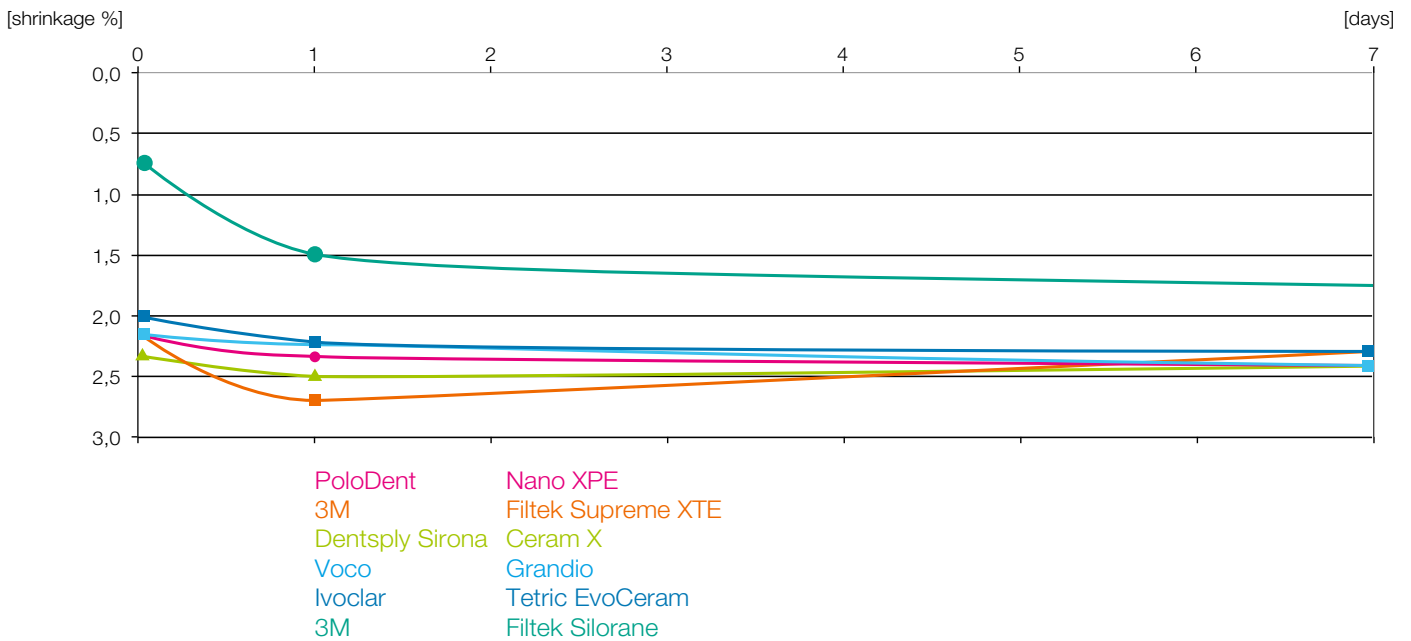
- low stress
- long durability and higher hardness
- non sticky, excellent handling features
- highly sculptable
- beautiful esthetic restorations

Mechanical properties: shrinkage

Shrinkage is very important for sealing of the interface between tooth and restoration. Low shrinkage means that the requirement on the adhesive force of the bonding is reduced to achieve a perfect marginal seal.

Nano XPE has a low shrinkage. With it's perfect non sticky consistency it is ideal to get a very good wetting of the adhesive layer. Therefore a perfect filling without margin is formed.

