

Product Passport

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



Purso Oy
 Alumiinitie 1
 FI-37200 Siuro, Finland
 Tel. +358 3 3404 111
 Fax +358 3 3404 500
 E-mail purso@purso.fi
 web www.purso.fi

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
 18-17832-1581
 18-17832-1582
 S-04310-18
 S-04311-18

System	LK75eco window LK90eco window
Product family	Fixed windows Inward opening windows Outward opening windows
Materials	Aluminium: EN-AW 6063 T5 Thermal breaks: polyamide + PU Gaskets: EPDM
Surface treatment	Anodizing Powder coating
Glass / infill panel	LK75eco 14..63 mm LK90eco 25..78 mm
Frame depth	75 and 90 mm

LK75eco properties / Class *)

Resistance to fire (E / EI)	Smoke leakage (S)	Resistance to wind load	Water tightness	Dangerous substances
npd	npd	C4	E1200	npd
Load-bearing capacity of safety devices	Acoustic performance R_w (C; C_{tr})	Thermal transmittance (U_w)	Radiation properties (gw / τ_V)	Air permeability
npd	**) 45 (-1; -3) dB	**) $\geq 0,71 \text{ W/m}^2\text{K}$	**)	4

LK90eco properties / Class *)

Resistance to fire (E / EI)	Smoke leakage (S)	Resistance to wind load	Water tightness	Dangerous substances
npd	npd	C5 / C4	E1200 / E1650	npd
Load-bearing capacity of safety devices	Acoustic performance R_w (C; C_{tr})	Thermal transmittance (U_w)	Radiation properties (gw / τ_V)	Air permeability
npd	**) 46 (-1; -4) dB	**) $\geq 0,65 \text{ W/m}^2\text{K}$	**)	4

*) Tested / calculated maximum values of the system

**) Declared value according to project

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Summary of system properties:

ref No. for hEN-standard	Name:	LK75eco window			LK90eco window		
		Description:					
Fixed or inward opening window			Fixed or inward opening window	Outward opening window			
-	Resistance to fire (E / EI)	npd			npd		
-	Smoke leakage (S)	npd			npd		
4.2	Resistance to wind load ^{1) 3)}	C4 (≤1/300) (1600 Pa)			C5 (≤1/300) (2000 Pa)	C4 (≤1/300) (1600 Pa)	
4.5	Watertightness ^{2) 4)}	E1200			E1200	E1650	
4.6	Dangerous substances	npd			npd		
4.8	Load-bearing capacity of safety devices ^{1) 2)}	npd			npd		
4.11	Acoustic performance ⁵⁾	R_w 45dB	R_w+C 44dB	R_w+C_{tr} 42dB	R_w 46dB	R_w+C 45dB	R_w+C_{tr} 42dB
4.12	Thermal transmittance ⁵⁾ (U_w)	fixed: ≥ 0,71 W/m ² K openable: ≥ 0,71 W/m ² K			fixed: ≥ 0,65 W/m ² K openable: ≥ 0,67 W/m ² K		
4.13	Radiation properties ⁵⁾ (g_w / τ_v)	5)			5)		
4.14	Air permeability ^{2) 4)}	4 (600 Pa)			4 (600 Pa)	4 (600 Pa)	

NOTE! Values in the table apply for standard size window (1230x1480 mm)

- ¹⁾ Tested size (inward opening window) 1760x2150mm, size ≤ 3,7 m²
- ²⁾ Tested size (inward opening window) 1760x2150mm, size ≤ 5,6 m²
- ³⁾ Tested size (outward opening window) 1230x1480mm, size ≤ 1,8 m²
- ⁴⁾ Tested size (outward opening window) 1230x1480mm, size ≤ 2,7 m²
- ⁵⁾ Values according to project are declared separately

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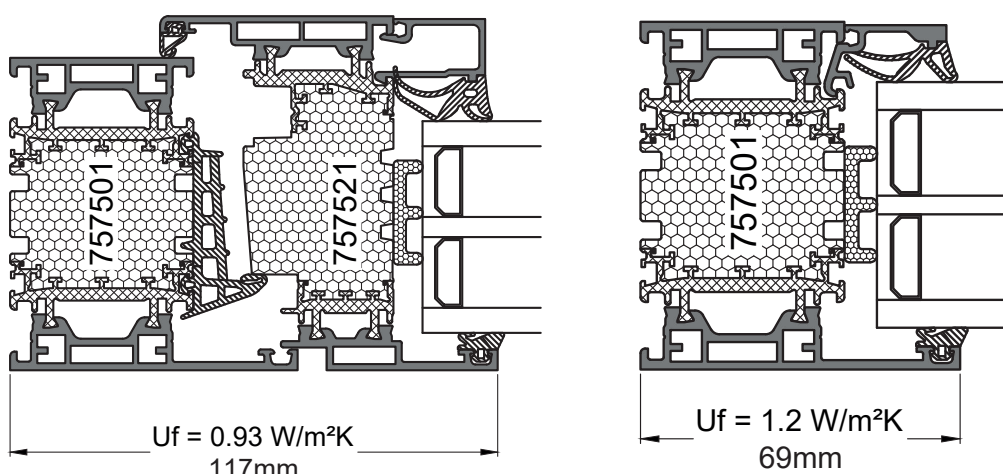


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LK75eco window (1230x1480 mm) U_w -values:

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 openable window $U_f = 0,93 \text{ W/m}^2\text{K}$

