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BASIC LINE / INDIVIDUAL LINE / TOUCH UP

ceraMotion® Zr

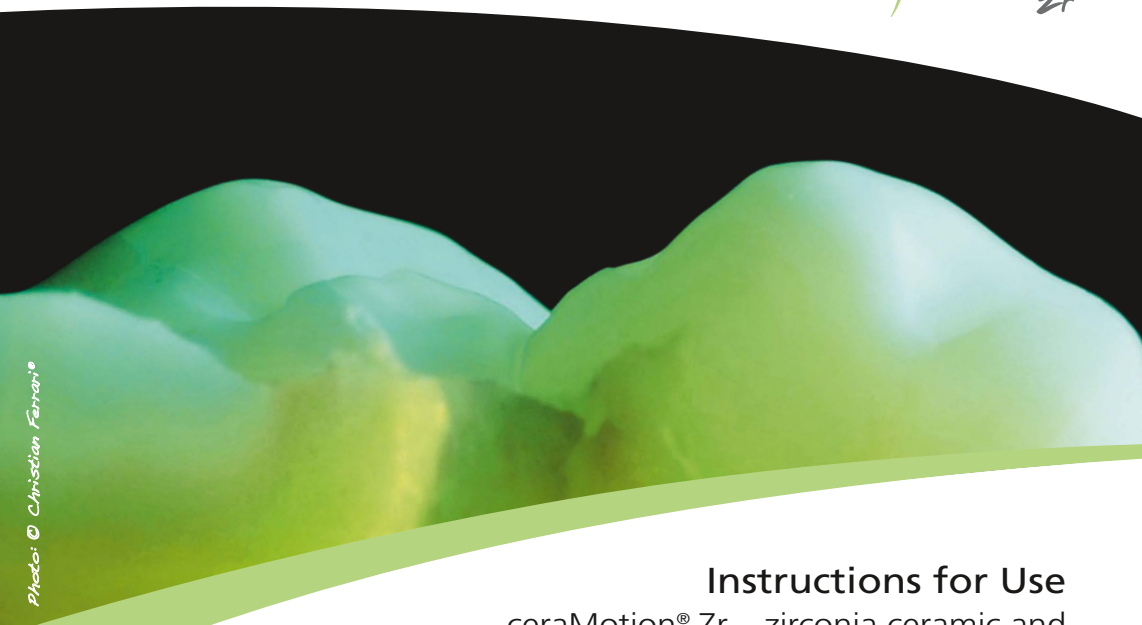

Photo: © Christian Ferrari®

Instructions for Use

ceraMotion® Zr – zirconia ceramic and lithium disilicate

DENTAURUM

Contents

You will find a shortened version of the basic instructions in part one (Basic Line), which includes all the important information you will require. In part two (Individual Line) you will find the information for the individualised layering technique.

TOUCH UP

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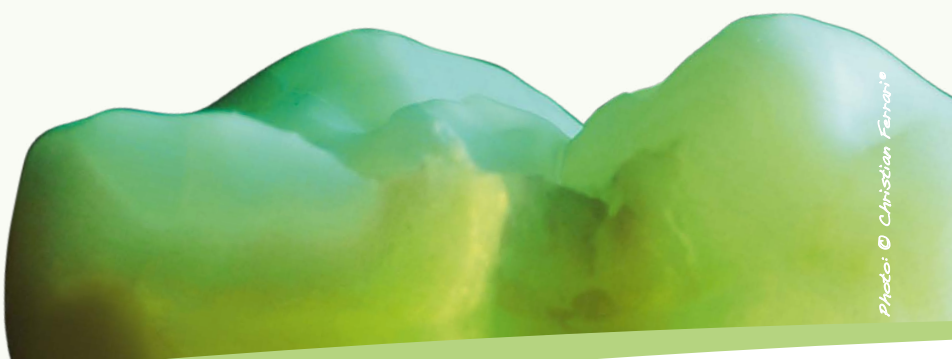
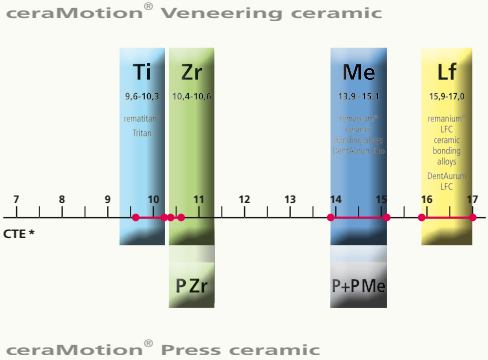


Classification CE 0483

ceraMotion® Zr is a class 1a bonding ceramic (according to DIN EN ISO 6872:2008) for veneering zirconia frameworks or approved framework materials with the same thermal expansion and for all-ceramic frameworks made from ceraMotion® PZr (press-on ceramic).