Overview of selected mechanical properties:
shrinkage in water

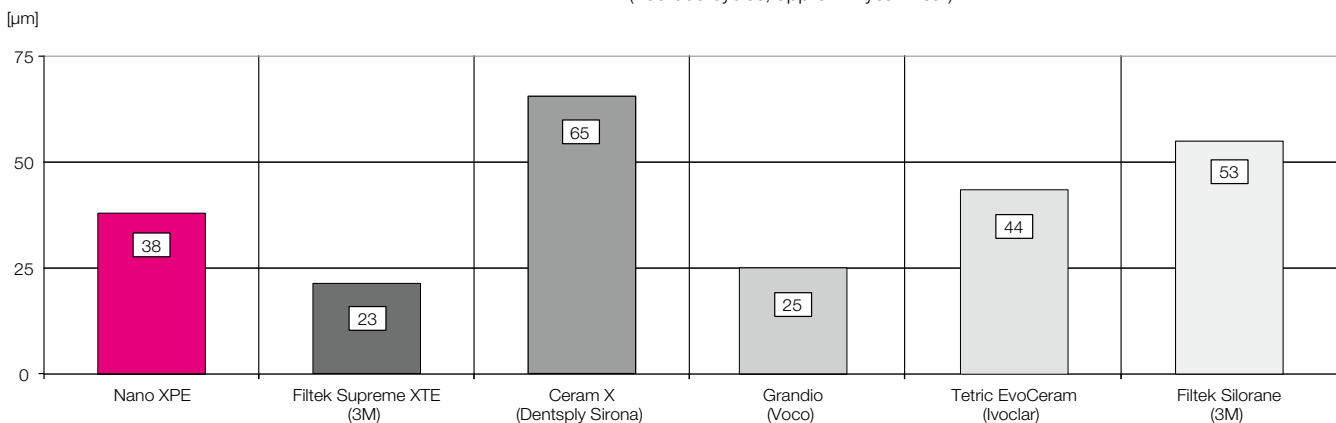


Mechanical properties: wear

Wear or abrasion is very important for the long-term clinical success of a filling. Food abrasion may alter the surface of the filling and later induce cracks and failure of the filling. Therefore low wear is essential for clinical success. The wear of the filling material should be similar to natural enamel, because otherwise the antagonist may be damaged.

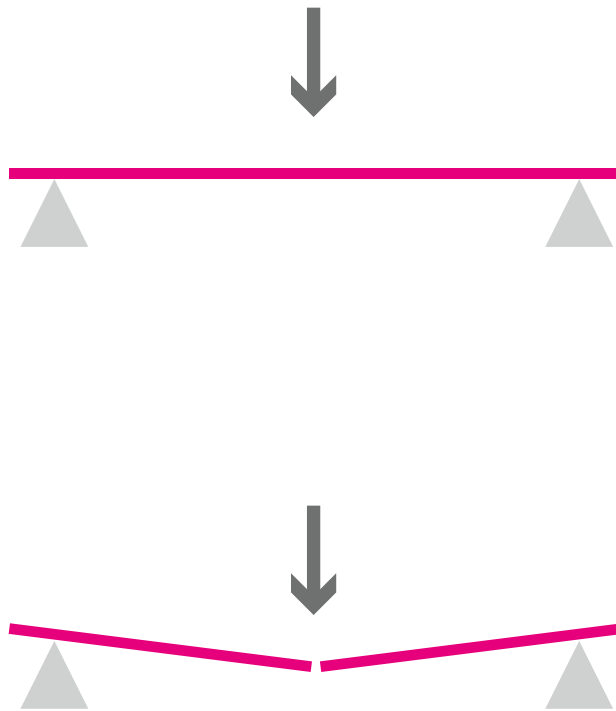
Nano XPE has an optimal wear. Not too weak, not too strong ! Just right !

Overview of selected mechanical properties:
wear after 1 month storage
(200.000 cycles; approx. 1 year wear)

