

Product Passport

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



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System **LK90eco window**
LK75eco window

Product line Fixed glazing
 Openable windows

Materials Aluminium: EN-AW 6063 T5
 Thermal breaks: polyamide + PU
 Gaskets: EPDM

Surface treatment Anodizing
 Powder coating

Glass/ infill panel thickness 14..73 mm

Frame depth 90 and 75 mm

Frame width 44 mm

Product standard (hEN):

EN 14 351-1:2006+A1:2010

Test reports:

- 11-000253-PB01
- 11-000253-PB01
- 11-000479-PR01
- 11-000479-PR02
- 11-000479-PR03
- 11-000479-PR04
- 11-000479-PR05
- 12-002276-PR02
- 12-003108-PR01
- 12-003108-PR02
- 12-003108-PR03
- 12-003108-PR04
- 12-003108-PR05
- 13-003610-PR01
- 13-003610-PR02
- 12/07-A225-B1
- 12/07-A225-K1
- 12/07-A225-K2
- 12/07-A225-K3
- 12/07-A225-K4
- 15/11-A466-B1
- H.E-148/10
- H.K-58/10
- L1-10-152

Properties/ Class *)

Resistance to fire (E / EI)	Smoke leakage (S)	Resistance to wind load	Watertightness	Dangerous substances
npd	npd	C5	9A	npd
Load-bearing capacity of safety devices	Acoustic performance R_w (C; C_{tr})	Thermal transmittance (U_w)	Radiation properties (g_w / τ_v)	Air permeability
npd	**) 46 (-1; -4) dB	**) $\geq 0,64$ W/m²K	**)	4

*) Only tested/ calculated maximum values of the system for standard size window (1230x 1480 mm)

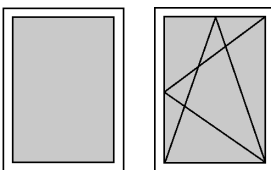
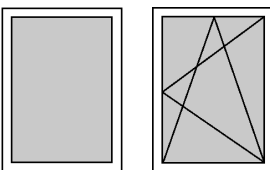
**) Declared value according to project

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Summary of system properties:

ref No. for hEN-standard	Name:	LK90eco window			LK75eco window		
		Description:					
Fixed or openable window			Fixed or openable window				
-	Resistance to fire (E / EI)	npd			npd		
-	Smoke leakage (S)	npd			npd		
4.2	Resistance to wind load ¹⁾	C5 / B5 ($\leq 1/300$ / $\leq 1/200$) (2000 Pa)			C4 / B4 ($\leq 1/300$ / $\leq 1/200$) (1600 Pa)		
4.5	Watertightness ²⁾	9A			9A		
4.6	Dangerous substances	npd			npd		
4.8	Load-bearing capacity of safety devices ¹⁾	npd			npd		
4.11	Acoustic performance ³⁾	R_w 46dB	R_w+C 45dB	R_w+C_{tr} 42dB	R_w 45dB	R_w+C 44dB	R_w+C_{tr} 42dB
4.12	Thermal transmittance ³⁾ (U_w)	fixed: $\geq 0,64$ W/m ² K openable: $\geq 0,66$ W/m ² K			fixed: $\geq 0,71$ W/m ² K openable: $\geq 0,77$ W/m ² K		
4.13	Radiation properties ³⁾ (g_w / τ_v)	3)			3)		
4.14	Air permeability ²⁾	4 (600 Pa)			4 (600 Pa)		

NOTE! Values in the table apply for standard size window (1230x 1480 mm)