Indication

Allocation of ceramic to framework material



ceraMotion® Zr is suitable for veneering zirconia with a thermal expansion of 10.4 to 10.6 · 10^{-6} K^{-1}.

It can also be used for completing lithium disilicate or ceraMotion® PZr frameworks.

ceraMotion® Zr should not be used for veneering frameworks made of aluminium oxide ceramic, titanium/titanium alloys, dental alloys or ceraMotion® P+PMe frameworks.

ceraMotion® Zr must not be used if there is a known intolerance to any constituent.

*** CTE – Coefficient of thermal expansion of the framework material (10^{-6} K^{-1}, 25 – 500 °C / 77-932 °F)**

Framework design

The substructure is an anatomically reduced version of the finished tooth, whereby corners or edges within the framework **must be avoided**. The thickness of the fired ceramic material must not exceed 2 mm.

Framework wall thicknesses: Please adhere to the framework manufacturer's instructions.

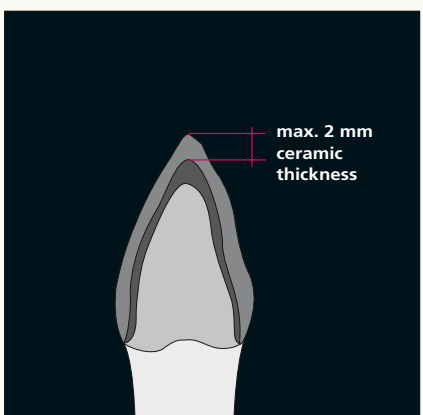


Fig. 1: framework design of an anterior crown

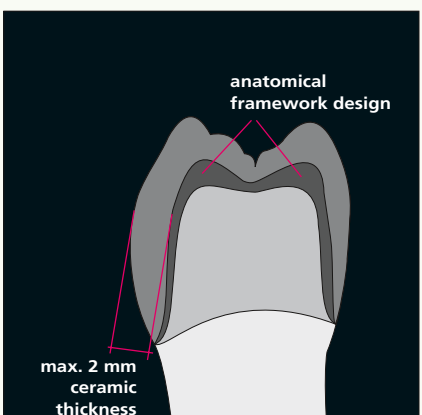


Fig. 2: framework design of a molar crown

Fig. 3: white ZrO_2 framework

Fig. 4: stained ZrO_2 framework

Preparing the framework

Adhere to the framework manufacturer's instructions for preparing and sandblasting.

Note:

Preparing and sandblasting of milled or ground frameworks carries the risk of superficially changing the structure of the Y-TZP and should be limited to the essential.

Use recommended instruments with the appropriate min^{-1} and apply moderate pressure.

Connectors should only be trimmed with the greatest of care.

Avoid overheating of the framework material.

Fig. 5: correctly fired material sample

Fig. 6: underfired material sample

Firing control

We recommend carrying out a test firing in order to assess the firing temperature of your furnace, as this is the only method of determining the firing procedure correctly.

The test sample is prepared by mixing transpa T material with the Modelling Liquid (REF 254-000-10).

Carry out the first dentin firing. When firing, place the test sample onto platinum foil and not onto a piece of firing wool, otherwise the results may appear cloudy.

The furnace temperature is correct if the fired test sample is clearly transparent and has sharp edges (see Fig. 5).

If the furnaces end temperature is too high, the fired test sample will be extremely shiny and has no sharp edges. If the end temperature is too low, the fired test sample will be milky white in colour (see Fig. 6).

Please increase/decrease the end temperature of the furnace in 10 °C / 50 °F steps. Subsequently re-fire the test sample.

