

2.1.6 EUROPEAN QUALITY STANDARDS

		Extruded Ceramic Tiles				Dry-pressed Ceramic Tiles		
Product Standards		DIN EN 14411				DIN EN 14411		Test Standards
(simplified and based on 20 x 20 cm (BIII) or 30 x 30 cm (BI))		Group AI <sub>a</sub> + AI <sub>b</sub>		Group AII <sub>a</sub>   Part 1		Group BI <sub>a</sub> + BI <sub>b</sub>	Group BIII	
		"Nature"	"Pre- cision"	"Nature"	"Pre- cision"			
A	Dimensions and Surfaces							
1.	Length and Width	± 2%	± 1,0%	± 2%	± 1,25%	± 0,6%	± 0,5%	DIN EN ISO 10545-2
2.	Thickness	± 10%	± 10%	± 10%	± 10%	± 5%	± 10%	DIN EN ISO 10545-2
3.	Straightness of Edges	± 0,6%	± 0,5%	± 0,6%	± 0,5%	± 0,5%	± 0,3%	DIN EN ISO 10545-2
4.	Rectangularity	± 1,0%	± 1,0%	± 1,0%	± 1,0%	± 0,5%	± 0,5%	DIN EN ISO 10545-2
5.	Surface Flatness							DIN EN ISO 10545-2
	5.1 Curvature at Centre	± 1,5%	± 0,5%	± 1,5%	± 0,5%	± 0,5%	+ 0,5 / - 0,3%	DIN EN ISO 10545-2
	5.2 Curvature at the Edges	± 1,5%	± 0,5%	± 1,5%	± 0,5%	± 0,5%	+ 0,5 / - 0,3%	DIN EN ISO 10545-2
	5.3 Skewness	± 1,5%	± 0,8%	± 1,5%	± 0,8%	± 0,5%	± 0,5%	DIN EN ISO 10545-2
6.	Surface Quality	at least 95%		at least 95%		at least 95%	at least 95%	DIN EN ISO 10545-2
7.	Color Deviations	■		■		■	■	DIN EN ISO 10545-16
	7.1 Color Shade Grading	■		■		■	■	Deutsche Steinzeug
8.	Size Grading <sup>1)</sup>	■		■		■	■	Deutsche Steinzeug

B	Physical Properties			glazed		
1.	Water Absorption (on average/ max. individual value)	AI <sub>a</sub> E ≤ 0,5% / 0,6% AI <sub>b</sub> 0,5% < E ≤ 3% / 3,3%	≤ 6/6,5%	BI <sub>a</sub> ≤ 0,5% BI <sub>b</sub> ≤ 3%	only < 10%	DIN EN ISO 10545-3
2.	Modulus of Rupture (Value in brackets = min. individual value)	AI <sub>a</sub> min. 28 (21) N/mm <sup>2</sup>  AI <sub>b</sub> min. 23 (18) N/mm <sup>2</sup>	min. 20 (18) N/mm <sup>2</sup>	BI <sub>a</sub> min. 35 (32) N/mm <sup>2</sup>  BI <sub>b</sub> min. 30 (27) N/mm <sup>2</sup>	Thickness < 7,5mm: 15 N/mm <sup>2</sup>  Thickness ≥ 7,5mm: 12 N/mm <sup>2</sup>	DIN EN ISO 10545-4
	2.1 Breaking Strenght (≥ 7,5mm thickness)	AI <sub>a</sub> min. 1300 N AI <sub>b</sub> min. 1100 N	at least 950 N	BI <sub>a</sub> min. 1300 N BI <sub>b</sub> min. 1100 N	at least 600 N	DIN EN ISO 10545-4
	2.2 Breaking Strenght (< 7,5mm thickness)	at least 600 N	at least 600 N	at least 700 N	at least 200 N	DIN EN ISO 10545-4
3.	Resistance to Shock	■		■	■	DIN EN ISO 10545-5
4.	Resistance to Deep Abrasion	≤ 275mm <sup>3</sup>	≤ 393 mm <sup>3</sup>	≤ 175 mm <sup>3</sup>	-	DIN EN ISO 10545-6
5.	Resistance to Glaze Abrasion	0 – 5	0 – 5	0 – 5	0 – 5	DIN EN ISO 10545-7
6.	Max. Coefficient of Expansion	■		■	■	DIN EN ISO 10545-8

