

***NEW: Why worry about repairing a crack?
Now you can heal it! Learn all about***

Denseo[®] Fairy



Cracks are truly unpredictable: They can occur always and everywhere



Crown with cracks



Bridge with cracks

Not even the most experienced lab can ever be safe of crack. Officially, the incidence of cracks is low, at 3–5%, but the true figure is probably a lot higher. **Which is hardly surprising: nobody likes to talk about their own cracks.**

Cracks are unpredictable. Unfortunately. But one thing is certain: they will occur when you are least prepared to deal with them – **when the pressure is high and deadlines lurk large**



Fracture in the patient's mouth



Fracture in the patient's mouth

“Repaired” teeth will always still have microcracks, making them less resilient. But teeth must withstand a pressure of 800 N each time you close your mouth during chewing – comparable to a person weighing 80 kg standing on a sugar cube.

Repaired ceramic teeth often form cracks, with particles chipping off in the patient's mouth.

Reasons why cracks occur

Mechanical tension within the ceramic veneer

Veneering ceramics consist of several phases. Each phase has different properties, so tension can occur between the different phases.

Submicroscopic surface damage

Microcracks occur on all glass surfaces and can grow into damaging macrocracks.

Built-up tension within a wax-up

Bulkier areas cool more slowly than thinner areas.

Thermal tension due to temperature cycling

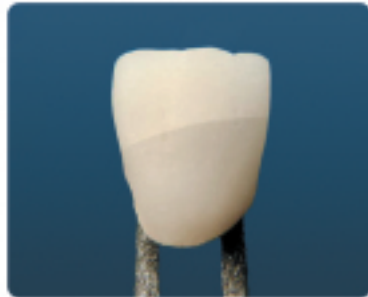
Multiple firings give existing microcracks the chance to grow and new ones the chance to form.

CTE differences

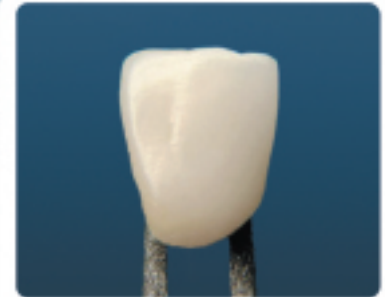
Framework and veneer are unequal partners, creating tension.

NEW: Denseo[®] Fairy

from now on you can not only
repair cracks but **heal** them!



before



after



before



after



before



after

Lab owners about Denseo Fairy

"Denseo Fairy is exactly what I have been waiting for all these years! Finally I feel much safer in my work."

Stephan Bauer, MDT
Dental-Labor Bauer GmbH
Aschaffenburg, Germany

"Denseo Fairy has twice helped us deliver our work on time. A god thing we have the Fairy!"

Dominik Kruchen, MDT
Kruchen Zahntechnik GmbH
Düsseldorf, Germany

Note: Studies have shown that Denseo Fairy will heal high-fusing and low-fusing ceramics in more than 90% of the cases.

Scientific studies have shown:

**Ceramics treated with Denseo Fairy are healed.
In the true sense of the word.**



Image 1:

Specimen made of containment enamel masses after flexural strength testing*



Image 2:

The specimen as healed with **Denseo Fairy** shows no visible traces of cracking*

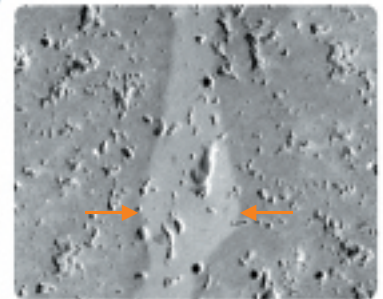


Image 3:

The intensive fusion of the ceramic material is evident under the scanning electron microscope*

“The difference in brightness between the original ceramics and **Denseo Fairy** (between the arrows) bears witness to the gradual transition and intensive fusion between the two materials. If it were not for the difference in shade, the transition area would not be discernible at all. **Ceramics treated with Denseo Fairy are healed – in the true sense of the word.**”*

Denseo Fairy does not leave any weak spots behind.