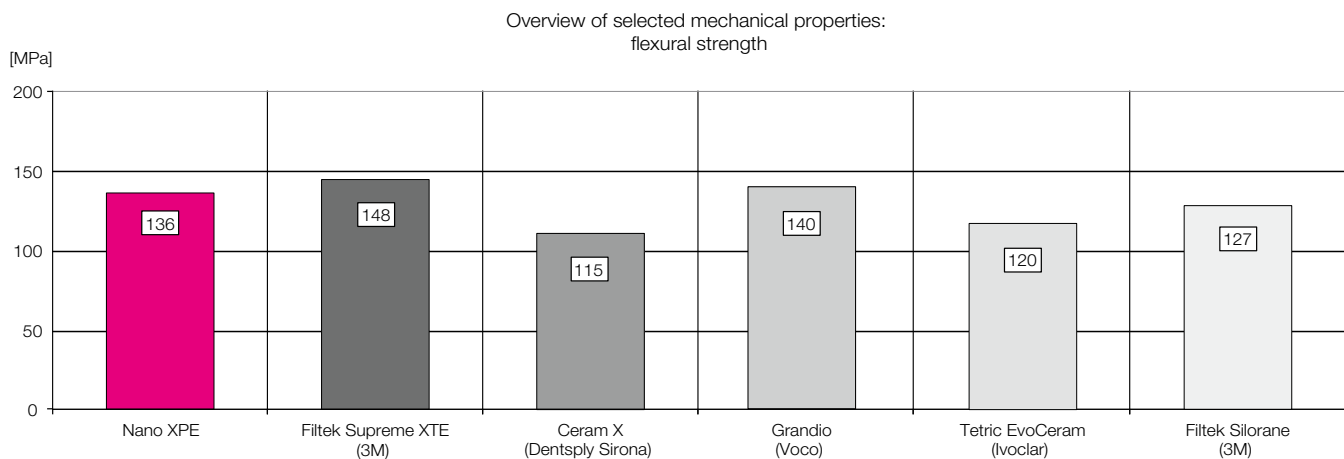


Mechanical properties: flexural strength

The flexural strength is determined from the 3-Point bending experiment.

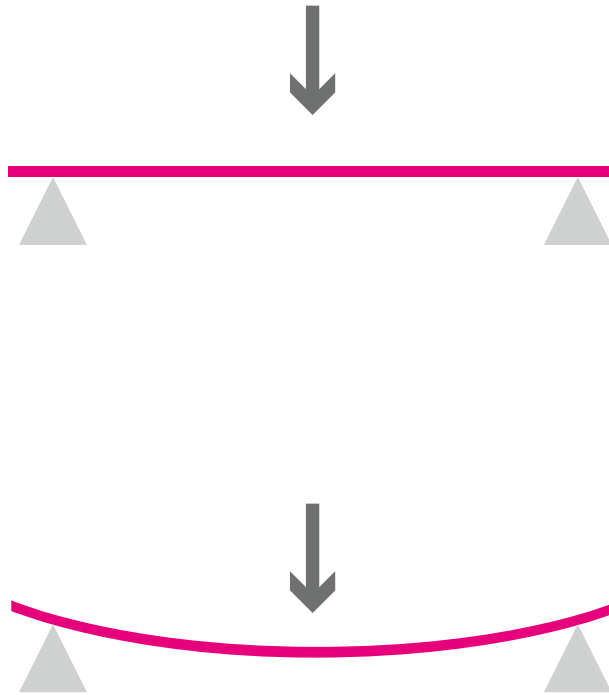


Mechanical stability is important for the clinical success of filling materials. Especially in larger fillings the flexural strength is a very good prediction of the clinical performance in the mouth.



