4ROLAND
DIGITAL CAM TECHNOLOGY

Biomic™ LiSi Connect

Zirconia bonding pretreatment agent

4ROLAND
DIGITAL CAM TECHNOLOGY

■ Reassuring zirconia bonding starts from LiSi.

Introduction

A layer of LiSi Connect is sprayed on the surface of the zirconia bonding surface, and after one sintering, LiSi Connect crystallizes on the surface of the zirconia into a lithium disilicate coating to complete the surface modification of the zirconia. The zirconia treated by LiSi connect has the same clinical bonding effect as glass ceramics, which helps the clinical bonding performance of zirconia.

Advantages

LiSi connect coating is tightly combined with zirconia.①

Ultra-thin micron-level lithium disilicate coating does not affect clinical placement.②

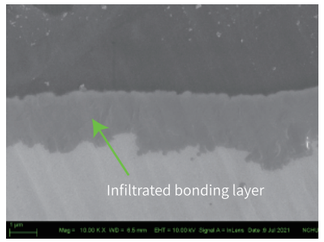
Allowing long time stable and durable adhesive bond.

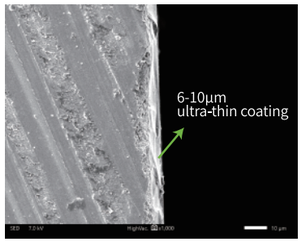
Adhesive force can support zirconia veneer bonding.

Compatible with all zirconia materials.

① LiSi connect will penetrate into zirconia after sintering to produce a strong bonding layer.

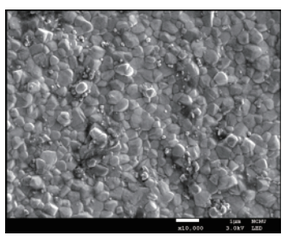
② LiSi connect will form an ultra-thin coating of 6-10μm on the surface of zirconia, which will not affect the restoration design and clinical placement.



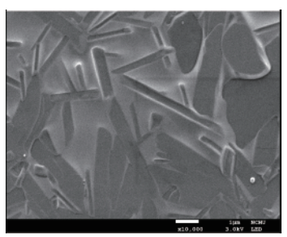


Etching effect

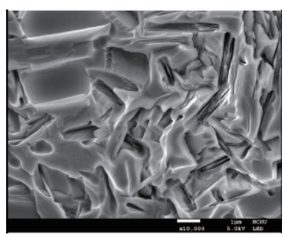
After LiSi connect is sintered on the zirconia surface, the zirconia surface presents a crystal structure similar to that of glass ceramics. After acid etching, it forms a rough porous morphology, achieving the effect of surface roughness.



SEM image of original surface of zirconia (x10 5)



SEM image of zirconia surface after spraying LiSi connect and sintering (x10 4)



SEM image of LiSi connect coating after acid etching (x10 6)

Bonding process

1.Spray a layer of Biomic LiSi connect on the surface of zirconia restoration after its final sintering, and then do the sintering of LiSi connect according to the specified curve.

2.Use 4.5% HF to etch for 90-120s during acid etching, or use 9.5%HF to etch for 45-60s.

3.Use a resin-based adhesive to complete the bonding of the restoration, also the use of pure light-type resin adhesive can prevent the restoration from darkening.

Fast sintering

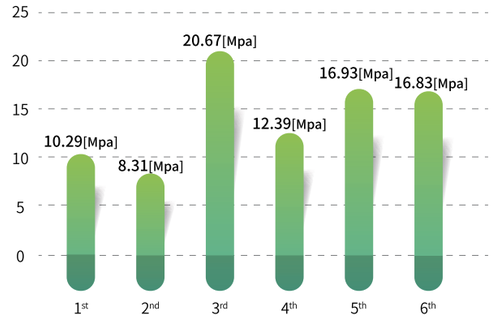
Starting temp (℃)	Drying time (min)	Heating rate (℃/min)	Maximum temp (℃)	Holding time (min)	Vacuum rate	Final temp (℃)
450	1	80	895	1.5	100%	700

Slow sintering：

Starting temp (℃)	Drying time (min)	Heating rate (℃/min)	Maximum temp (℃)	Holding time (min)	Vacuum rate	Final temp (℃)
450	1	55	895	1.5	100%	700

Experimental data

Comparison of the bonding strength of zirconia before and after aging under different conditions



1st Bonding strength of zirconia before aging treatment without any treatment on the bonding surface before.

2nd Bonding strength of zirconia after aging treatment without any treatment on the bonding surface before.

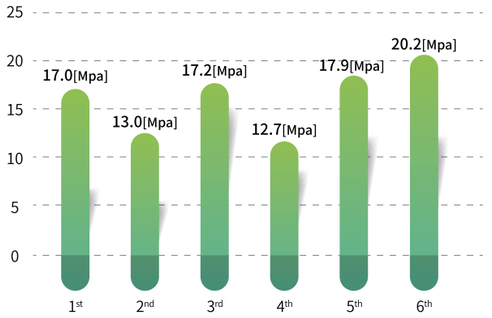
3rd Bonding strength of zirconia before aging treatment with sandblasting treatment on the bonding surface before.

4th Bonding strength of zirconia after aging treatment with sandblasting treatment on the bonding surface before.

5th Bonding strength of zirconia before aging treatment with LiSi connect treatment and 20 seconds of acid etching before.

6th Bonding strength of zirconia after aging treatment with LiSi connect treatment and 20 seconds of acid etching before.

Comparison of the bonding strength of zirconia and glass ceramics under different conditions



1st The average value of bonding strength of each literature for the bonding treatment of glass ceramics by using common clinical bonding method.

2nd The average value of bonding strength of each literature for the bonding treatment of zirconia by using Z primer.

3rd The bonding strength of Cameo glass ceramic by using common clinical bonding method.

4th The bonding strength of Aidite zirconia by using Z primer.

5th Bonding strength of zirconia before aging treatment with LiSi connect treatment and 20 seconds of acid etching before.

6th Bonding strength of zirconia before aging treatment with LiSi connect treatment and 100 seconds of acid etching before.