¹⁾ Element size $\leq 1,8$ m²

²⁾ Element size $\leq 2,7$ m²

³⁾ Values according to project are declared separately

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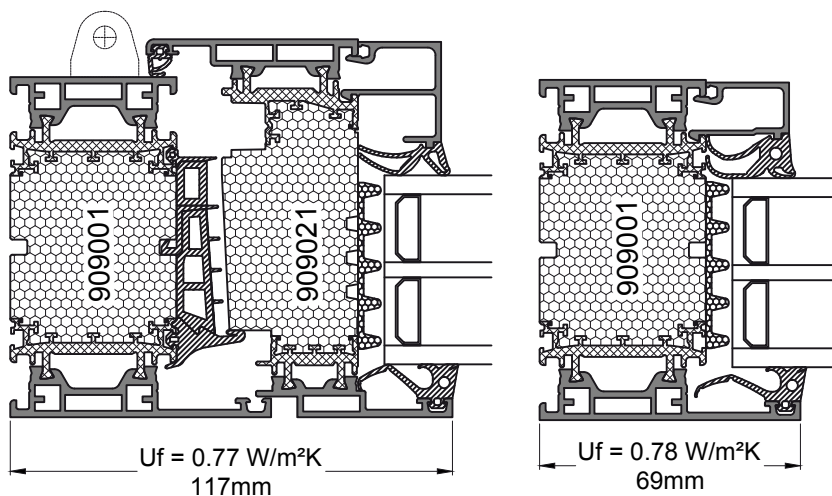
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LK90eco window(1230 x1480 mm) U_w -values:

The thermal transmittance of the frames (U_f) are defined according to standard SFS-EN ISO 10077-2:2012

Tabulated U_w -values can be used, when total area of the window $\leq 2,3 \text{ m}^2$. Specific values according to project are declared separately.



Purso LK90eco		U_g [W/m²K]	U_w [W/m²K]
Avautuva ikkuna	Opening window	1,0	1,0
3k lasitus	3 layer glazing	0,70	0,80
Swisspacer ULTIMATE	Swisspacer ULTIMATE	0,60	0,73
1230x 1480 mm	1230x 1480 mm	0,50	0,66

Purso LK90eco		U_g [W/m²K]	U_w [W/m²K]
Kiinteä ikkuna	Fixed window	1,0	1,0
3k lasitus	3 layer glazing	0,70	0,80
Swisspacer ULTIMATE	Swisspacer ULTIMATE	0,60	0,72
1230x 1480 mm	1230x 1480 mm	0,50	0,64

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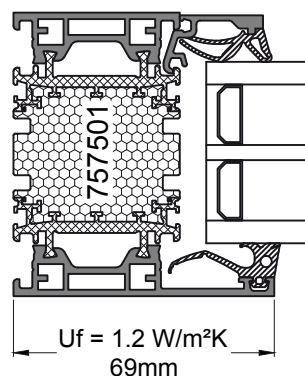
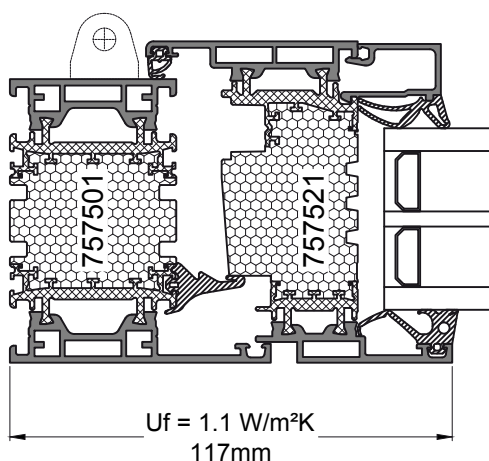
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LK75eco window (1230x 1480 mm) U_w -values:

The thermal transmittance of the frames (U_f) are defined according to standard SFS-EN ISO 10077-2:2012

Tabulated U_w -values can be used, when total area of the window $\leq 2,3 \text{ m}^2$. Specific values according to project are declared separately.



Purso LK75eco		U_g [W/m²K]	U_w [W/m²K]
Avautuva ikkuna	Opening window	1,0	1,1
3k lasi	3 layer glass	0,70	0,90
Swisspacer ULTIMATE	Swisspacer ULTIMATE	0,60	0,84
1230x 1480 mm	1230x 1480 mm	0,50	0,77

Purso LK75eco		U_g [W/m²K]	U_w [W/m²K]
Kiinteä ikkuna	Fixed window	1,0	1,1
3k lasi	3 layer glass	0,70	0,88
Swisspacer ULTIMATE	Swisspacer ULTIMATE	0,60	0,80
1230x 1480 mm	1230x 1480 mm	0,50	0,71

