Product Passport

Window and door system in accordance to EN 14351-1

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Product Passport number	**LK78X/LK78Xe 290421 EN**
System	**LK78X, LK78Xe doors and windows**
Product line	Fixed windows Inward and outward opening doors and windows
Materials	Aluminium: EN-AW 6063 T5 Thermal breaks: polyamide Gaskets: EPDM
Surface treatment	Anodizing Powder coating
Glass/ infill panel	thickness 23..60 mm
Frame depth	78 mm
Frame width	30..150 mm

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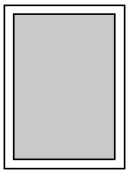
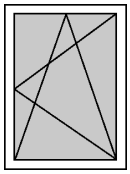
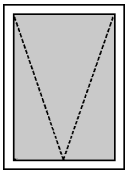
Summary of system features:

EN 14351-1	Name:	LK78X, LK78Xe Fixed window			LK78X, LK78Xe Inward opening window			LK78X, LK78Xe Outward openening window		
	Description:									
		Fixed window			Single side, bottom, top hung and tilt and turn window			Single side, bottom, and top hung window		
4.2	**Resistance to wind load**	**5** (2000 Pa)			**5C** (≤1/300, 2000 Pa)			**3C** (≤1/300, 1200 Pa)		
4.5	**Watertightness**	**E1200**			**E1200, E1350**			**E750**		
4.6	**Dangerous substances**	npd			npd			npd		
4.8	**Load-bearing capacity of safety devices**	npd			npd			npd		
4.11	**Acoustic performance**	R_w	R_w+C	R_w+C_{tr}	R_w	R_w+C	R_w+C_{tr}	R_w	R_w+C	R_w+C_{tr}
		44dB	43dB	41dB	40dB	39dB	35dB	41dB	39dB	36dB
4.12	**Thermal transmittance (U_W)**	**≥ 0,69 W/m²K** (LK78X) **≥ 0,78 W/m²K** (LK78Xe)			**≥ 0,82 W/m²K** (LK78X) **≥ 0,96 W/m²K** (LK78Xe)			**≥ 0,83 W/m²K** (LK78X) **≥ 1,0 W/m²K** (LK78Xe)		
4.13	**Radiation properties(g_w / τ)**									
4.14	**Air permeability**	**4**			**4**			**4**		
More detailed information and restrictions		**Page 5**			**Page 5**			**Page 6**		

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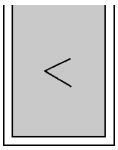
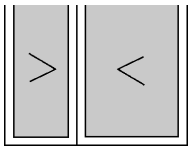
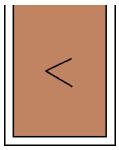
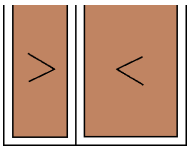
Summary of system features:

EN 14351-1	Name:	LK78X, LK78Xe outward opening single leaf door			LK78X, LK78Xe outward opening double leaf door			LK78X, LK78Xe inward opening single leaf door			LK78X, LK78Xe inward opening double leaf door		
	Description:												
		Thermally insulated single leaf door			Thermally insulated double leaf door			Thermally insulated single leaf door			Thermally insulated double leaf door		
4.2	**Resistance to wind load**	**3C** (1200 Pa, ≤1/300)			**3C** (1200 Pa, ≤1/300)			**3C** (1200 Pa, ≤1/300)			**3C** (1200 Pa, ≤1/300)		
4.5	**Watertightness**	**5A**			**6A**			**9A**			**7A**		
4.6	**Dangerous substances**	npd			npd			npd			npd		
4.7	**Impact resistance**	npd			npd			npd			npd		
4.8	**Load-bearing capacity of safety devices**	npd			npd			npd			npd		
4.9	**Height and width**												
4.10	**Ability to release**	npd			npd			npd			npd		
4.11	**Acoustic performance**	R_w	R_w+C	R_w+C_{tr}	R_w	R_w+C	R_w+C_{tr}	R_w	R_w+C	R_w+C_{tr}	R_w	R_w+C	R_w+C_{tr}
		41dB	40dB	38dB	41dB	40dB	39dB	41dB	40dB	38dB	41dB	40dB	39dB
4.12	**Thermal transmittance (U_D)**	**≥ 0,77 W/m²K** (LK78X) **≥ 1,1 W/m²K** (LK78Xe)			**≥ 0,79 W/m²K** (LK78X) **≥ 1,1 W/m²K** (LK78Xe)			**≥ 0,77 W/m²K** (LK78X) **≥ 1,1 W/m²K** (LK78Xe)			**≥ 0,79 W/m²K** (LK78X) **≥ 1,1 W/m²K** (LK78Xe)		
4.13	**Radiation properties (g_D / τ)**												
4.14	**Air permeability**	**4**			**3**			**4**			**2**		
More detailed information and restrictions		**Page 7**			**Page 8**			**Page 9**			**Page 10**		

