Admira Fusion

NANO-ORMOCER® DIRECT RESTORATIVE
Admira Fusion

ALL CERAMIC-BASED DIRECT RESTORATIVE

The highly innovative ORMOCER® technology – developed by the Fraunhofer Institute for Silicate Research ISC – was first used by VOCO as early as 1999, for the restorative composite Admira. Since then, this pioneering technology has been the subject of continued consistent and meticulous research and development. The aim was to launch an ORMOCER® restorative material completely free of classic monomers, while also implementing the nano-hybrid technology developed by VOCO, which was first introduced and utilized in 2003 with the launch of the nano-hybrid composite Grandio.

The outstanding results of this endeavor are a range of nano-hybrid ORMOCER® restorative materials that make up the Admira Fusion family of products.

"Pure Silicate Technology“ inside

Silicon oxide forms the chemistry base for Admira Fusion, not only for the fillers (nano-fillers as well as glass ceramics) but also — and this represents the innovative achievement in development — for the resin matrix.

This unique "Pure Silicate Technology“ makes Admira Fusion the world’s first all ceramic-based restorative material and offers several remarkable advantages.

ORMOCER® = Highly biocompatible

Admira Fusion contains no classic monomers, such as BisGMA, TEGDMA or HEMA, thus eliminating the potential for such substances to be released after polymerization. The ORMOCER® (OREganically MOdified CERamics) which have been used in place of conventional monomers consist of large and precondensed molecules of an inorganic matrix with a high degree of cross-linking. With this ORMOCER® technology the overall results on Admira Fusion is one of “excellent biocompatibility”.¹

¹ Leyhausen et al., Hannover Medical School, report to VOCO, 2015.
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UP TO 50 % LESS SHRINKAGE THAN CONVENTIONAL COMPOSITES

Composite resins have been in use within dentistry for almost 50 years and along with their use has always been a concern regarding the impact of their initial shrinkage (initially as high as 5 % though currently around 2 to 3 %) as it relates to marginal integrity and micro-leakage and in the end the overall integrity and longevity of the restoration. Today Admira Fusion’s nano-ORMOCER® technology offers a step forward in the evolution of direct restorations and specifically in the area of initial shrinkage with only 1.25 % (by volume) shrinkage which is up to 50 % less shrinkage than many conventional composites.

Marginal integrity of the highest standard
The special ORMOCER® compound molecules in Admira Fusion reduce the volume shrinkage to an extremely low level (1.25 % by volume) in conjunction with very low shrinkage stress (3.87 MPa). These two factors guarantee optimal marginal integrity of the restorative material and thus significantly contribute to the long-term success of the restoration.

Technical data

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>Reference/Manufacturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filler content</td>
<td>84.0 % by weight</td>
<td>DIN 51081</td>
</tr>
<tr>
<td>Polymerization shrinkage</td>
<td>1.25 % by vol.</td>
<td>analogous Watts et al.</td>
</tr>
<tr>
<td>Shrinkage stress</td>
<td>3.71 MPa</td>
<td>analogous Watts et al.</td>
</tr>
<tr>
<td>3-point flexural strength</td>
<td>132 MPa</td>
<td>ISO 4049</td>
</tr>
<tr>
<td>Modulus of elasticity</td>
<td>9.8 GPa</td>
<td>ISO 4049:1988</td>
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<tr>
<td>Compressive strength</td>
<td>307 MPa</td>
<td>analogous ISO 9917</td>
</tr>
<tr>
<td>Surface hardness</td>
<td>141.3 MHV</td>
<td>University of Rostock, Germany</td>
</tr>
<tr>
<td>Edge strength</td>
<td>171.9 N</td>
<td>University of Manchester, UK</td>
</tr>
<tr>
<td>Radiopacity</td>
<td>305% Al</td>
<td>ISO 4049</td>
</tr>
<tr>
<td>Resistance to ambient light</td>
<td>198 s</td>
<td>ISO 4049</td>
</tr>
<tr>
<td>Water absorption</td>
<td>13.4 µg / mm³</td>
<td>ISO 4049</td>
</tr>
<tr>
<td>Water solubility</td>
<td>≤ 0.1 µg / mm³</td>
<td>ISO 4049</td>
</tr>
<tr>
<td>Thermal expansion coefficient (α)</td>
<td>40.3*10^-6 / K</td>
<td>Fraunhofer Institute Würzburg, Germany</td>
</tr>
<tr>
<td>Depth of cure</td>
<td>2.7 mm</td>
<td>ISO 4049</td>
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<tr>
<td>Tensile bond strength to enamel (with Futurabond M+: self-etch mode)</td>
<td>30.0 MPa</td>
<td>University of São José dos Campos, Brazil</td>
</tr>
<tr>
<td>Tensile bond strength to dentin (with Futurabond M+: self-etch mode)</td>
<td>23.8 MPa</td>
<td>University of São José dos Campos, Brazil</td>
</tr>
</tbody>
</table>
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PHYSICAL PROPERTIES THAT OFFER THE NEXT LEVEL OF PERFORMANCE FOR A DIRECT RESTORATIVE