Image 1:

Fractured specimen after the first fracture test*

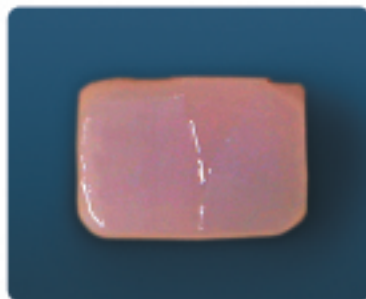


Image 2:

Specimen healed with **Denseo Fairy**



Image 3:

The fracture line occurs in a different location*

“An interesting observation is that the specimens treated with **Denseo Fairy** generally will not fracture along the first fracture line the second time around. **This means that the healing process does not leave weak spots behind.**”*

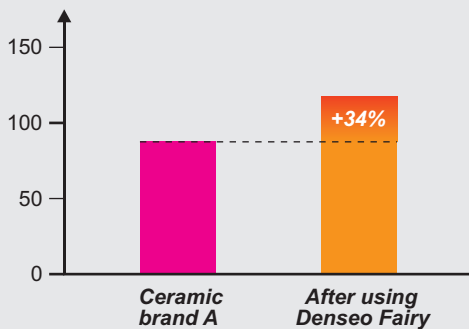
* **Source:** Scientific study on Denseo Fairy – final report of 5 March 2008 by Professor Wolf-Dieter Müller, Director of the Laboratory for Biomaterials and Dental Materials Research at the Charité University Hospital in Berlin, Germany

Scientific studies have shown:

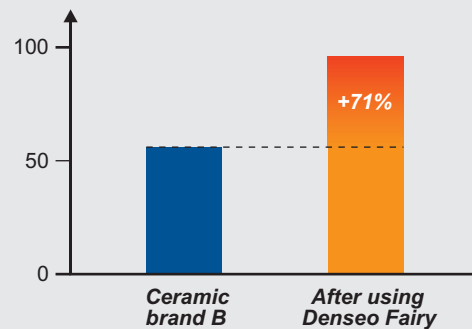
After healing with Denseo Fairy, the ceramic material will be even stronger than before the crack.

1. Flexural strength is increased by 71%.

Tensile strength (N/mm²)



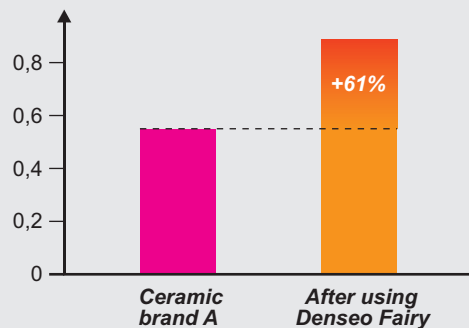
Tensile strength (N/mm²)



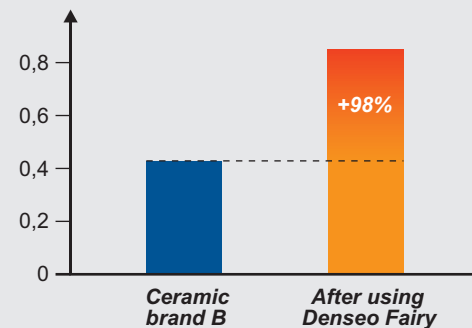
Flexural strength of Denseo Fairy compared to the original ceramic material*

2. The capability of the ceramic material to resist crack propagation is increased by more than 60%.

K_{Ic} (MPa m^{1/2})



K_{Ic} (MPa m^{1/2})



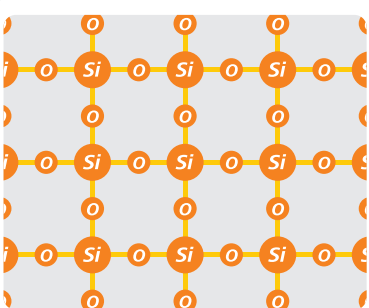
Critical tension intensity factor K_{Ic} of Denseo Fairy compared to that of the original ceramic material*

Note: Denseo Fairy also can be used for the prevention of cracks, especially in multi-unit bridges and other complex dental restorations.

* **Source:** Scientific study on Denseo Fairy – final report of 5 March 2008 by Professor Wolf-Dieter Müller, Director of the Laboratory for Biomaterials and Dental Materials Research at the Charité University Hospital in Berlin, Germany

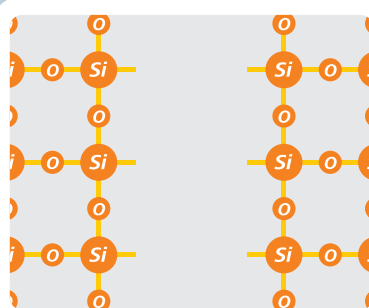
This is how the healing process works:

Cracked ceramic material fusing on a molecular level.