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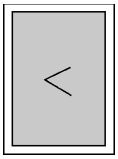
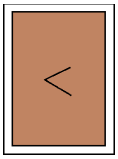
Summary of system features:

EN 14351-1	Name	LK78X, LK78Xe outward opening RC3 door			LK78X, LK78Xe inward opening RC3 door		
	Description:						
		Thermally insulated single leaf door			Thermally insulated single leaf door		
4.2	**Resistance to wind load**	**3C** (1200 Pa, ≤1/300)			**3C** (1200 Pa, ≤1/300)		
4.5	**Watertightness**	**5A**			**9A**		
4.6	**Dangerous substances**	npd			npd		
4.7	**Impact resistance**	npd			npd		
4.8	**Load-bearing capacity of safety devices**	npd			npd		
4.9	**Height and width**						
4.10	**Ability to release**	npd			npd		
4.11	**Acoustic performance**	R_w	R_w+C	R_w+C_{tr}	R_w	R_w+C	R_w+C_{tr}
		41dB	40dB	38dB	41dB	40dB	38dB
4.12	**Thermal transmittance (U_D)**	**≥ 0,77 W/m²K** (LK78X) **≥ 1,1 W/m²K** (LK78Xe)			**≥ 0,77 W/m²K** (LK78X) **≥ 1,1 W/m²K** (LK78Xe)		
4.13	**Radiation properties (g_D / τ)**						
4.14	**Air permeability**	**4**			**4**		
4.23	**Burglar resistance**	**RC3**			**RC3**		
More detailed information and restrictions		**Page 11**			**Page 12**		

EN 14351-1 Clause	Characteristic	Classifica-tion standard	Test or calculation standard	Size of test specimen	**Class/ declared value**	Range of direct application		Test report
4.2	Resistance to wind load	EN 12210	EN 12211	1230 x 1480	**C5**	-100 % of frame width and height of test specimen	Frame width ≤ 1720mm Frame height ≤ 2110mm	EUFI29-20004966 -T1-EN
				1720 x 2110	**C5**			EUFI29-20004966 -T2-EN
4.3	Resistance to snow and permanent load				npd	Only roof windows		
4.4	Reaction to fire				npd	Only roof windows		
4.5	Watertightness	EN 12208	EN 1027	1230 x 1480	**E1350**	-100 % to +50 % of test specimen overall area	Overall area: ≤ 2,7 m2	EUFI29-20004966 -T1-EN
				1720 x 2110	**E1200**		Overall area: ≤ 5,4 m2	EUFI29-20004966 -T2-EN
4.6	Dangerous substances				npd	As required by regulations		
4.7	Impact resistance	EN 13049	EN 13049		npd	>Overall area of test specimen		
4.8	Load-bearing capacity of safety devices		EN 14609		npd	-100 % of test specimen overall area		
4.11	Acoustic performance		EN ISO 140-3 EN ISO 717-1	1230 x 1480	Page 17	Tested values,EN 14351-1 annex B table B.3	Project value	VTT-S-01312-12 VTT-S-01314-12
4.12	Thermal transmittance		EN ISO 10077-2	1230 x 1480	Table 1,2,9,10 Tbl.5,6,11,12	If Ug ≤ 1.9 W/m2K	All sizes	20-003771-PR02 NW-K20-06-en-01
4.13	Radiation properties					Solar factor, g-value	All sizes	IGU values
4.14	Air permeability	EN 12207	EN 1026	1230 x 1480	**4**	-100 % to +50 % of test specimen overall area	Overall area: ≤ 5,4 m2	EUFI29-20004966 -T1-EN
				1720 x 2110	**4**			EUFI29-20004966 -T2-EN
4.16	Operating forces	EN 13115	EN 12046-1, EN 14608, EN 14609		npd	-100 % of test specimen overall area		
4.17	Mechanical strength	EN 13115	EN 12046-1		npd	-100 % of test specimen overall area		
4.18	Ventilation		EN 13141-1		npd			
4.19	Bullet resistance	EN 1522	EN 1523		npd			
4.20	Explosion resistance				npd			
4.21	Resistance to repeated opening and closing	EN 12400	EN 1191		npd	-100 % of test specimen overall area		
4.22	Behaviour between different climates		ENV 13420		npd	All sizes		
4.23	Burglar resistance	ENV 1627	ENV 1628, ENV 1629, ENV 1630		npd	ENV 1627		