Admira Fusion sets new standards in restorative dentistry in respect to materials science. Now you have the option of placing all ceramic-based restorations chairside, and in just the same straightforward way as you are accustomed to from working with a good restorative composite. Admira Fusion allows you to offer your patients premium treatments in tooth shades with a level of quality previously never achieved.

A NEW LEVEL OF BIOCOMPATIBILITY

Fact:
Fillers and resin matrix based purely on silicon oxide, no content of classic monomers.

Benefit to You:
Excellent biocompatibility\textsuperscript{(1)}, minimized allergy potential.

\textsuperscript{(1)} Leyhausen et al., Hannover Medical School, report to VOCO, 2015.

HIGH SURFACE HARDNESS FOR BETTER LONGEVITY

Fact:
Very high surface hardness (141 MHV), coupled with simple and effective polishing procedure.

Benefit to You:
Highly stable and smooth fillings are best able to withstand the loads imposed on a daily basis by chewing, and they also impede the adhesion of micro-organisms.
**Fact:** Extremely low polymerization shrinkage (1.25 % by volume) and very low shrinkage stress (3.87 MPa).

**Benefit to You:** Marginal integrity of the highest standard for fillings remaining intact for the long term.

**Fact:** Ultimate color stability, even in extreme conditions (2 weeks storage in red wine).

**Benefit to You:** Long lasting aesthetic restorations equate to highly satisfied patients.

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Admira Fusion achieves results of the highest quality for anterior and posterior restorations. The combination of the innovative ORMOCER® technology with that of the tried and tested nano-hybrid technology means that you are able to work with a product which sets new standards, both with regard to its handling characteristics as well as its strength and stability. We invite you to convince yourself of the non-sticky, smooth consistency of this material, which adapts excellently to the cavity walls and can be modeled to perfection. The quick and simple high-gloss polishing procedure, in conjunction with its high surface hardness, makes Admira Fusion a guarantor for restorations which are aesthetic and remain intact for a long time. In accordance to the varying clinical requirements, needs and/or demands, Admira Fusion can be used either in a one-shade or a multiple-shade system. Three levels of translucency (i.e. opacity), are available for this purpose, while the 10 universal VITA shades are perfectly balanced, achieving realistic results even with just one shade.

Clinical Cases

- Enamel-dentin fracture on tooth 9
- Insufficient amalgam restorations in teeth 30 and 31
- Prepared cavities
- Model of material which is still malleable at this stage (A2)
- Model of dentin core (OA2) and incisal edge (I)
- Applying the final layer (A2) and sculpting the shape of the tooth
- Finished, polished restorations

Source: Dr. Sanzio Marques, Passos / Brazil
Admira Fusion x-tra

**NANO-ORMOCER® BULK-FILL RESTORATIVE MATERIAL**

**Indications**
- Class I and II posterior restorations
- Base in class I and II cavities
- Class V restorations
- Locking, splinting of loose anteriors
- Extended fissure sealing
- Repairing veneers, small enamel defects and temporary C&B-materials
- Restoration of deciduous teeth
- Core build-up

