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**21**

EN 13986:2004

HDF

Internal use as a non structural component in dry conditions  
**E1**

DoP Ref: KC/QUAL/DOC/0091

<https://uk.kronospan-express.com/en/express-services/downloads>

Essential characteristics	Performance								
	Thickness(mm)								
	1.8 to 2.5	>2.5 to 4	>4 to 6	>6 to 9	>9 to 12	>12 to 19	>19 to 30	>30 to 45	>45
<sup>1</sup> Water vapour permeability $\mu$	NPD	NPD	NPD	NPD	NPD	NPD	NPD	NPD	NPD
Release of formaldehyde (class E1 or E2)	E1	E1	E1	E1	E1	E1	E1	E1	E1
Release (content) of pentachlorophenol (PCP)	≤5ppm	≤5ppm	≤5ppm	≤5ppm	≤5ppm	≤5ppm	≤5ppm	≤5ppm	≤5ppm
<sup>2</sup> Airborne sound insulation (surface mass) R (dB)	NPD	NPD	NPD	NPD	NPD	NPD	NPD	NPD	NPD
<sup>3</sup> Sound absorption factor Frequency range 250Hz to 500Hz ( $\alpha$ )	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
<sup>3</sup> Sound absorption factor Frequency range 1000Hz to 2000Hz ( $\alpha$ )	NPD	NPD	NPD	NPD	NPD	NPD	NPD	NPD	NPD
<sup>4</sup> Thermal conductivity $\lambda$ (W/mK)	NPD	NPD	NPD	NPD	NPD	NPD	NPD	NPD	NPD
Air permeability $V_0$ (m <sup>3</sup> /h)	NPD	NPD	NPD	NPD	NPD	NPD	NPD	NPD	NPD
Durability									
Internal bond (N/mm <sup>2</sup> )	0.65	0.65	0.65	0.65	0.60	0.55	0.55	0.50	0.50
Swelling in thickness 24 h (%)	45	35	30	17	15	12	10	8	6
Bending Strength (N/mm <sup>2</sup> )	23	23	23	23	22	20	18	17	15

<b>Modulus of elasticity in bending (N/mm<sup>2</sup>)</b>	-	-	2700	2700	2500	2200	2100	1900	1700
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<b>Biological</b>		<b>Use class 1</b>							
<b><sup>5</sup>Reaction to fire</b>  (see notes to table for field of application details and associated documentation references)		Minimum thickness	Class (excluding floorings) <sup>g</sup>				Class (Flooring) <sup>h</sup>		
	<b>Without an air gap behind the panel<sup>abef</sup></b>	9	D-s2,d0				D <sub>fl</sub> ,s1		
	<b>With a closed or open air gap ≤ 22mm behind the panel<sup>cef</sup></b>	9	D-s2,d2				-		
	<b>Closed air gap behind the panel<sup>def</sup></b>	15	D-s2,d0				D <sub>fl</sub> ,s1		
	<b>With an open air gap behind the panel<sup>def</sup></b>	18	D-s2,d0				D <sub>fl</sub> ,s1		
	<b>Any end use<sup>ef</sup></b>	3	E				E <sub>fl</sub>		
	<p>a Mounted without an air gap directly against class A1 or A2-s1, d0 products with minimum density 10kg/m<sup>3</sup> or at least class D-s2, d2 products with minimum density 400 kg/m<sup>3</sup>.</p> <p>b A substrate of cellulose insulation material of at least class E may be included if mounted directly against the wood-based panel, but not for floorings.</p> <p>c Mounted with an air gap behind. The reverse face of the cavity shall be at least class A2-s1, d0 products with minimum density 10 kg/m<sup>3</sup>.</p> <p>d Mounted with an air gap behind. The reverse face of the cavity shall be at least class D-s2, d2 products with minimum density 400 kg/m<sup>3</sup>.</p> <p>e Veneered, phenol- and melamine-faced panels are included for class excl. floorings.</p> <p>f A vapour barrier with a thickness up to 0,4 mm and a mass up to 200 g/m<sup>2</sup> can be mounted in between the wood-based panel and a substrate if there are no air gaps in between.</p> <p>g Class Provided for in Table 1 of the Annex to decision 2000/147/EC</p> <p>h Class Provided for in Table 2 of the Annex to decision 2000/147/EC</p>								

<p><b>NOTES TO TABLE</b></p> <p>1 Taken from Table 9 of EN 13986:2004+A1</p> <p>2 Calculated according to clause 5.10 of EN 13986:2004+A1</p> <p>3 Taken from Table 10 of EN 13986:2004+A1</p> <p>4 Taken from Table 11 of EN 13986:2004+A1</p> <p>5 reaction to fire classes from Table 1 of Commission Decision 2003/43/EC of January 2003 (OJEU L13 of 18.1.2003) corrected by Corrigendum (OJEU L33 of 8.2.2003) and amended by Commission decision 2007/348/EC of May 2007 (OJEU L131 of 23-05-2007); also reproduced in Table 8 of EN 13986:2004+A1:2015 for wood-based panels installed according to CEN/TR 12872</p>
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