LK78X and LK78Xe outward opening window features according with EN 14351-1

EN 14351-1 Clause	Characteristic	Classifica-tion standard	Test or calculation standard	Size of test specimen	**Class/ declared value**	Range of direct application		Test report
4.2	Resistance to wind load	EN 12210	EN 12211	1230 x 1480	**C3**	-100 % of frame width and height of test specimen	Frame width ≤ 1230mm Frame height ≤ 1480mm	VTT-S-01051-12
4.3	Resistance to snow and permanent load				npd	Only roof windows		
4.4	Reaction to fire				npd	Only roof windows		
4.5	Watertightness	EN 12208	EN 1027	1230 x 1480	**E750**	-100 %...+50 % of test specimen overall area	Overall area: ≤ 2,7 m2	VTT-S-01051-12
4.6	Dangerous substances				npd	As required by regulations		
4.7	Impact resistance	EN 13049	EN 13049		npd	> Overall area of test specimen		
4.8	Load-bearing capacity of safety devices		EN 14609		npd	-100 % of test specimen overall area		
4.11	Acoustic performance		EN ISO 140-3 EN ISO 717-1	1230 x 1480	Page 17	Tested values,EN 14351-1 Annex B table B.3	Project value	VTT-S-01313-12
4.12	Thermal transmittance		EN ISO 10077-2	1230 x 1480	Table 3, 4 Table 7, 8	If Ug ≤ 1.9 W/m2K	All sizes	20-003771-PR02 NW-K20-06-en-01
4.13	Radiation properties					Solar factor, g-value	All sizes	IGU values
4.14	Air permeability	EN 12207	EN 1026	1230 x 1480	**4**	-100 %...+50 % of test specimen overall area	Overall area: ≤ 2,7 m2	VTT-S-01051-12
4.16	Operating forces	EN 13115	EN 12046-1, EN 14608, EN 14609		npd	-100 % of test specimen overall area		
4.17	Mechanical strength	EN 13115	EN 12046-1		npd	-100 % of test specimen overall area		
4.18	Ventilation		EN 13141-1		npd			
4.19	Bullet resistance	EN 1522	EN 1523		npd			
4.20	Explosion resistance				npd			
4.21	Resistance to repeated opening and closing	EN 12400	EN 1191		npd	-100 % of test specimen overall area		
4.22	Behaviour between different climates		ENV 13420		npd	All sizes		
4.23	Burglar resistance	ENV 1627	ENV 1628, ENV 1629, ENV 1630		npd	Ks. ENV 1627		

LK78X and LK78Xe outward opening single leaf door features according with EN 14351-1