Product Standards	Extruded Ceramic Tiles		Dry-pressed Ceramic Tiles		Test Standards	
	DIN EN 14411					
(simplified and based on 20 x 20 cm (BIII) or 30 x 30 cm (BI))	Group AI <sub>a</sub> + AI <sub>b</sub>		Group AII <sub>a</sub>   Part 1		Group BI <sub>a</sub> + BI <sub>b</sub>	Group BIII
	"Nature"	"Pre- cision"	"Nature"	"Pre- cision"		

B	Physical Properties	glazed				
7.	Thermal Shock Resistance	■	■	■	■	DIN EN ISO 10545-9
8.	Moisture Expansion	< 0,001 mm/m	< 0,001 mm/m	app. 0,001 mm/m	app. 0,01 mm/m	DIN EN ISO 10545-10
9.	Resistance to Glaze Cracking	required	required	required	required	DIN EN ISO 10545-11
10.	Thermal Conductivity	app. 1 W/mk	app. 1 W/mk	app. 1 W/mk	app. 0,8 W/mk	Deutsche Steinzeug
11.	Electrical Leakage Resistance	>10 <sup>10</sup> Ohm <sup>4)</sup>	>10 <sup>10</sup> Ohm <sup>4)</sup>	10 <sup>10</sup> Ohm	10 <sup>10</sup> Ohm	DIN EN 1081
12.	Steam Diffusion Resistance	app. μ 120.000	app. μ 120.000	app. μ 120.000	app. μ 100.000	DIN EN ISO 12572
13.	Resistance to Frost	required	not required, but met by AGROB BUCHTAL	required	-	DIN EN ISO 10545-12
14.	Light and Color Fastness	■	■	■	■	DIN 51094
15.	Luminance	according to specifications	according to specifications	according to specifications	according to specifications	Deutsche Steinzeug
16.	Behaviour in Fire	A1/A1 <sub>fl</sub>	A1/A1 <sub>fl</sub>	A1/A1 <sub>fl</sub>	A1/A1 <sub>fl</sub>	DIN 4102

C	Chemical Properties <sup>2)</sup>					
1.	Resistance to Chemicals	see the certificate	see the certificate	see the certificate	see the certificate	DIN EN ISO 10545-13
2.	Resistance to Household Chemicals and Bath Water Activities	min. GB or UB	min. GB or UB	min. GB or UB	-	
3.	Stain Resistance (glazed)	min. Cl. 3	min. Cl. 3	min. Cl. 3	min. Cl. 3	DIN EN ISO 10545-14
4.	Lead and Cadmium Delivery	■	■	■	■	DIN EN ISO 10545-15
5.	Hytect	see the certificate	see the certificate	see the certificate	see the certificate	Deutsche Steinzeug

D	Slip resistance					
1.	Coefficient of Friction	■	■	■	-	E-DIN EN ISO 10545-17
	1.1 Industrial Areas (BG) Trade Associations	Groups R9-13 / V4-10	Groups R9-13 / V4-10	Groups R9-13 / V4-10	-	DIN 51130 DGUV-R 108-003 (BGR 181)
	1.2 Barefoot Areas (BUK) German National Association of Accident Insurance Companies	Groups A / B / C	Groups A / B / C	Groups A / B / C	-	DIN 51097 DGUV-I 207-006 (GUV-I 8527)

1) Boxes marked according to size and color shade. | 2) Hydrofluoric acid and its compounds excluded.  
3) Exceptions: KerAion ELA 10.6: Electrical Leakage Resistance 106 Ohm (DIN EN 1081)

**Deutsche Steinzeug tiles present better values than required by the standards.** In addition, they are construction biologically, ecologically, hygienically and bacteriologically safe; this is guaranteed through the choice of raw materials, method of processing and firing technique.