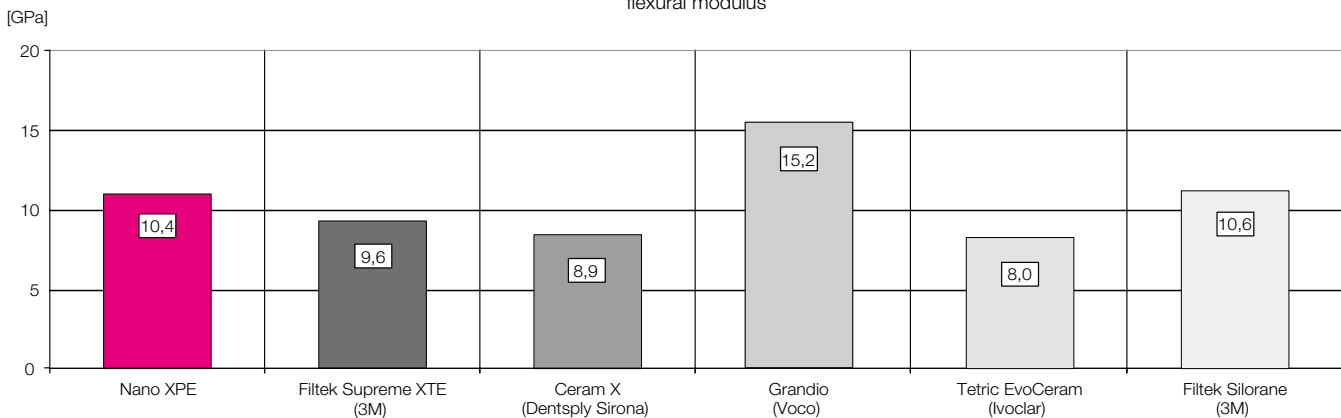
Mechanical properties: flexural modulus

The flexural modulus is determined from the 3-Point bending (flexural strength) experiment.



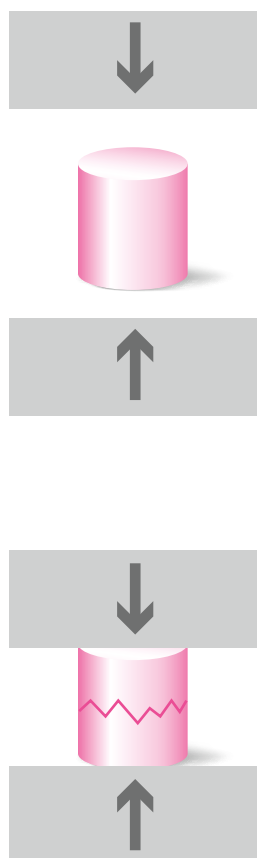
The flexural modulus represents the flexibility or stiffness of the material. Higher value means a stiffer material. Stiffness is important to assure that the masticating force does not displace the filling, which will lead to leakage. On the other hand during polymerisation very high stiffness of the composite may result in high shrinkage stress.

Overview of selected mechanical properties:
flexural modulus



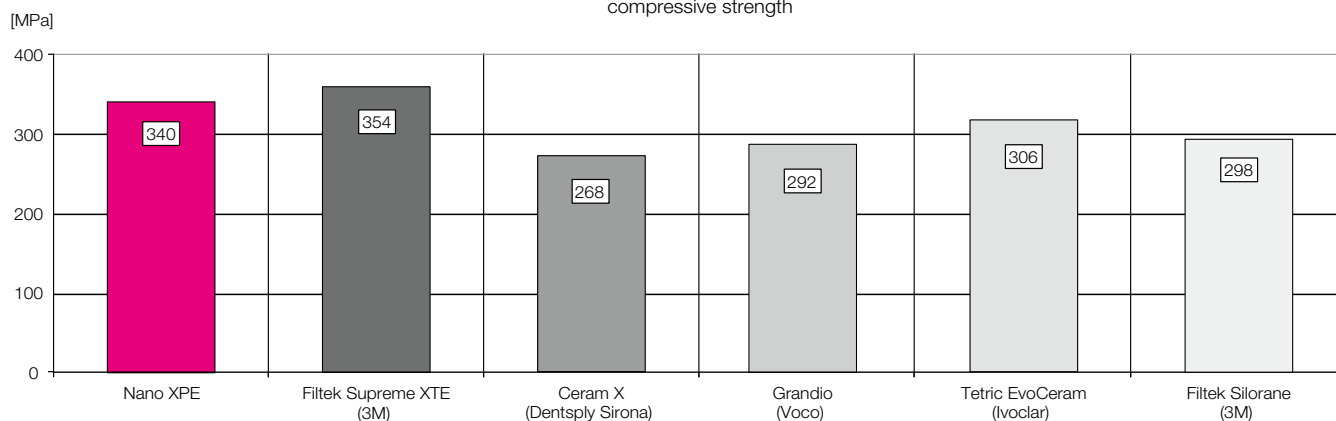
Mechanical properties: compressive strength

The compressive strength is determined from a cylinder with a diameter of 4 mm and a height of 6 mm.



The measurement of compressive strength is a good prediction of clinical performance of filling especially in load carrying class I and II situations. Like with all in-vitro tests it represents only a part aspect of the real clinical situation. Therefore the summary of all mechanical testing experiments have to be viewed as a prediction of the clinical situation.