EN 14351-1 Clause	Characteristic	Classification standard	Test or calculation standard	Size of test specimen	**Class/ declared value**	Range of direct application		Test report
4.2	Resistance to wind load	EN 12210	EN 12211	990 x 2090	**C3**	-100 % of frame width and height of test specimen	Frame width ≤ 990mm Frame height ≤ 2090mm	VTT-S-04207-13 VTT-S-04206-13
4.5	Watertightness	EN 12208	EN 1027	990 x 2090	**5A**	-100 %...+50 % of test specimen overall area	Overall area: ≤ 3,1 m2	VTT-S-04207-13 VTT-S-04206-13
4.6	Dangerous substances				npd	As required by regulations		
4.7	Impact resistance	EN 13049	EN 13049		npd	> Overall area of test specimen	Glazed doors	
4.8	Load-bearing capacity of safety devices		EN 14609		npd	-100 % of test specimen overall area		
4.9	Height and width					Declared values	Clear opening height and width	
4.10	Ability to release				npd		Doors in escape routes	
4.11	Acoustic performance		EN ISO 140-3 EN ISO 717-1	990 x 2090	Page 18	-100 %...+50 % of test specimen overall area	Overall area: ≤ 3,1 m2 Project value	VTT-S-05511-13
4.12	Thermal transmittance		EN ISO 10077-2	1230 x 2180	Table 13 Table 15	If Ug ≤ 1.9 W/m2K	Overall area ≤ 3,6 m2	20-003771-PR02 NW-K20-06-en-01
4.13	Radiation properties					Solar factor, g value	All sizes	IGU values
4.14	Air permeability	EN 12207	EN 1026	990 x 2090	**4**	-100 %...+50 % of test specimen overall area	Overall area: ≤ 3,1 m2	VTT-S-04207-13 VTT-S-04206-13
4.16	Operating forces	EN 13115	EN 12046-1, EN 14608, EN 14609		npd	-100 % of test specimen overall area		
4.17	Mechanical strength	EN 13115	EN 12046-1		npd	-100 % of test specimen overall area		
4.18	Ventilation		EN 13141-1		npd			
4.19	Bullet resistance	EN 1522	EN 1523		npd			
4.20	Explosion resistance				npd			
4.21	Resistance to repeated opening and closing	EN 12400	EN 1191		npd	-100 % of test specimen overall area		
4.22	Behaviour between different climates		ENV 13420		npd	All sizes		
4.23	Burglar resistance	ENV 1627	ENV 1628, ENV 1629, ENV 1630		npd	Ks. ENV 1627		

LK78X and LK78Xe outward opening double leaf door features according with EN 14351-1

EN 14351-1 Clause	Characteristic	Classification standard	Test or calculation standard	Size of test specimen	**Class/ declared value**	Range of direct application		Test report
4.2	Resistance to wind load	EN 12210	EN 12211	1520 x 2090	**C3**	-100 % of frame width and height of test specimen	Frame width ≤ 1520mm Frame height ≤ 2090mm	VTT-S-04211-13
4.5	Watertightness	EN 12208	EN 1027	1520 x 2090	**6A**	-100 %...+50 % of test specimen overall area	Overall area: ≤ 4,8 m2	VTT-S-04211-13
4.6	Dangerous substances				npd	As required by regulations		
4.7	Impact resistance	EN 13049	EN 13049		npd	> Overall area of test specimen	Glazed doors	
4.8	Load-bearing capacity of safety devices		EN 14609		npd	-100 % of test specimen overall area		
4.9	Height and width					Declared values	Clear opening height and width	
4.10	Ability to release				npd		Doors in escape routes	
4.11	Acoustic performance		EN ISO 140-3 EN ISO 717-1	1520 x 2090	Page 18	-100 %...+50 % of test specimen overall area	Overall area: ≤ 4,8 m2 Project value	VTT-S-05511-13
4.12	Thermal transmittance		EN ISO 10077-2	1230 x 2180	Table 14 Table 16	If Ug ≤ 1.9 W/m2K	Overall area > 3,6 m2	20-003771-PR02 NW-K20-06-en-01
4.13	Radiation properties					Solar factor, g value	All sizes	IGU values
4.14	Air permeability	EN 12207	EN 1026	1520 x 2090	**3**	-100 %...+50 % of test specimen overall area	Overall area: ≤ 4,8 m2	VTT-S-04211-13
4.16	Operating forces	EN 13115	EN 12046-1, EN 14608, EN 14609		npd	-100 % of test specimen overall area		
4.17	Mechanical strength	EN 13115	EN 12046-1		npd	-100 % of test specimen overall area		
4.18	Ventilation		EN 13141-1		npd			
4.19	Bullet resistance	EN 1522	EN 1523		npd			
4.20	Explosion resistance				npd			
4.21	Resistance to repeated opening and closing	EN 12400	EN 1191		npd	-100 % of test specimen overall area		
4.22	Behaviour between different climates		ENV 13420		npd	All sizes		
4.23	Burglar resistance	ENV 1627	ENV 1628, ENV 1629, ENV 1630		npd	Ks. ENV 1627		

LK78X and LK78Xe inward opening single leaf door features according with EN 14351-1