Connecting Liner Mixing Chart

Mixing recommendations

Tooth shade	L1	L2	L3	L4	L5	L6
A1	1/3				2/3	
A2	2/3				1/3	
A3	1					
A3,5	3/4					1/4
A4	1/2					1/2
B1		1/3			2/3	
B2		2/3			1/3	
B3		3/4			1/4	
B4		1				
C1			1/3		2/3	
C2			2/3		1/3	
C3			3/4		1/4	
C4			1			
D2				2/3	1/3	
D3				3/4	1/4	
D4		1/3		2/3		

Connecting

Application of a Liner is recommended with white zirconia frameworks (Fig. 3). A layer with Base Dentin or Dentin can be applied with stained frameworks.

Fig. 7: Liner after firing on a white ZrO_2 framework

Fig. 8: Base Dentin/Dentin after firing on a stained ZrO_2 framework

Note: Liner should be mixed to a creamy consistency using Powder BOL Liquid (REF 254-008-10). Liner can also be applied using the spray-on-technique.

Connecting firing	Start temp. (°C / °F)	Drying time (min)	Heat rate (°C / °F/min)	Vacuum start (°C / °F)	Vacuum end (°C / °F)	Firing temp. (°C / °F)	Holding time (min)
Liner 1 + 2	500 / 932	4	55 / 131	500 / 932	810 / 1490	810 / 1490	2 (with vacuum)
Base Dentin/Dentin	500 / 932	6	55 / 131	500 / 932	780 / 1436	780 / 1436	2 (with vacuum)

Layering technique: Basic build-up

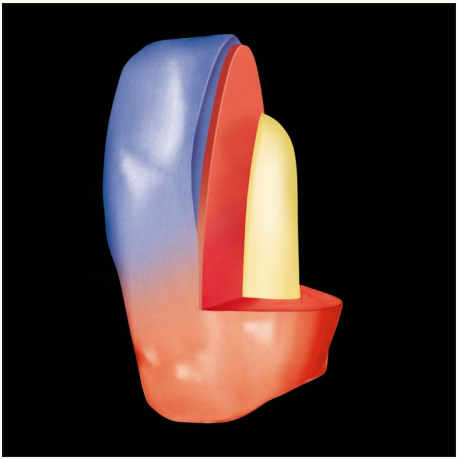


Fig. 9: basic build-up

- Connecting
- Dentin
- Incisal

Build-up

Build-up the complete anatomical tooth shape in Dentin, cut back the Dentin in the region of the incisal third. Use standard Modelling Liquid (REF 254-000-10)!

Note:

Up to 10 % of Stains/Body Stains can be mixed into the ceramic material.

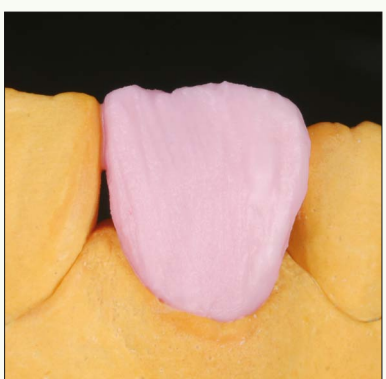


Fig. 10: complete anatomical tooth shape

Fig. 11: cutting back the Dentin in the incisal third

Build-up

Fig. 12: applying the incisal material

Fig. 13: build-up before the first firing

Incisal allocation table:

Dentin shade	Incisal Standard	Incisal Opal	Incisal Transpa
A1, A2, B1	I 1	IO 1	IT 1
A3, A3,5, B2, B3, B4, C1, C2, C3, D2, D3, D4	I 2	IO 2	IT 2
A4, C4	I 3	IO 3	IT 3

Note:

Build the tooth slightly larger than the actual anatomical size in order to compensate for ceramic shrinkage during firing (Fig. 12 + 13).

When building-up a bridge, the teeth should be separated interdentally all the way back to the framework before the first firing, in order to control the shrinkage.

	Start temp. (°C / °F)	Drying time (min)	Heat rate (°C / °F/min)*	Vacuum start (°C / °F)	Vacuum end (°C / °F)	Firing temp. (°C / °F)	Holding time (min)**
Dentin firing 1	500 / 932	6	55 / 131	500 / 932	750 / 1382	750 / 1382	2 (with vacuum)

* the firing quality can be improved with large restorations by reducing the heat rate

** extend the holding time with large restorations to compensate for the poor thermal conductivity of ZrO_2

The given parameter is intended only as a guideline, each dental furnace should be individually adjusted due to deviations through different manufacturers and the age of the furnace.

