

### InSyncZR Glaze & Stains and Spray Glaze

For characterizing on frames based zirconia and restorations made of compatible lithium-disilicate materials

Technical Datas	TYP	CLASS	CTE	CTE	Tg <sup>(1)</sup>	Chem. 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]
Stains / Shades	I	1b	7.5	-	490	< 100	< 100	≥ 50	> 50
Glaze	I	1b	7.3 <sub>(1x)</sub>	-	485 <sub>(1x)</sub>	< 100	< 100	≥ 50	> 50
Spray Glaze		1b	7.3 <sub>(1x)</sub>	-	485 <sub>(1x)</sub>	< 100	< 100	≥ 50	> 50

Properties are measured according to ISO 6872 and ISO 9693

<sup>(1)</sup>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]	≤ 0.03**
Radioactivity <sup>234</sup> Th	[Bq/g]	≤ 0.03**

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 Glaze & Stains and Spray Glaze 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
Stains / Shades	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
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	-
Spray 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	-

Pigments include: color pigments, opacifying agent, fluorescence material

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

787405 (05/2003) / 1507800 (09/2012)

\*\*Forschungszentrum Jülich: Report of Analysis: (05/2003)

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

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Physical Information	Unit	Value	ISO requirements
Vickers Hardness HV5**	HV0,5	596	-
Fracture Toughness $K_{Ic}$ ** (in accordance to SEVNB method)	[MPa*m <sup>0.5</sup> ]	-	-
E-Modulus** (Ultrasonic measurement)	[GPa]	-	-
Thermal Shock Resistance (Biotan-Ti/Biotan-Nb/Girotan-R/Girotan-L)	[°C]	-	Acc. to ISO 9693-2
Thermal Shock Resistance (*) (ZrO <sub>2</sub> )	[°C]	-	Acc. to ISO 9693-2
Bond Strength (Biotan-Ti/Biotan-Nb/Girotan-R/Girotan-L)	[MPa]	-	> 25 (ISO 9693-1)
Bond Strength (*) (ZrO <sub>2</sub> )	[MPa]	-	> 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)