EN 14351-1 Clause	Characteristic	Classification standard	Test or calculation standard	Size of test specimen	**Class/ declared value**	Range of direct application		Test report
4.2	Resistance to wind load	EN 12210	EN 12211	990 x 2090	**C3**	-100 % of frame width and height of test specimen	Frame width ≤ 990mm Frame height ≤ 2090mm	VTT-S-01643-13 VTT-S-01642-13
4.5	Watertightness	EN 12208	EN 1027	990 x 2090	**9A**	-100 %...+50 % of test specimen overall area	Overall area: ≤ 3,1 m2	VTT-S-01643-13 VTT-S-01642-13
4.6	Dangerous substances				npd	As required by regulations		
4.7	Impact resistance	EN 13049	EN 13049		npd	> Overall area of test specimen	Glazed doors	
4.8	Load-bearing capacity of safety devices		EN 14609		npd	-100 % of test specimen overall area		
4.9	Height and width					Declared values	Clear opening height and width	
4.10	Ability to release				npd		Doors in escape routes	
4.11	Acoustic performance		EN ISO 140-3 EN ISO 717-1	990 x 2090	Page 18	-100 %...+50 % of test specimen overall area	Overall area: ≤ 3,1 m2 Project value	VTT-S-05511-13
4.12	Thermal transmittance		EN ISO 10077-2	1230 x 2180	Table 13 Table 15	If Ug ≤ 1.9 W/m2K	Overall area: ≤ 3,6 m2	20-003771-PR02 NW-K20-06-en-01
4.13	Radiation properties					Solar factor, g value	All sizes	IGU values
4.14	Air permeability	EN 12207	EN 1026	990 x 2090	**4**	-100 %...+50 % of test specimen overall area	Overall area: ≤ 3,1 m2	VTT-S-01643-13 VTT-S-01642-13
4.16	Operating forces	EN 13115	EN 12046-1, EN 14608, EN 14609		npd	-100 % of test specimen overall area		
4.17	Mechanical strength	EN 13115	EN 12046-1		npd	-100 % of test specimen overall area		
4.18	Ventilation		EN 13141-1		npd			
4.19	Bullet resistance	EN 1522	EN 1523		npd			
4.20	Explosion resistance				npd			
4.21	Resistance to repeated opening and closing	EN 12400	EN 1191		npd	-100 % of test specimen overall area		
4.22	Behaviour between different climates		ENV 13420		npd	All sizes		
4.23	Burglar resistance	ENV 1627	ENV 1628, ENV 1629, ENV 1630		npd	Ks. ENV 1627		

LK78X and LK78Xe inward opening double leaf door features according with EN 14351-1

EN 14351-1 Clause	Characteristic	Classification standard	Test or calculation standard	Size of test specimen	**Class/ declared value**	Range of direct application		Test report
4.2	Resistance to wind load	EN 12210	EN 12211	1520 x 2090	**C3**	-100 % of frame width and height of test specimen	Frame width ≤ 1520mm Frame height ≤ 2090mm	VTT-S-04202-13 VTT-S-04204-13
4.5	Watertightness	EN 12208	EN 1027	1520 x 2090	**7A**	-100 %...+50 % of test specimen overall area	Overall area: ≤ 4,8 m2	VTT-S-04202-13 VTT-S-04204-13
4.6	Dangerous substances				npd	As required by regulations		
4.7	Impact resistance	EN 13049	EN 13049		npd	> Overall area of test specimen	Glazed doors	
4.8	Load-bearing capacity of safety devices		EN 14609		npd	-100 % of test specimen overall area		
4.9	Height and width					Declared values	Clear opening height and width	
4.10	Ability to release				npd		Doors in escape routes	
4.11	Acoustic performance		EN ISO 140-3 EN ISO 717-1	1520 x 2090	Page 18	-100 %...+50 % of test specimen overall area	Overall area: ≤ 4,8 m2 Project value	VTT-S-05511-13
4.12	Thermal transmittance		EN ISO 10077-2	1230 x 2180	Table 14 Table 16	If Ug ≤ 1.9 W/m2K	Overall area > 3,6 m2	20-003771-PR02 NW-K20-06-en-01
4.13	Radiation properties					Solar factor, g value	All sizes	IGU values
4.14	Air permeability	EN 12207	EN 1026	1520 x 2090	**2/4**	-100 %...+50 % of test specimen overall area	Overall area: ≤ 4,8 m2	VTT-S-04202-13 VTT-S-04204-13
4.16	Operating forces	EN 13115	EN 12046-1, EN 14608, EN 14609		npd	-100 % of test specimen overall area		
4.17	Mechanical strength	EN 13115	EN 12046-1		npd	-100 % of test specimen overall area		
4.18	Ventilation		EN 13141-1		npd			
4.19	Bullet resistance	EN 1522	EN 1523		npd			
4.20	Explosion resistance				npd			
4.21	Resistance to repeated opening and closing	EN 12400	EN 1191		npd	-100 % of test specimen overall area		
4.22	Behaviour between different climates		ENV 13420		npd	All sizes		
4.23	Burglar resistance	ENV 1627	ENV 1628, ENV 1629, ENV 1630		npd	Ks. ENV 1627		