**Advantages**
- All ceramic-based, bulk-fill restorative material
- Fast and high-quality – reliable curing of 4 mm layers
- Thanks to the most innovative ORMOCER® technology – by far the lowest polymerization shrinkage (1.25 % by volume) and particularly low level of shrinkage stress, providing optimal marginal integrity
- Inert, so highly biocompatible and extremely resistant to discoloration
- Excellent handling, simple high-lustre polishing procedure coupled with high surface hardness guarantee first-class long-term results
- Universal shade with chameleon effect
- Compatible with all conventional bonding agents
- In terms of materials science identical to the universal restorative material Admira Fusion – a perfectly matched system

**Presentation**
- REF 2810  Syringe 3 g universal
- REF 2811  Caps 15 x 0.2 g universal

Admira Fusion x-base

**NANO-ORMOCER® FLOWABLE BASE RESTORATIVE**

**Indications**
- Base in class I and II cavities
- Cavity lining under direct restorative materials in class I and II cavities
- Small, non occlusal stress-bearing class I restorations according to minimal invasive filling therapy
- Class III and V restorations
- Extended fissure sealing
- Undercut blockout
- Repair of small enamel defects
- Repair of small defects in esthetic indirect restorations
- Repair of temporary C&B materials
- Core build-up

**Advantages**
- All ceramic-based direct flowable base restorative material
  - Pure Silicate Technology: Fillers and matrix are based purely on silicon oxide
  - No classic monomers (BisGMA [No BPA], UDMA, HEMA, TEGDMA, etc.)
  - Inert for outstanding shade stability
  - Compatible with conventional bonding agents
- 4 mm depth of cure
- Excellent wettability with smart self-leveling effect without slumping out of maxillary restorations
- Non-Dripping Syringe Technology (NDT®)
- Radiopaque

**Presentation**
- REF 2812  Syringe 2 x 2 g universal, accessories
- REF 2148  Application Intraoral Tip Type 46, 100 pcs.
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UNIVERSAL NANO-ORMOCER® RESTORATIVE MATERIAL

Indications

Class I to V restorations
Base in class I and II cavities
Reconstruction of traumatically damaged anteriors
Facetting of discolored anteriors
Correction of shape and shade for improved aesthetic appearance
Locking, splinting of loose anteriors
Repairing veneers, small enamel defects and temporary C&B-materials
Extended fissure sealing
Restoration of deciduous teeth
Core build-up
Composite inlays

Advantages

• The world’s first all ceramic-based direct universal restorative material
  – Pure Silicate Technology: Fillers and matrix are based purely on silicon oxide
  – No classic monomers for higher biocompatibility (no BisGMA, UDMA or TEGDMA etc.)
  – Nano-ORMOCER® technology reduces shrinkage and shrinkage stress by up to 50 % compared to composites and leads to outstanding shade stability
• Non-sticky consistency for easy handling
• Perfect balance of translucency and opacity for natural looking restorations
• Easy to polish to a high shine luster
• High 84 % fill rate for high wear resistance
• Compatible with all conventional bonding agents

Presentation

REF 2750 Kit
syringe 5 x 3 g (A1, A2, A3, A3.5, Admira Fusion x-tra), shade guide
REF 2752 Shade guide

REF 2780 Kit
Caps 75 x 0.2 g (15 each of A1, A2, A3, A3.5, Admira Fusion x-tra), shade guide

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<th>Syringe 3 g</th>
<th>Caps 15 x 0.2 g</th>
<th>Shade</th>
<th>Syringe 3 g</th>
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<td>REF 2784</td>
<td>B3</td>
<td>REF 2764</td>
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<td>BL</td>
<td>REF 2775</td>
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<td>C2</td>
<td>REF 2766</td>
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<td>D3</td>
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<td>REF 2788</td>
<td>OA2</td>
<td>REF 2771</td>
<td>REF 2799</td>
<td>*(3 each of B1, C2, D3, BL, Incisal)</td>
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<td></td>
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</tbody>
</table>

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