The firing table is intended for furnaces which are regularly calibrated with fine silver.

All information has been compiled with care, it is, however provided, without guarantee.

Correction technique

Results after the first dentin firing and correction build-up.

Fig. 14: results after the first dentin firing

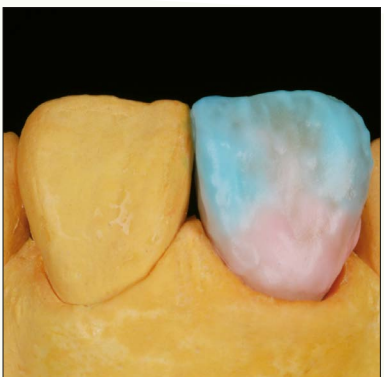


Fig. 15: shape correction with Dentin and Incisal after the first dentin firing

Fig. 16: shape correction with Dentin and Incisal after the first dentin firing

Note:

When working on a bridge construction, apply Dentin to the interdental spaces and basal areas on the pontics first.

	Start temp. (°C / °F)	Drying time (min)	Heat rate (°C / °F/min)*	Vacuum start (°C / °F)	Vacuum end (°C / °F)	Firing temp. (°C / °F)	Holding time (min)**
Dentin firing 2	500 / 932	4	55 / 131	500 / 932	750 / 1382	750 / 1382	2 (with vacuum)

* the firing quality can be improved with large restorations by reducing the heat rate

** extend the holding time with large restorations to compensate for the poor thermal conductivity of ZrO_2

Processing

Shape correction, finishing and glaze firing

Use recommended burs for the shape correction.
Grind over the entire surface area evenly and clean thoroughly before the glaze firing.

Fig. 17: finishing

Glaze firing

Individual colour nuances can be applied to the surface using Stains/Body Stains (Fig. 18). If required, apply glaze material mixed with Stains Liquid (REF 254-010-02) to the entire piece of work.

Fig. 18: Stains/Glaze application

	Start temp. (°C / °F)	Drying time (min)	Heat rate (°C / °F/min)	Vacuum start (°C / °F)	Vacuum end (°C / °F)	Firing temp. (°C / °F)	Holding time (min)
Glaze firing	500 / 932	4	55 / 131	*	*	750 / 1382	1
Glaze firing with glaze liquid	500 / 932	6	55 / 131	500 / 932	750 / 1382	750 / 1382	1

* Glaze firing can be completed with or without vacuum

Finishing

The finished piece of work after glaze firing.

Fig. 19: labial view of the finished piece of work

Fig. 20: labial view of the finished piece of work

Notes

Customisation / Connecting

Fig. 1: Dentin/Base Dentin with inlaid white band

Fig. 2: Base Dentin/Dentin with inlaid orange effects

Fig. 3: Liner fired with inlaid white band

Fig. 4: Liner fired with inlaid orange effects

Layering technique: Individual build-up

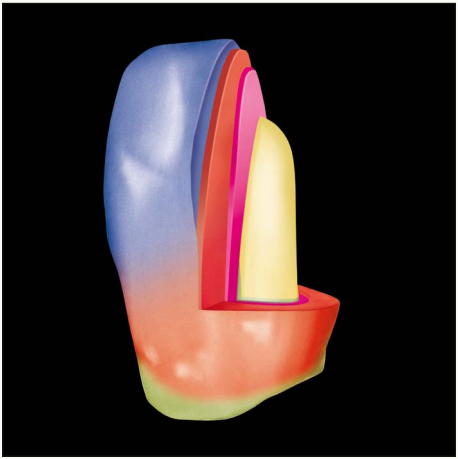


Fig. 5: individual build-up

- Connecting
- Shoulder
- Base Dentin
- Dentin
- Incisal

Mixing table shoulder materials

ceraMotion® Zr has four different shoulder materials which can be divided into the shade groups A-B-C-D. With the shoulder material "white" it is possible to individually mix all shade nuances from A1 to D4 by following the information in the mixing table. By adding the shoulder material "transparent", the translucence is increased in the shoulder. Use Shoulder Liquid (REF 254-004-02)!