EN 14351-1 Clause	Characteristic	Classification standard	Test or calculation standard	Size of test specimen	**Class/ declared value**	Range of direct application		Test report
4.2	Resistance to wind load	EN 12210	EN 12211	990 x 2090	**C3**	-100 % of frame width and height of test specimen	Frame width ≤ 990mm Frame height ≤ 2090mm	VTT-S-04207-13 VTT-S-04206-13
4.5	Watertightness	EN 12208	EN 1027	990 x 2090	**5A**	-100 %...+50 % of test specimen overall area	Overall area: ≤ 3,1 m2	VTT-S-04207-13 VTT-S-04206-13
4.6	Dangerous substances				npd	As required by regulations		
4.7	Impact resistance	EN 13049	EN 13049		npd	> Overall area of test specimen	Glazed doors	
4.8	Load-bearing capacity of safety devices		EN 14609		npd	-100 % of test specimen overall area		
4.9	Height and width					Declared values	Clear opening height and width	
4.10	Ability to release				npd		Doors in escape routes	
4.11	Acoustic performance		EN ISO 140-3 EN ISO 717-1	990 x 2090	Page 18	-100 %...+50 % of test specimen overall area	Overall area: ≤ 3,1 m2 Project value	VTT-S-05511-13
4.12	Thermal transmittance		EN ISO 10077-2	1230 x 2180	Table 13 Table 15	If Ug ≤ 1.9 W/m2K	Overall area ≤ 3,6 m2	20-003771-PR02 NW-K20-06-en-01
4.13	Radiation properties					Solar factor, g value	All sizes	IGU values
4.14	Air permeability	EN 12207	EN 1026	990 x 2090	**4**	-100 %...+50 % of test specimen overall area	Overall area: ≤ 3,1 m2	VTT-S-04207-13 VTT-S-04206-13
4.16	Operating forces	EN 13115	EN 12046-1, EN 14608, EN 14609		npd	-100 % of test specimen overall area		
4.17	Mechanical strength	EN 13115	EN 12046-1		npd	-100 % of test specimen overall area		
4.18	Ventilation		EN 13141-1		npd			
4.19	Bullet resistance	EN 1522	EN 1523		npd			
4.20	Explosion resistance				npd			
4.21	Resistance to repeated opening and closing	EN 12400	EN 1191		npd	-100 % of test specimen overall area		
4.22	Behaviour between different climates		ENV 13420		npd	All sizes		
4.23	Burglar resistance	ENV 1627	ENV 1628, ENV 1629, ENV 1630		RC3	ENV 1627	Frame width 880..1210mm. Frame height 1840..2530mm	17-000651-PR02 17-000651-PR04

EN 14351-1 Clause	Characteristic	Classification standard	Test or calculation standard	Size of test specimen	**Class/ declared value**	Range of direct application		Test report
4.2	Resistance to wind load	EN 12210	EN 12211	990 x 2090	**C3**	-100 % of frame width and height of test specimen	Frame width ≤ 990mm Frame height ≤ 2090mm	VTT-S-01643-13 VTT-S-01642-13
4.5	Watertightness	EN 12208	EN 1027	990 x 2090	**9A**	-100 %...+50 % of test specimen overall area	Overall area: ≤ 3,1 m2	VTT-S-01643-13 VTT-S-01642-13
4.6	Dangerous substances				npd	As required by regulations		
4.7	Impact resistance	EN 13049	EN 13049		npd	> Overall area of test specimen	Glazed doors	
4.8	Load-bearing capacity of safety devices		EN 14609		npd	-100 % of test specimen overall area		
4.9	Height and width					Declared values	Clear opening height and width	
4.10	Ability to release				npd		Doors in escape routes	
4.11	Acoustic performance		EN ISO 140-3 EN ISO 717-1	990 x 2090	Page 18	-100 %...+50 % of test specimen overall area	Overall area: ≤ 3,1 m2 Project value	VTT-S-05511-13
4.12	Thermal transmittance		EN ISO 10077-2	1230 x 2180	Table 13 Table 15	If Ug ≤ 1.9 W/m2K	Overall area: ≤ 3,6 m2	20-003771-PR02 NW-K20-06-en-01
4.13	Radiation properties					Solar factor, g value	All sizes	IGU values
4.14	Air permeability	EN 12207	EN 1026	990 x 2090	**4**	-100 %...+50 % of test specimen overall area	Overall area: ≤ 3,1 m2	VTT-S-01643-13 VTT-S-01642-13
4.16	Operating forces	EN 13115	EN 12046-1, EN 14608, EN 14609		npd	-100 % of test specimen overall area		
4.17	Mechanical strength	EN 13115	EN 12046-1		npd	-100 % of test specimen overall area		
4.18	Ventilation		EN 13141-1		npd			
4.19	Bullet resistance	EN 1522	EN 1523		npd			
4.20	Explosion resistance				npd			
4.21	Resistance to repeated opening and closing	EN 12400	EN 1191		npd	-100 % of test specimen overall area		
4.22	Behaviour between different climates		ENV 13420		npd	All sizes		
4.23	Burglar resistance	ENV 1627	ENV 1628, ENV 1629, ENV 1630		**RC3**	ENV 1627	Frame width 880..1210mm. Frame height 1840..2530mm	17-000651-PR01 17-000651-PR03