	Glazing U_g -value [$\text{W/m}^2\text{K}$]					
	0,48	0,50	0,53	0,60	0,70	0,80
IGU spacers	Window U_w -arvo [$\text{W/m}^2\text{K}$]					
Swisspacer ULTIMATE	0,71	0,72	0,74	0,79	0,86	0,93
TPS	0,72	0,73	0,75	0,80	0,87	0,93

Purso LK75eco fixed window $U_f = 1,2 \text{ W/m}^2\text{K}$

	Glazing U_g -value [$\text{W/m}^2\text{K}$]					
	0,48	0,50	0,53	0,60	0,70	0,80
IGU spacers	Window U_w -arvo [$\text{W/m}^2\text{K}$]					
Swisspacer ULTIMATE	0,71	0,73	0,75	0,81	0,89	0,97
TPS	0,73	0,74	0,77	0,82	0,90	0,98

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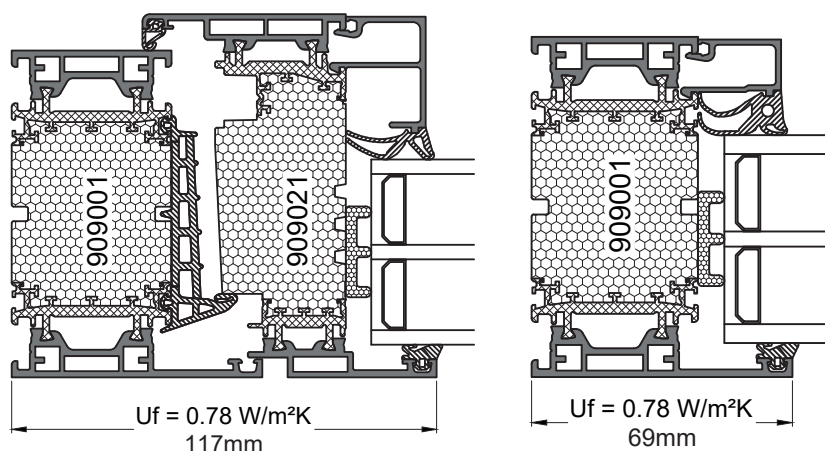


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LK90eco window(1230x1480 mm) U_w -values:

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]
Opening window 3 layer glazing TPS spacers 1230x 1480 mm	0,80	0,89
	0,70	0,82
	0,60	0,75
	0,53	0,70
	0,50	0,68
	0,48	0,67

Purso LK90eco	U_g [W/m²K]	U_w [W/m²K]
Fixed window 3 layer glazing TPS spacers 1230x 1480 mm	0,80	0,90
	0,70	0,82
	0,60	0,74
	0,53	0,69
	0,50	0,66
	0,48	0,65

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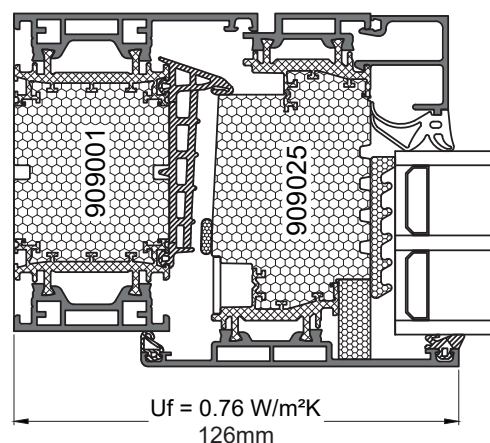
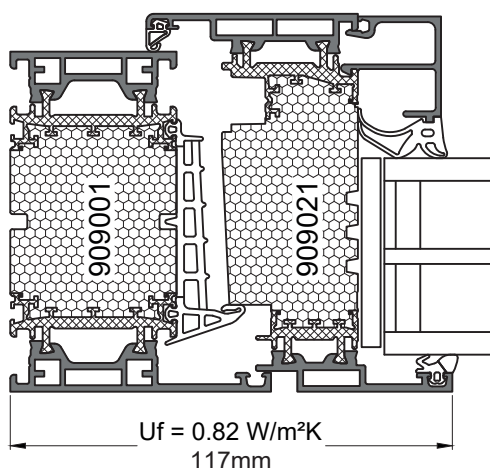


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LK90eco window(1230x1480 mm) U_w -values:

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/m ² K]	U_w [W/m ² K]
Opening window 3 layer glazing spacersswisspacer ULTIMATE 1230x 1480 mm	0,70	0,80
	0,64	0,76
	0,58	0,72
	0,52	0,68

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LK75eco and LK90eco 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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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	41	39	35
Inward opening	3k 8.2L-16-4-16-6	43 dB	36 dB	42	40	37
Inward opening	2k 15.2L-24-8.2L	52 dB	46 dB	45	44	42

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			
	$A \leq 2,7 \text{ m}^2$	$2,7 \text{ m}^2 < A \leq 3,6 \text{ m}^2$	$3,6 \text{ m}^2 < A \leq 4,6 \text{ m}^2$	$4,6 \text{ m}^2 < A$
$R_w, R_w + C$ and $R_w + C_{tr}$	- 0 dB	- 1 dB	- 2 dB	- 3 dB

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	40	38	34
Inward opening	3k VSG8-14-4-14-6	43 dB	36 dB	43	40	36
Inward opening	3k VSG12-14-6-14 -VSG8	50 dB	44 dB	46	45	42

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			
	$A \leq 2,7 \text{ m}^2$	$2,7 \text{ m}^2 < A \leq 3,6 \text{ m}^2$	$3,6 \text{ m}^2 < A \leq 4,6 \text{ m}^2$	$4,6 \text{ m}^2 < A$
$R_w, R_w + C$ and $R_w + C_{tr}$	- 0 dB	- 1 dB	- 2 dB	- 3 dB