Tooth shade	A	B	C	D	white
A1	50 %				50 %
A2	65 %				35 %
A3	70 %				30 %
A3,5	100 %				
A4	100 %				
B1		35 %			65 %
B2		80 %			20 %
B3		90 %			10 %
B4		100 %			
C1			50 %		50 %
C2			75 %		25 %
C3			85 %		15 %
C4			100 %		
D2				60 %	40 %
D3	60 %			30 %	10 %
D4				100 %	

	Start temp. (°C / °F)	Drying time (min)	Heat rate (°C / °F/min)	Vacuum start (°C / °F)	Vacuum end (°C / °F)	Firing temp. (°C / °F)	Holding time (min)
Shoulder firing 1 + 2	500 / 932	6	55 / 131	500 / 932	780 / 1436	780 / 1436	2 (with vacuum)

Build-up

Building-up the complete anatomical tooth shape in Dentin.

Fig. 6: complete anatomical tooth shape

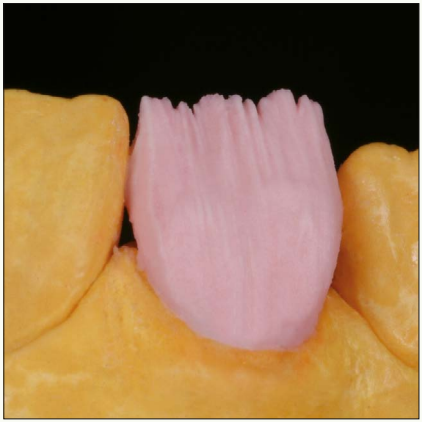


Fig. 7: cutting back the Dentin in the incisal third

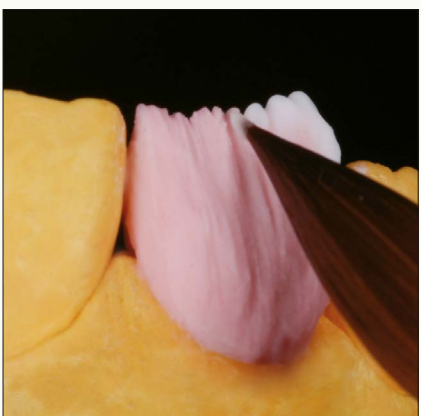


Fig. 8: applying a seam of Transpa

Fig. 9: applying Dentin Modifier Fluo

Note: The individual build-up shown is a suggestion and should be adjusted according to the desired effect.

Build-up

Fig. 10: inlaid white band, orange effect in the cervical area

Fig. 11: alternate layering with I 2 and IO 2

Fig. 12: cutback, application of Dentin Modifier Fluo orange, delicately spread up to the incisal edge