Overview of selected mechanical properties:
compressive strength



source: manufacturer's research and evaluation labs

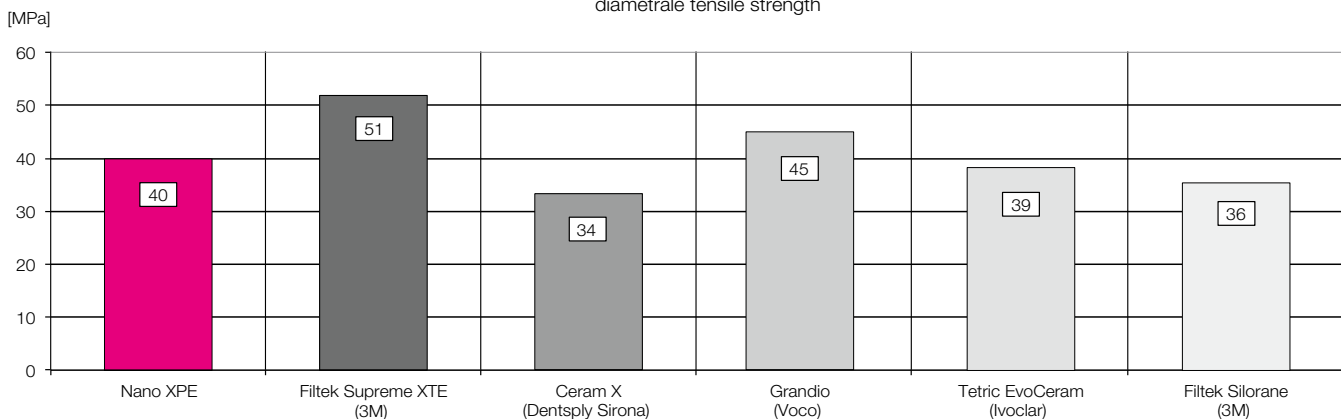
Mechanical properties: diametrale tensile strength

The diametrale tensile strength is determined from from a cylinder with a diameter of 6 mm and a height of 4 mm.



This experiments tests the specimen under a tearing force, which is otherwise difficult to measure. Higher value means stronger material.

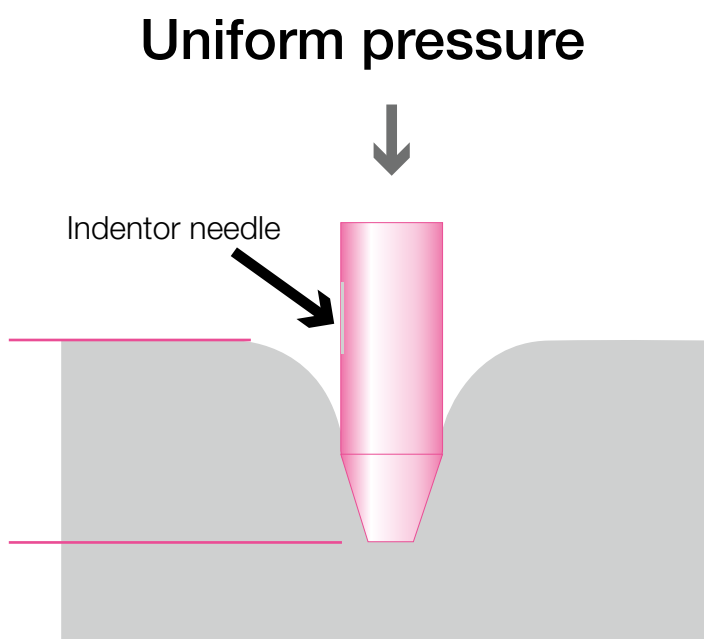
Overview of selected mechanical properties:
diametrale tensile strength



