

### InSync ZR & InSync ZR press & InSync ZR Glaze/Stains

For pressing and layering frames based on zirconia, for layering titanium and titanium alloy frames and for characterizing and veneering all-ceramic restorations made of compatible lithium-disilicate materials

Technical Datas	TYP	CLASS	CTE	CTE	Tg <sup>(*)</sup>	Chem. Solubility	Solubility	3 Point-Flexural strength	
			2x fired (25-500°C) [*10 <sup>-6</sup> K <sup>-1</sup> ] ± 0,5	4x fired (25-500°C) [*10 <sup>-6</sup> K <sup>-1</sup> ] ± 0,5	2x / 4x fired [°C] ± 20	Ceramic [µg/cm <sup>2</sup> ]	acc. to ISO 6872 [µg/cm <sup>2</sup> ]	Ceramic [MPa]	acc. to ISO 6872 [MPa]
Ti-Opaquier	I	1b	9.2	9.2	550	≤ 30	< 100	≥ 125	> 50
CPC-Zr Liner	I	1b	9.8	9.8	640	≤ 20	< 100	≥ 80	> 50
Margin	I	1b	8.5	8.5	570	≤ 20	< 100	≥ 70	> 50
Dentine, Monocast, Bleach	I	1b	8.5	8.5	530	≤ 20	< 100	≥ 70	> 50
Incisal, Modifier	I	1b							
Transpa, Clear, Opal	I	1b							
Correction	I	1b	8.5	8.5	500	≤ 20	< 100	≥ 70	> 50
Stains ZrTi	I	1b	7.5	-	490	< 100	< 100	≥ 50	> 50
ZrTi Glaze	I	1b	7.3 <sub>(1x)</sub>	-	485 <sub>(1x)</sub>	< 100	< 100	≥ 50	> 50
InSync ZR press	II	1b	9.5 <sub>(pressed)</sub>	-	570	≤ 20	< 100	≥ 95	> 50

Properties are measured according to ISO 6872 and ISO 9693

(\*)If the Tg 2x/4x is less than 500°C, the CTE is specified in [25°C - Tg]

#### Biocompatibility

Cytotoxicity XTT <sub>50</sub> -Value	[%]	= 0 (no cytotoxicity)*
Radioactivity <sup>238</sup> U	[Bq/g]	≤ 0.05**
Radioactivity <sup>234</sup> Th	[Bq/g]	≤ 0.05**

Cytotoxicity requirements according to ISO 10993, Part.5 / ISO 7405 / ISO 6872 XTT<sub>50</sub>-Value ≤ 1 (low cytotoxicity)

The critical value according to ISO – 6872 from <sup>238</sup>U – activity is 1,0 Bq/g.

The InSync ZR & InSync ZR press ceramic - system is free from cytotoxicity, irritation and sensitizing potential! The radioactivity is far below the acceptable <sup>238</sup>U – critical value and there is no difference between the natural radioactivity! (The average radioactivity in our earth's crust from <sup>238</sup>U and <sup>232</sup>Th is at 0,03 Bq/g)

#### Composition

Amount in wt. %

	SiO <sub>2</sub>	ZrO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	B <sub>2</sub> O <sub>3</sub>	K <sub>2</sub> O	Na <sub>2</sub> O	SrO	CeO <sub>2</sub>	SnO <sub>2</sub>	ZnO	P <sub>2</sub> O <sub>5</sub>	CaO	Li <sub>2</sub> O	La <sub>2</sub> O <sub>3</sub>	F	Pigment
Ti-Opaquier	25-45	15-40	4-12	2-8	1-8	2-9	-	0-2	0.01-2	0-4	0.5-5	0-3	0-3	-	-	0-25
CPC-Zr Liner	55-75	-	8-22	0-8	3-12	4-12	0.01-5	0.1-2	0.01-2	0-3	0-4	0-3	0-3	-	0-1	0-4
Margin, Dentine, Monocast, Incisal, Transpa, Clear, Opal, Correction	55-75	-	6-20	1-10	3-12	3-12	0-3	0.1-2	0.01-2	0-4	0-4	0-3	0-3	-	0-1	0.1-3
Stains ZrTi	50-70	-	2-10	6-18	1-9	1-9	-	0.1-2	0.01-2	0-3	-	0-2	0-3	-	0-2	0-25
ZrTi Glaze	50-72	-	2-12	6-18	2-10	2-10	-	0.1-2	0.01-2	0-4	0-3	0-4	0.1-4	-	0-3	-
InSync ZR press	55-75	-	8-22	0-8	3-12	4-12	0.01-5	0.1-2	0.01-2	0-3	0-4	0-3	0-3	0.05-4	0-1	0-3

Pigments include: color pigments, opacifying agent, fluorescence material

Sources: \*HARLAN RCC- In Vitro Study (XTT-Test)

787405 (05/2003) / 1059302 (11/2006) / 1153901 (01/2008) / 1253401 (04/2009) / 1507800 (09/2012) / 1509600 (09/2012)

\*\*Forschungszentrum Jülich: Report of Analysis: (05/2003) / (10/2006) / (01/2008)

\*\*Bundesamt für Bevölkerungsschutz BABS in Spiez: NUC-12-015 (08/2012) / NUC-12-016( 09/2012)

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Physical Information	Unit	Value	ISO requirements
<b>Vickers Hardness HV5**</b>	<b>HV0,5</b>	<b>590</b>	-
<b>Fracture Toughness <math>K_{1c}</math>**</b> (in accordance to SEVNB method)	<b>[MPa*m<sup>0.5</sup>]</b>	<b>0.73</b>	≥ 0.70 (ISO 6872)
<b>E-Modulus**</b> (Ultrasonic measurement)	<b>[GPa]</b>	<b>73.8</b>	-
<b>Thermal Shock Resistance</b> (Biotan-Ti/Biotan-Nb/Girotan-R/Girotan-L)	<b>[°C]</b>	<b>130-160</b>	Acc. to ISO 9693-2
<b>Thermal Shock Resistance (*)</b> (ZrO <sub>2</sub> )	<b>[°C]</b>	<b>140-170</b>	Acc. to ISO 9693-2
<b>Bond Strength</b> (Biotan-Ti/Biotan-Nb/Girotan-R/Girotan-L)	<b>[MPa]</b>	<b>≥ 30</b>	> 25 (ISO 9693-1)
<b>Bond Strength (*)</b> (ZrO <sub>2</sub> )	<b>[MPa]</b>	<b>≥ 30</b>	> 20 (ISO 9693-2)

(\*) depending on the ZrO<sub>2</sub> - frame

Sources: \*\*EMPA, Eidg. Materiaprüfungs- und Forschungsanstalt, Dübendorf/Schweiz: Report No.: 462097 (11/2012)