

Product Passport

Door system in accordance to EN 14 351-1 +A1



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System	LK90X doors
Product line	Thermally insulated outward opening door and double leaf door
Materials	Aluminium: EN-AW 6063 T5 Thermal breaks: polyamide Gaskets: EPDM
Surface treatment	Anodizing Powder coating
Glass/ infill panel	thickness 33..73 mm
Frame depth	90 mm
Frame width	50..95 mm

Product standard (hEN):

EN 14 351-1:2006+A1:2010

Test reports:

VTT-S-04206-13
VTT-S-04207-13
VTT-S-04211-13
VTT-S-05921-14
VTT-S-05922-14
VTT-S-04201-13
14/8749-936
14/8749-937
15/11460-3015
15/11460-3017

Properties/ Class *)

Resistance to fire (E / EI) npd	Smoke leakage (S) npd	Self-closing (C) npd	Resistance to wind load C3	Watertightness 8A ***)
Dangerous substances npd	Impact resistance npd	Load-bearing capacity of safety devices npd	Height **)	Ability to release npd
Acoustic performance R_w (C; C _{tr}) **) 43 (-1; -3) dB	Thermal transmittance (U _D) **) ≥ 0,80 W/m²K	Radiation properties (g _D / τ _v) **)	Air permeability 4	

*) Only tested/ calculated maximum values of the system for single leaf door

***) Declared value according to project

***) With surface mounted hinges

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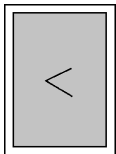
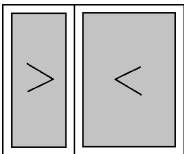
Resistance to fire (E / EI) npd	Smoke leakage (S) npd	Self-closing (C) npd	Resistance to wind load C3	Watertightness 8A ***)
Dangerous substances npd	Impact resistance npd	Load-bearing capacity of safety devices npd	Height **)	Ability to release npd
Acoustic performance R_w (C; C _{tr}) **) 43 (-1; -3) dB	Thermal transmittance (U _D) **) ≥ 0,80 W/m²K	Radiation properties (g _D / τ _v) **)	Air permeability 4	

- 1) Element size: single leaf door ≤ 2,1 m², double leaf door ≤ 3,2 m²
- 2) Element size: single leaf door ≤ 3,1 m², double leaf door ≤ 4,8 m²
- 3) Values according to project are declared separately

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ref.No. for hEN-standard	Name:	LK90X door			LK90X double leaf door		
	Description:		Thermally insulated single leaf door				Thermally insulated double leaf door
-	Resistance to fire (E / EI)	npd			npd		
-	Smoke leakage (S)	npd			npd		
-	Self-closing (C)	npd			npd		
4.2	Resistance to wind load ¹⁾	C3 (1200 Pa, ≤1/300)			C3 (1200 Pa, ≤1/300)		
4.5	Watertightness ²⁾	8A			6A		
4.6	Dangerous substances	npd			npd		
4.7	Impact resistance	npd			npd		
4.8	Load-bearing capacity of safety devices ¹⁾	npd			npd		
4.9	Height ³⁾	3)			3)		
4.10	Ability to release	npd			npd		
4.11	Acoustic performance ^{2) 3)}	R _w 43dB	R _w +C 42dB	R _w +C _{tr} 40dB	R _w 41dB	R _w +C 40dB	R _w +C _{tr} 39dB
4.12	Thermal transmittance ³⁾ (U _D)	≥ 0,80 W/m ² K			≥ 0,81 W/m ² K		
4.13	Radiation properties ³⁾ (g _D / τ _v)	3)			3)		
4.14	Air permeability ²⁾	4			3		

NOTE! Values in the table apply for single leaf door 990x 2090 mm and double leaf door 1520x 2090 mm excl. thermal transmittance which is calculated for standard size door (1230x 2180 mm and 2000x 2180 mm)

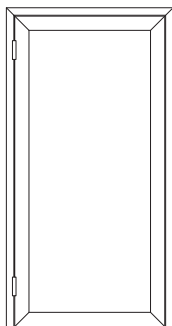
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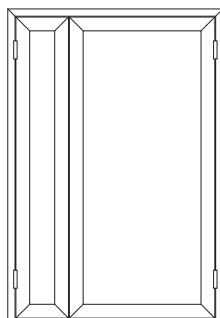
LK90X U_D -values for standard size door:

Single leaf door (1230x 2180 mm)



	Glass U_g -value (W/m ² K)	
	0,5	0,6
IGU spacer	Door U_D -arvo (W/m ² K)	
TGI (0,044 W/mK)	0,81	0,88
TPS (0,038 W/mK)	0,80	0,87

Double leaf door (2000x 2180 mm)



	Glass U_g -value (W/m ² K)	
	0,5	0,6
IGU spacer	Door U_D -arvo (W/m ² K)	
TGI (0,044 W/mK)	0,82	0,89
TPS (0,038 W/mK)	0,81	0,88

Tabulated U_D -values can be used for single leaf door (1230x 2180 mm) when the door size $\leq 3,6 \text{ m}^2$.
Tabulated U_D -values can be used for double leaf door (2000x 2180 mm) when the door size $> 3,6 \text{ m}^2$.
Specific values according to project are declared separately.