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LK90eco and LK75eco Windows
 determination of sound insulation based on IGU data
 according to standard EN 14 351-1 annex B
 (for windows $R_w < 39$ dB or $R_w + C_{tr} < 35$ dB):

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)

	IGU R_w [dB]								
	27	28	29	30	32	34	36	38	40
Total area of window	Window R_w [dB]								
$A \leq 2,7$ m ²	30	31	32	33	34	35	36	37	38
$2,7$ m ² < $A \leq 3,6$ m ²	29	30	31	32	33	34	35	36	37
$3,6$ m ² < $A \leq 4,6$ m ²	28	29	30	31	32	33	34	35	36
$4,6$ m ² < A	27	28	29	30	31	32	33	34	35

Window $R_w + C =$ window $R_w - 1$ dB

	IGU $R_w + C_{tr}$ [dB]								
	24	25	26	27	28	30	32	34	36
Total area of window	Window $R_w + C_{tr}$ [dB]								
$A \leq 2,7$ m ²	26	27	28	29	30	31	32	33	34
$2,7$ m ² < $A \leq 3,6$ m ²	25	26	27	28	29	30	31	32	33
$3,6$ m ² < $A \leq 4,6$ m ²	24	25	26	27	28	29	30	31	32
$4,6$ m ² < A	23	24	25	26	27	28	29	30	31

CE-marking example:

Total area of window (A) $1,5$ m x $2,0$ m = $3,0$ m², IGU $R_w = 36$ dB and $R_w + C_{tr} = 32$ dB.

From tabulated data:

Window: $R_w = 35$ dB

$R_w + C = 35$ dB - 1 dB = 34 dB

$R_w + C_{tr} = 31$ dB

CE-marking:

R_w (C; C_{tr})

35 (-1; -4) dB

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LK90eco Windows, determination of sound insulation based on sound insulation testing
 (for windows $R_w \geq 39$ dB or $R_w + C_{tr} \geq 35$ dB):

Window type	Tested glazing	IGU performance		R_w [dB]	$R_w + C$ [dB]	$R_w + C_{tr}$ [dB]
		R_w	$R_w + C_{tr}$			
Inward opening	3k 6-14-4-14-4	36 dB	30 dB	38	35	31
Inward opening	3k 8-14-4-14-4	37 dB	31 dB			
Inward opening	3k VSG8-14-4-14-6	43 dB	36 dB			
Inward opening	3k VSG12-14-6-14 -VSG8	50 dB	44 dB			

Values obtained from the tests can be used for window elements with different glazing if the performance of the used IGU is equivalent or better than tested.

Extrapolation of the test results for different size windows:

Properties	Total area of window			
	$A \leq 2,7$ m ²	$2,7$ m ² < $A \leq 3,6$ m ²	$3,6$ m ² < $A \leq 4,6$ m ²	$4,6$ m ² < A
$R_w, R_w + C$ and $R_w + C_{tr}$	- 0 dB	- 1 dB	- 2 dB	- 3 dB

LK75eco Windows, determination of sound insulation based on sound insulation testing
 (for windows $R_w \geq 39$ dB or $R_w + C_{tr} \geq 35$ dB):

Window type	Tested glazing	IGU performance		R_w [dB]	$R_w + C$ [dB]	$R_w + C_{tr}$ [dB]
		R_w	$R_w + C_{tr}$			
Inward opening	3k 6-16-4-16-4	36 dB	30 dB	39	37	32
Inward opening	3k 8-16-4-16-4	37 dB	31 dB			
Inward opening	3k 8.2L-16-4-16-6	43 dB	36 dB			
Inward opening	2k 14.2L-24-8.2L	52 dB	46 dB			

Values obtained from the tests can be used for window elements with different glazing if the performance of the used IGU is equivalent or better than tested.

Extrapolation of the test results for different size windows:

Properties	Total area of window			
	$A \leq 2,7$ m ²	$2,7$ m ² < $A \leq 3,6$ m ²	$3,6$ m ² < $A \leq 4,6$ m ²	$4,6$ m ² < A
$R_w, R_w + C$ and $R_w + C_{tr}$	- 0 dB	- 1 dB	- 2 dB	- 3 dB