source: manufacturer's research and evaluation labs

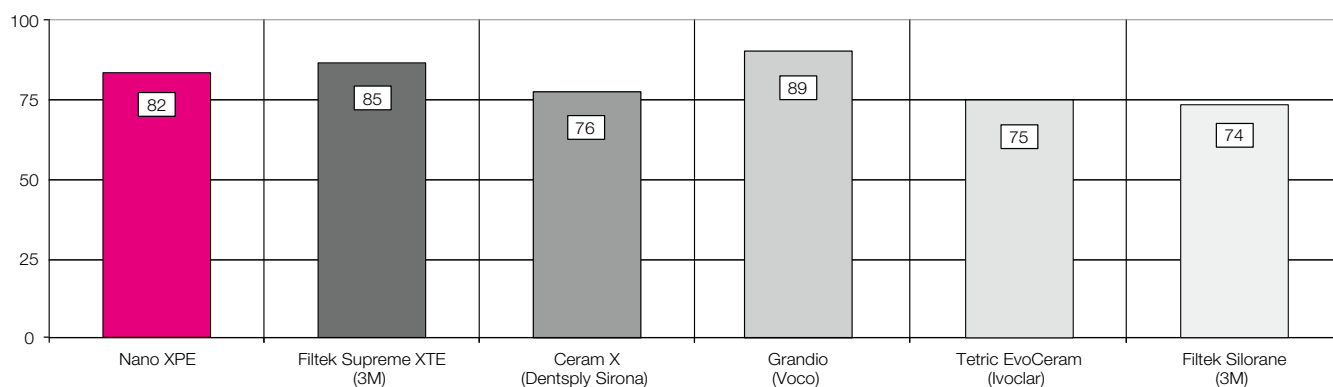
Mechanical properties: barcol hardness

The test specimen is placed under the indenter of the Barcol hardness tester. A uniform pressure is applied to the specimen until the dial indication reaches a maximum. The depth of penetration is converted into about barcol numbers.



This experiment measures the resistance of the surface of the specimen against a standardised testing needle. Clinically it can be viewed as the resistance to allow initial cracks in the filling. Higher value means stronger surface.

Overview of selected mechanical properties:
barcol hardness



source: manufacturer's research and evaluation labs

The effect of toothbrushing on surface gloss*

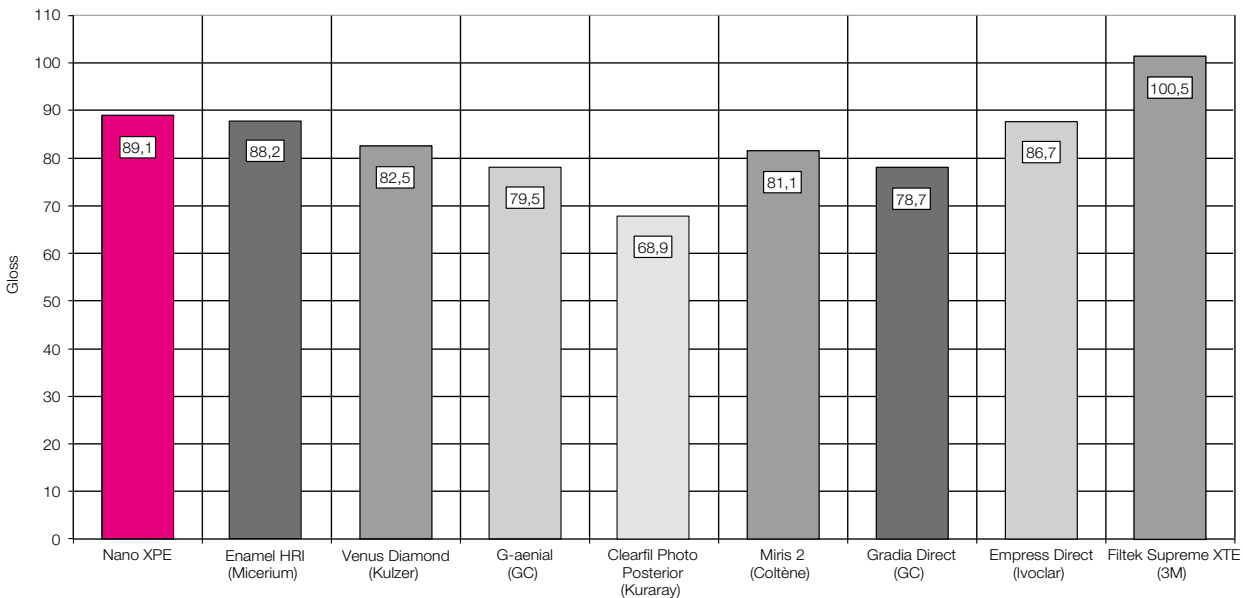
The purpose of this study was to determine the changes in surface gloss of different composites after in vitro toothbrushing simulation.