The thermal transmittance of the frames (U_f) are defined according to standard SFS-EN ISO 10077-2:2017

IGU = Insulating Glass Unit

LK90X Single leaf doors acoustic performance:

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Glazings:

- Glass-1:** 3K 4-18-4-18-4
- Glass-2:** 3K 6-16-4-18-6
- Glass-3:** 3K 6-16-4-16-8
- Glass-4:** 3K 13.1Phon-18-6-18-9.1Phon
- Glass-5:** 3K 6-16-4-16-9.1Phon

Opaque panels:

- UO-1:** 1,5 mm aluminium sheet - 6 mm HDF - 50 mm PUR - 6 mm HDF - 1,5 mm aluminium sheet
- UO-2:** 1,5 mm aluminium sheet - 6 mm HDF - 50 mm hard mineral wool - 6 mm HDF - 1,5 mm aluminium sheet
- UO-3:** 1,5 mm aluminium sheet - 9 mm fibre-cement sheet - 50 mm hard mineral wool - 9 mm fibre-cement sheet - 1,5 mm aluminium sheet
- UO-4:** 1,5 mm aluminium sheet - 13 mm gypsum board - 50 mm PUR - 13 mm gypsum board - 1,5 mm aluminium sheet
- UO-5:** 1,5 mm aluminium sheet - 9 mm fibre-cement sheet - 50 mm PUR - 9 mm fibre-cement sheet - 1,5 mm aluminium sheet
- UO-6:** 1,5 mm aluminium sheet - 13 mm gypsum board - 50 mm hard mineral wool - 13 mm gypsum board - 1,5 mm aluminium sheet

Number of door leaves	Door type	Tested glazing panel	R _w [dB]	R _w + C [dB]	R _w + C _{tr} [dB]
1	Fully glazed door	Glass-1	35	33	30
1	Fully glazed door	Glass-2	38	36	33
1	Fully glazed door	Glass-3	39	38	34
1	Fully glazed door	Glass-4	42	42	40
1	Fully glazed door	Glass-5	41	39	35
1	Glass door with panel	Glass-1 UO-1	36	35	32
1	Glass door with panel	Glass-2 UO-2	40	39	34
1	Glass door with panel	Glass-2 UO-3	40	40	36
1	Glass door with panel	Glass-2 UO-4	38	37	34
1	Glass door with panel	Glass-2 UO-5	39	38	35
1	Glass door with panel	Glass-2 UO-6	41	40	36
1	Glass door with panel	Glass-4 UO-6	43	42	38
1	Glass door with panel	Glass-5 UO-6	42	41	37
1	Glass door with panel	Glass-3 UO-6	42	41	
1	Glass door with panel	Glass-4 UO-3			

Tested door sizes and maximum total areas (A) of doors:

Single leaf doors: **990x 2090 mm** **0 m² < A ≤ 3,1 m²**

- Terms: **R_w** Sound reduction index (the higher the R_w number, the better the sound insulation)
R_w+C Jet aircraft noise, sounds of fast trains, industrial noise (high and mid frequency)
R_w+C_{tr} City traffic noise, sounds of slow trains, industrial noise (low and mid frequency)

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LK90X Double leaf doors acoustic performance:

Glazings:

Glass-1: 3K 4-16-4-16-4 RST

Glass-2: 3K 13.1Phon-12-6-12-9.1Phon

Opaque panels:

UO-1: 1,5 mm aluminium sheet - 4 mm plywood - 50 mm PUR - 4 mm plywood - 1,5 mm aluminium sheet

UO-2: 1,5 mm aluminium sheet - 9 mm fibre-cement sheet - 40 mm hard mineral wool - 9 mm fibre-cement sheet - 1,5 mm aluminium sheet

Number of door leaves	Door type	Tested glazing panel	R _w [dB]	R _w + C [dB]	R _w + C _{tr} [dB]
2	Fully glazed door	Glass-1	35	33	30
2	Fully glazed door	Glass-2	41	40	39
2	Glass door with transom	Glass-1	35	34	30
2	Glass door with transom	Glass-2	41	40	39
2	Panel door with transom	UO-1	32	31	28
2	Panel door with transom	UO-2	40	39	35
2	Glass door with panel	Glass-1 UO-1	33	32	29
2	Glass door with panel	Glass-1 UO-2	37		
2	Glass door with panel	Glass-2 UO-1			

Tested door sizes and maximum total areas (A) of doors:

Double leaf doors: **1520x 2090 mm** $m^2 < A \leq 4,8 m^2$

Terms: **R_w** Sound reduction index (the higher the R_w number, the better the sound insulation)

R_w+C Jet aircraft noise, sounds of fast trains, industrial noise (high and mid frequency)

R_w+C_{tr} City traffic noise, sounds of slow trains, industrial noise (low and mid frequency)