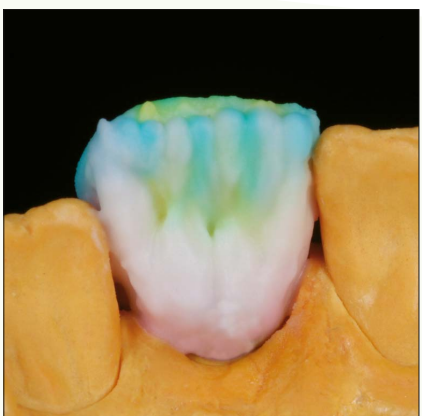


Fig. 13: addition of Dentin and Incisal Opal

Build-up

Fig. 14: results after the first dentin firing

Fig. 15: results after the first dentin firing

Correction technique and finishing

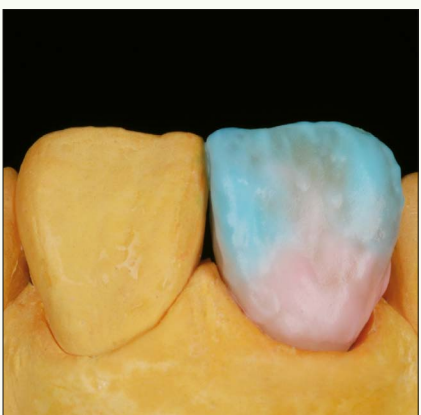


Fig. 16: build-up with Dentin, Incisal and Transpa 1/1

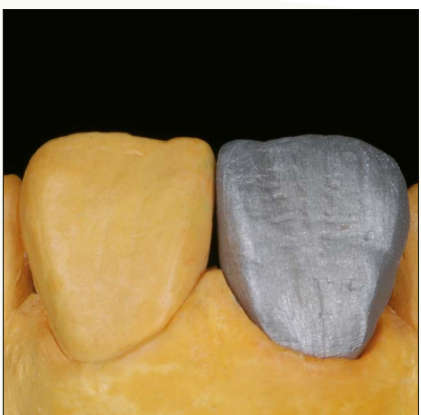


Fig. 17: grinding and finishing the surface

Finishing

Fig. 18: individual Stains/Glaze application

Fig. 19: finished piece of work

Fig. 20: finished piece of work

Creative firing

- ☐ very natural marginal and incisal ridges
- ☐ customised degrees of glaze on a single restoration
- ☐ adjustment and glaze firing in one

Fig. 21: application of Touch Up material Dentin/ Incisal, mixed with Modelling Liquid

Fig. 22: finished restoration

Note: Adjustments can be made with or without glaze material. When using glaze material, first cover the entire surface with glaze material, stain the restoration and then apply Touch Up material over the glaze material and staining.

	Start temp. (°C / °F)	Drying time (min)	Heat rate (°C / °F/min)	Vacuum start (°C / °F)	Vacuum end (°C / °F)	Final temp. (°C / °F)	Holding time *
Glaze and adjustment **with** glaze material	500 / 932	6	55 / 131	500 / 932	730 / 1346	730 / 1346	1 min
					730 / 1346	740 / 1364	20 s
Glaze and adjustment **without** glaze material	500 / 932	6	55 / 131	500 / 932	730 / 1346	730 / 1346	1 min
					730 / 1346	750 / 1382	20 s

* the required degree of glaze can be attained using a higher firing temperature and shorter holding time, or a lower firing temperature and longer holding time

Additional firing

- ☐ adding occlusal contact points at a later stage
- ☐ adding to the fitting surface

Fig. 23: application of Touch Up for missing occlusion

Fig. 24: adding to the fitting surface

Note: Adjustments can be made with or without glaze material. When using glaze material, first cover the entire surface with glaze material, stain the restoration and then apply Touch Up material over the glaze material and staining.

	Start temp. (°C / °F)	Drying time (min)	Heat rate (°C / °F / min)	Vacuum start (°C / °F)	Vacuum end (°C / °F)	Final temp. (°C / °F)	Holding time *
Glaze and adjustment **with** glaze material	500 / 932	6	55 / 131	500 / 932	730 / 1346	730 / 1346	1 min
					730 / 1346	740 / 1364	20 s
Glaze and adjustment **without** glaze material	500 / 932	6	55 / 131	500 / 932	730 / 1346	730 / 1346	1 min
					730 / 1346	750 / 1382	20 s

* the required degree of glaze can be attained using a higher firing temperature and shorter holding time, or a lower firing temperature and longer holding time

Repair

☐ repair of a restoration worn by a patient

Note: Restorations that have been worn intraorally must be dried out in the preheat furnace. Clean the restoration, the surface must be roughened or sandblasted. Heat the restoration in the preheat furnace from room temperature to 400 °C / 752 °F at a rate of 5 °C / 41 °F/min. Hold time 4 hours minimum, allow to cool slowly.

Then apply the Touch Up materials Base Dentin, Dentin and Incisal, mixed with Modelling Liquid.

	Start temp. (°C / °F)	Drying time (min)	Heat rate (°C / °F/min)	Vacuum start (°C / °F)	Vacuum end (°C / °F)	Final temp. (°C / °F)	Holding time (min)
Dentin firing during repair	500 / 932	6	55 / 131	500 / 932	700 / 1292	700 / 1292	1
Glaze firing during repair **without** glaze material	500 / 932	4	75 / 167	–	–	700 / 1292	1
Glaze firing during repair **with** glaze material	500 / 932	6	55 / 131	500 / 932	690 / 1274	690 / 1274	1

