

Properties acc. to EN 1817/EN 14 521	Test method	Requirements	Average test results from running production						
			uni logic fossil	stone mega plus classic grip	eco	mega 3.0 mm	stone acoustic mega acoustic	stone al 2.0 mm mega al 2.0 mm plus al 2.0 mm plus al 3.5 mm	duo al
Dimensional stability	EN 434	± 0.4 %	± 0.3 %						
Cigarette-burn resistance	EN 1399	Procedure A (stubbed out) level ≥ 4 Procedure B (burning) level ≥ 3	-	fulfilled					
Flexibility	EN 435, procedure A	Mandrel diameter 20 mm, no fissuring	fulfilled						
Hardness	ISO 7619	≥ 75 Shore A	92 Shore A	92 Shore A	92 Shore A	92 Shore A	85 Shore A	92 Shore A	90 Shore A
Residual indentation	EN 433	Mean value ≤ 0.15 mm at thickness < 2.5 mm	0.05 mm	0.05 mm	0.06 mm	-	-	0.05 mm (2.0 mm)	-
		Mean value ≤ 0.20 mm at thickness ≥ 2.5 mm	-	-	-	0.05 mm	-	0.05 mm (3.5 mm)	0.03 mm
		acoustic: Mean value ≤ 0.25 mm	-	-	-	-	0.20 mm	-	-
Abrasion resistance at 5 N load	ISO 4649, procedure A	≤ 250 mm ³	200 mm ³	200 mm ³	230 mm ³	200 mm ³	150 mm ³	180 mm ³	150 mm ³
Colour fastness to artificial light	EN 20 105-802, procedure 3, test conditions 6.1 a)	at least level 6 on the blue scale level ≥ 3 on the grey scale (= 350 MJ/m ²)	grey scale ≥ level 3 acc. to EN 20 105-A 02						

Additional technical properties

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Classification	EN 685	Residential	21 - 23	21 - 23	21 - 23	21 - 23	21 - 23	21 - 23	21 - 23
		Commercial	31 - 34	31 - 34	31 - 34	31 - 34	31 - 33	31 - 34	31 - 34
		Industrial	41 - 42	41 - 42	41 - 42	41 - 43	-	2.0 mm 41 - 42 3.5 mm 41 - 43	41 - 43
Fire behaviour	DIN 4102	← B1 →							
	EN 13 501-1	← C _{fl} -s1 →				B _{fl} -s1		C _{fl} -s1	B _{fl} -s1
Toxicity of fire gases	DIN 53 436	← carbonisation gases are non-toxic →							
Anti-slip properties	DIN 51 130	according BGR 181	R 9	stone: R 10 grip: R 10 other: R 9	R 9	R 9	R 9	R 10	R 9
Slip resistance properties in barefoot areas affected by humidity	DIN 51 097	as per grading class	not tested	grip: A, B, C stone: A, B other: not tested	← not tested →				
Improvement in footfall sound absorption	ISO 140-8		6 dB	6 dB	5 dB	8 dB	20 dB	2.0 mm = 6 dB 3.5 mm = 10 dB	6 dB
Effect of chemicals	EN 423	← resistant depending on concentration and time of exposure* →							
Thermal conductivity	DIN 52 612	← 0.61 W/mK 0.61 W/mK 0.61 W/mK 0.61 W/mK 0.12 W/mK 0.54 W/mK 0.45 W/mK → suitable for underfloor heating systems							
Electrical insulation properties	IEC 60093 VDE 0303 T.30		>10 ¹⁰ Ohm	>10 ¹⁰ Ohm	>10 ¹⁰ Ohm	>10 ¹⁰ Ohm	>10 ¹⁰ Ohm	electrical behaviour see below	
Electrical propensity when walked upon	EN 1815	← antistatic, charging in case of rubber soles < 2 kV →						antistatic, charging in case of rubber soles < 1 kV	
Effect of a castor chair	EN 425	← suitable if castor wheels, type W, according to EN 12 529 are used →							

Electrical behaviour**

Resistance to EPA ground	ESD STM 7.1-2001	measuring the installed floor at 23 °C (± 2 °C) and ≥ 25 % r.h.	-	-	-	-	-	10 ⁴ - 9 x 10 ⁴ Ohm	< 10 ⁴ Ohm
		measuring the installed floor at 23 °C (± 2 °C) and < 25 % r.h., installed on an appropriate subfloor build up	-	-	-	-	-	10 ⁴ - 10 ⁴ Ohm***	< 10 ⁴ Ohm
Operator system – Resistance to ground	ESD STM 97.1-1999	for the system floor/ conductive footwear (R < 5 x 10 ⁴ Ohm)	-	-	-	-	-	≤ 3.5 x 10 ⁴ Ohm	< 3.5 x 10 ⁴ Ohm
Body voltage generation	ESD STM 97.2-1999	tested with defined conductive footwear with 21 °C and 20 % r.h.	-	-	-	-	-	< 10 V	< 10 V
Resistance to EPA ground	IEC 61340-4-1:2003	measuring the installed floor at 23 °C (± 2 °C) and ≥ 25 % r.h.	-	-	-	-	-	10 ⁴ - 9 x 10 ⁴ Ohm	< 10 ⁴ Ohm
		measuring the installed floor at 23 °C (± 2 °C) and < 25 % r.h., installed on an appropriate subfloor build up	-	-	-	-	-	10 ⁴ - 10 ⁴ Ohm***	< 10 ⁴ Ohm
Resistance to EPA ground	IEC 61340-5-1:2001 table 1, note 2	for the system floor/ conductive footwear (R < 5 x 10 ⁴ Ohm)	-	-	-	-	-	≤ 3.5 x 10 ⁴ Ohm	< 3.5 x 10 ⁴ Ohm
Resistance to earth	EN 1081:1998		-	-	-	-	-	10 ⁴ - 9 x 10 ⁴ Ohm	< 10 ⁴ Ohm
Insulation resistance	VDE 0100 / T.610 / CENELEC HD 384.6.61 S2:2003		-	-	-	-	-	≥ 5 x 10 ⁴ Ohm	-
Resistance to ground	ASTM F 150-1998 (100 V and 500 V=)		-	-	-	-	-	10 ⁴ - 10 ⁴ Ohm	< 10 ⁴ Ohm****
Surface resistance			-	-	-	-	-	10 ⁴ - 5 x 10 ⁴ Ohm	< 10 ⁴ Ohm****

* In case of increased impact of oils, greases, acids, alkalis and other aggressive chemicals- please contact us.

** If installed electrically dissipative and conductive in conformity with our installation instruction and according to the recommendations of the adhesive manufacturer.

The used adhesive has to have a permanent resistance of R < 3 x 10⁴ Ohm according to EN 13 415.

*** If extremely low humidity values (< 25 % relative air humidity (= r.h.)) are expected for a longer period,
please contact Freudenberg Building Systems, Technical Service, for advice.

EN 1817: Specification for homogeneous and heterogeneous smooth elastomer floorcoverings

EN 14 521: Specification for smooth rubber floorcoverings with or without foam backing with a decorative layer.

Colour variations due to different production batches as well as technical alterations to improve the product have to be accepted.

**** Special article according to NFPA 99: Art.No. 173/273 **noraplan® duo el** NFPA on request:

Resistance to ground > 2.5 x 10⁴ Ohm

Surface resistance 2.5 x 10⁴ - 10⁴ Ohm