

EN12086 Water Vapour diffusion resistance Testing of Gurit Kerdyn Green FR

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Executive Summary

Gurit has undertaken testing of Kerdyn Green FR PET to the EN12086 standard. Test results show both the diffusion equivalent air layer thickness S_d and the water vapour diffusion resistance coefficient μ . Water vapour diffusion is slower perpendicular to the extrusion direction.

1. Introduction

This reports summarises the results of the water vapour transmission properties according to EN 12086 of nominally 50mm thick plank and standard sheet Gurit Kerdyn Green FR PET foam products in three densities. Both the diffusion equivalent air layer thickness S_d and the water vapour diffusion resistance coefficient μ have been calculated from the results.

2. Experimental

Sample size = 115mm diameter circle of nominally 50mm thick product tested in both the standard sheet format (vapour transmission parallel to the extrusion direction $\rightarrow 2,2$) and Plank product (vapour transmission perpendicular to the extrusion direction $\rightarrow 3,3$). Refer to Figure 1 for details.

Desiccant = Calcium Chloride

Temperature = 23°C

Relative Humidity = 0/85 %

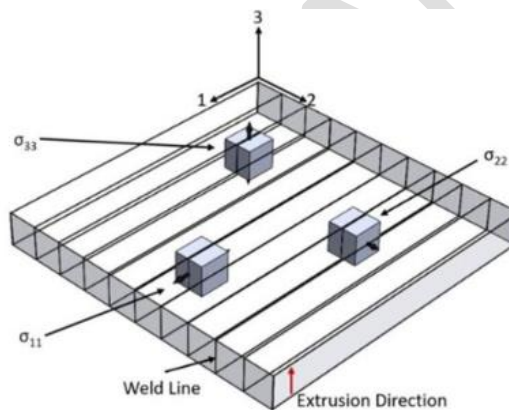


Figure 1 Reference directions

3. Results

Material	Type	Average Water Vapour diffusion resistance factor μ	Water vapour diffusion equivalent air thickness $S_d(m)$
Kerdyn Green FR 180 Kg/m ³	Plank	248	12
Kerdyn Green FR 115 Kg/m ³	Plank	423	22
Kerdyn Green FR 80 Kg/m ³	Plank	243	14
Kerdyn Green FR 180 Kg/m ³	Standard sheet	122	6
Kerdyn Green FR 115 Kg/m ³	Standard sheet	161	8
Kerdyn Green FR 80 Kg/m ³	Standard sheet	126	6

Figure 1. Summary of results

4. Remarks for future testing

The Kerdyn Planks are obtained by sanding the raw board sheets. The amount of sanding might affect the water vapour diffusion and it is therefore recommended for future testing to record the sanding parameters of the plank sheets so to have more information that can help correlating the permeability and depth of sanding.

5. Appendix

Material	Type	Water Vapour diffusion resistance factor μ	Water vapour diffusion equivalent air thickness S_d (m)
Kerdyn Green FR 180 Kg/m ³ coupon 1	Plank	Invalid result	Invalid result
Kerdyn Green FR 180 Kg/m ³ coupon 2	Plank	135	6
Kerdyn Green FR 180 Kg/m ³ coupon 3	Plank	500	24
Kerdyn Green FR 180 Kg/m ³ coupon 4	Plank	220	11
Kerdyn Green FR 180 Kg/m ³ coupon 5	Plank	137	7
Kerdyn Green FR 180 Kg/m ³ Average	Plank	248	12

Material	Type	Water Vapour diffusion resistance factor μ	Water vapour diffusion equivalent air thickness S_d (m)
Kerdyn Green FR 115 Kg/ m ³ coupon 1	Plank	399	20
Kerdyn Green FR 115 Kg/ m ³ coupon 2	Plank	430	22
Kerdyn Green FR 115 Kg/ m ³ coupon 3	Plank	316	16
Kerdyn Green FR 115 Kg/ m ³ coupon 4	Plank	457	23
Kerdyn Green FR 115 Kg/ m ³ coupon 5	Plank	512	26
Kerdyn Green FR 115 Kg/ m ³ Average	Plank	423	22

Material	Type	Water Vapour diffusion resistance factor μ	Water vapour diffusion equivalent air thickness S_d (m)
Kerdyn Green FR 80 Kg/m ³ coupon 1	Plank	281	16
Kerdyn Green FR 80 Kg/m ³ coupon 2	Plank	191	17
Kerdyn Green FR 80 Kg/m ³ coupon 3	Plank	104	12
Kerdyn Green FR 80 Kg/m ³ coupon 4	Plank	258	15
Kerdyn Green FR 80 Kg/m ³ coupon 5	Plank	178	10
Kerdyn Green FR 80 Kg/m ³ Average	Plank	243	14

Material	Type	Water Vapour diffusion resistance factor μ	Water vapour diffusion equivalent air thickness $S_d(m)$
Kerdyn Green FR 180 Kg/m ³ coupon 1	Standard sheet	129	6
Kerdyn Green FR 180 Kg/m ³ coupon 2	Standard sheet	122	6
Kerdyn Green FR 180 Kg/m ³ coupon 3	Standard sheet	121	6
Kerdyn Green FR 180 Kg/m ³ coupon 4	Standard sheet	126	6
Kerdyn Green FR 180 Kg/m ³ coupon 5	Standard sheet	110	5
Kerdyn Green FR 180 Kg/m ³ Average	Standard sheet	122	6

Material	Type	Water Vapour diffusion resistance factor μ	Water vapour diffusion equivalent air thickness $S_d(m)$
Kerdyn Green FR 115 Kg/m ³ coupon 1	Standard sheet	160	8
Kerdyn Green FR 115 Kg/m ³ coupon 2	Standard sheet	153	8
Kerdyn Green FR 115 Kg/m ³ coupon 3	Standard sheet	122	6
Kerdyn Green FR 115 Kg/m ³ coupon 4	Standard sheet	137	7
Kerdyn Green FR 115 Kg/m ³ coupon 5	Standard sheet	234	12
Kerdyn Green FR 115 Kg/m ³ Average	Standard sheet	161	8

Material	Type	Water Vapour diffusion resistance factor μ	Water vapour diffusion equivalent air thickness $S_d(m)$
Kerdyn Green FR 80 Kg/m ³ coupon 1	Standard sheet	136	7
Kerdyn Green FR 80 Kg/m ³ coupon 2	Standard sheet	149	7
Kerdyn Green FR 80 Kg/m ³ coupon 3	Standard sheet	86	4
Kerdyn Green FR 80 Kg/m ³ coupon 4	Standard sheet	134	7
Kerdyn Green FR 80 Kg/m ³ coupon 5	Standard sheet	Invalid result	Invalid result
Kerdyn Green FR 80 Kg/m ³ Average	Standard sheet	126	6

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