Notes

Firing table zirconia

	Start temp. (°C / °F)	Drying time (min)	Heat rate (°C / °F/min)*	Vacuum start (°C / °F)	Vacuum end (°C / °F)	Firing temp. (°C / °F)	Holding time (min)**
Connecting firing Liner 1 + 2	500 / 932	4	55 / 131	500 / 932	810 / 1490	810 / 1490	2 (with vacuum)
Connecting firing Base Dentin/Dentin	500 / 932	6	55 / 131	500 / 932	780 / 1436	780 / 1436	2 (with vacuum)
Shoulder firing 1 + 2	500 / 932	6	55 / 131	500 / 932	780 / 1436	780 / 1436	2 (with vacuum)
Dentin firing 1	500 / 932	6	55 / 131	500 / 932	750 / 1382	750 / 1382	2 (with vacuum)
Dentin firing 2	500 / 932	4	55 / 131	500 / 932	750 / 1382	750 / 1382	2 (with vacuum)
Correction firing****	500 / 932	4	55 / 131	500 / 932	715 / 1319	715 / 1319	1 (with vacuum)
Glaze firing	500 / 932	4	55 / 131	***	***	750 / 1382	1
Glaze firing with glaze liquid	500 / 932	6	55 / 131	500 / 932	750 / 1382	750 / 1382	1
Touch Up glaze and correction	500 / 932	6	55 / 131	500 / 932	730 / 1346	730 / 1346	1

* the firing quality can be improved with large restorations by reducing the heat rate

** extend the holding time with large restorations to compensate for the poor thermal conductivity of ZrO_2

*** Glaze firing can be completed with or without vacuum

**** The correction material has to be mixed 1 : 1 with Base Dentin, Dentin or Incisal.

Firing table lithium disilicate

	Start temp. (°C/F°)	Drying time (min)	Heat rate (°C/°F/min)*	Vacuum start (°C/°F)	Vacuum end (°C/°F)	Firing temp. (°C/°F)	Holding time (min)
Base Dentin Connection firing	500/932	6	55/131	500/932	760/1400	760/1400	1 (with vacuum)
Dentin firing	500/932	6	55/131	500/932	760/1400	760/1400	1 (with vacuum)
Glaze firing**	500/932	4	55/131			760/1382	1

* when making large restorations, the firing quality can be improved by reducing the heat rate

** glaze firing can be completed with or without vacuum

Please observe the instructions given by the manufacturer when fabricating the framework.

Physical-chemical information (according to DIN EN ISO 6872) ceraMotion® Zr

	Coefficient of thermal expansion/CTE (25-500 °C / 77-932 °F)	Transformation temperature/Tg (°C / °F)	Chemical solubility (µg/cm²)	Flexural strength (Mpa)
Liner	9.2	565 / 1049	35	130
Dentin	9.2	530 / 986	20	115
Incisal	9.2	530 / 986	20	115
Modifier	9.2	530 / 986	20	115
Glaze, Stains	8.4	530 / 986	30	–

Product overview

Liner	L	1-6
Liner Modifier	LM	gingival, orange
Shoulder	SM	A, B, C, D, white, transpa
Gingival	G	1, 2, 3, 4
Base Dentin	BD	A-D
Base Dentin Modifier	BDM	salmon, caramel, ochre, ivory, lemon, vanilla, brown
Dentin	D	A-D
Dentin Modifier Chroma	DM C	A, B, C, orange
Dentin Modifier Fluo	DM F	cream, yellow, orange
Incisal	I	1, 2, 3
Incisal Opal	IO	1, 2, 3
Incisal Transpa	IT	1, 2, 3
Transpa	T	transpa
Incisal Modifier	IM	opal honey, opal white, opal blue, grey, opal grey
Chroma Concept Liner	CC L	1 (bleach), 2, 3, 4
Chroma Concept Dentin	CC D	1 (bleach), 2 (bleach), 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Chroma Concept Incisal	CC I	1 (bleach)
Touch Up Base Dentin	TU BD	light, medium, dark
Touch Up Dentin	TU D	light, medium, dark
Touch Up Incisal	TU I	medium, opal, transpa
Correction	C	transpa
Glaze	GL	transpa
Body Stains	B ST	A, B, C
Stains	ST	1 white, 2 vanilla, 3 yellow, 4 orange, 5 pink, 6 purple, 7 blue, 8 grey, 9 olive green, 10 olive yellow, 11 medium brown, 12 red brown, 13 black
Liquids		Modelling Liquid, Modelling Liquid +, Powder BOL Liquid, Shoulder Liquid, Stains Liquid, Contrast Marker

ceramotion® Zr

➲ For more information on our products and services, please visit www.dentaurum.de

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