The specimens of the different materials were polished with different grit papers. Gloss measurements were made with a glossmeter prior to testing procedures. Then the specimens were subjected to simulated toothbrushing for 5, 10, 30 and 60 minutes by means of an electrical tooth brush with a pressure of 2N while being immersed in a toothpaste slurry.

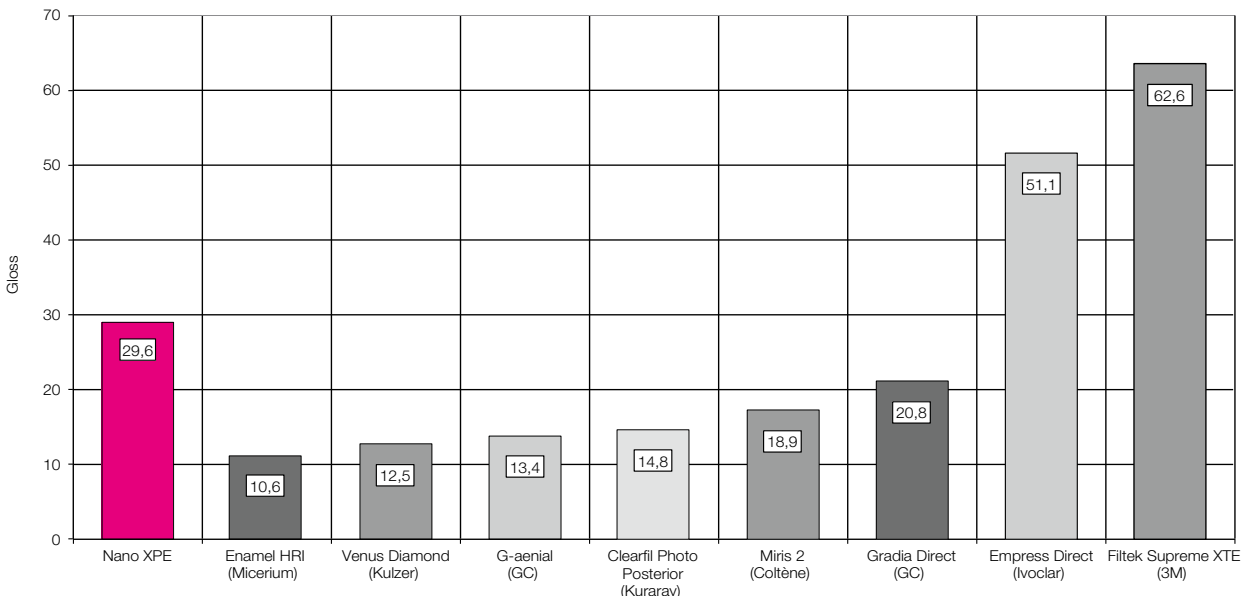
The following diagram shows the gloss measurement results after polishing (baseline) and after 60 min brushing. A high number means a high gloss value. **Nano XPE** shows high gloss after polishing and very good gloss values after 60 min brushing in comparison to the other tested materials.

Nano XPE is an excellent choice for an esthetic restoration with high gloss.

Mean gloss values at baseline



Mean gloss values after brushing of 60 minutes



* Test results of University of Geneva, Switzerland 2011

- This presentation contains a survey of internal scientific product data.
- This product information has been prepared by the manufacturer's research and evaluation labs.
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Polo MB Oisterwijk BV
Laarakkerweg 5
5061 JR Oisterwijk, The Netherlands



DS Dental Supply GmbH
22607 Hamburg, Germany