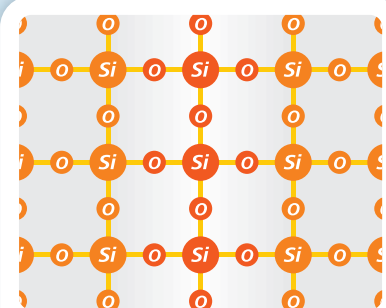
Graph 1:

Original molecular structure.



Graph 2:

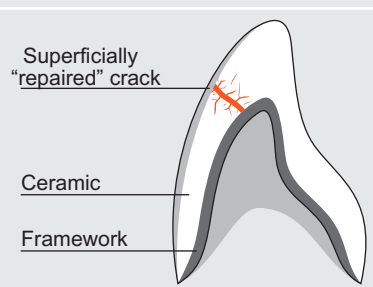
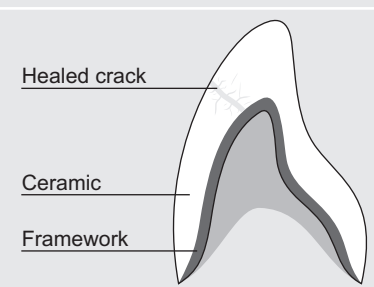
A typical crack. The molecules remain disjointed. Homopolar ions reject each other.



Graph 3:

Denseo Fairy closes the disrupted molecular structure.

Denseo Fairy saturates the crack and all its microscopic ramifications and joins the disjointed molecular structure. The ceramic is now chemically bonded almost as if no crack had ever been there – it has “healed” rather than being repaired. **A crown or bridge with a “healed” crack is just strong and resilient – and valuable – as a new one.**

	<i>Glaze firing as “repair” attempt</i>	<i>Healing with Denseo Fairy</i>
Temperature	Varies depending on the ceramic manufacturer	at 730°C/830°C, manufacturer-independent
Firing	Almost always without vacuum (follow ceramic manufacturers’ instructions)	in vacuum (follow Denseo Fairy firing table)
Use	With or without glaze	With Denseo Fairy 730° or Denseo Fairy 830°
Schematic representation	 <p>Superficially “repaired” crack</p> <p>Ceramic</p> <p>Framework</p>	 <p>Healed crack</p> <p>Ceramic</p> <p>Framework</p>

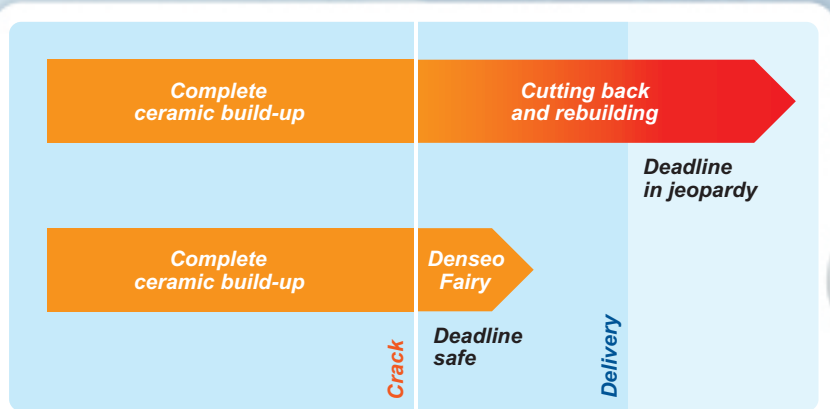
Comparison: Glaze firing and healing



Go for **Denseo® Fairy** today! It's your best insurance to always keep your "due" dates

Honoring deadlines is one of the important aspects of any service. Unfortunately, cracks will hit at the most inconvenient moment – when the pressure is greatest.

Denseo Fairy gives you reassurance. Which feels extra good.



How Denseo Fairy can rescue your deadline (three-unit bridge)

Conclusion

Even if **Denseo Fairy** were to help you meet your deadline only once during the next six months, your investment would still be worth your while.

Denseo® Fairy: We don't repair cracks - we heal them!

Indications

Denseo Fairy can be used for healing fissures and cracks on any popular veneering ceramics for precious and non-precious alloy frameworks.



Certifications

- EN ISO 13485:2003
- EN ISO 9001:2000
- Medical Device Directive 93/42/EEC