Product Passport

Window and door system in accordance to EN 14351-1

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LK78X inward opening window (1230x 1480 mm) U_w-values:

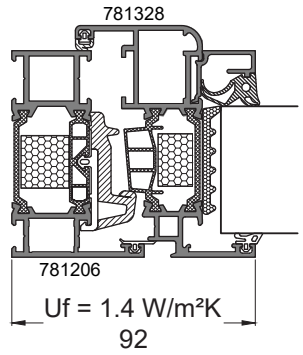

Table 1
Profiles 781206/ 781328

IGU spacer	Linear thermal transmittance ψ_g	Glass U_g value W/m²K					
		0,5	0,6	0,7	0,8	0,9	1,0
		Window U_w value W/m²K					
TPS	0,038 W/mK	0,83	0,90	0,98	1,1	1,1	1,2
RST t=0.18	0,066 W/mK	0,90	0,97	1,0	1,1	1,2	1,3
Alum. t=0.3	0,106 W/mK	1,0	1,1	1,2	1,2	1,3	1,4

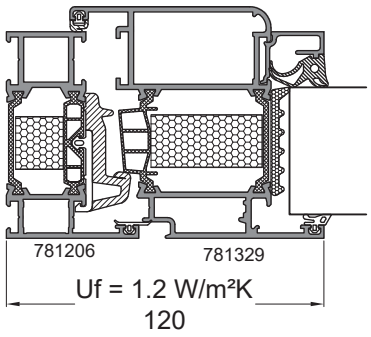

Table 2
Profiles 781206/ 781329

IGU spacer	Linear thermal transmittance ψ_g	Glass U_g value W/m²K					
		0,5	0,6	0,7	0,8	0,9	1,0
		Window U_w value W/m²K					
TPS	0,038 W/mK	0,82	0,89	0,96	1,0	1,1	1,2
RST t=0.18	0,066 W/mK	0,89	0,96	1,0	1,1	1,2	1,2
Alum. t=0.3	0,106 W/mK	0,99	1,1	1,1	1,2	1,3	1,3

LK78X outward opening window (1230x 1480 mm) U_w-values:

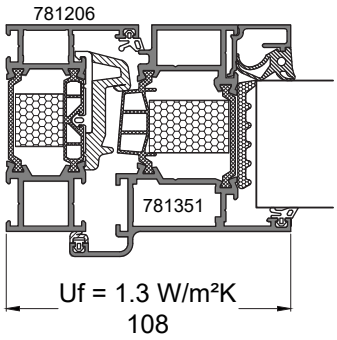

Table 3
Profiles 781206/ 781351

IGU spacer	Linear thermal transmittance ψ_g	Glass U_g value W/m²K					
		0,5	0,6	0,7	0,8	0,9	1,0
		Window U_w value W/m²K					
TPS	0,038 W/mK	0,83	0,90	0,97	1,0	1,1	1,2
RST t=0.18	0,066 W/mK	0,90	0,97	1,0	1,1	1,2	1,3
Alum. t=0.3	0,106 W/mK	1,0	1,1	1,1	1,2	1,3	1,4

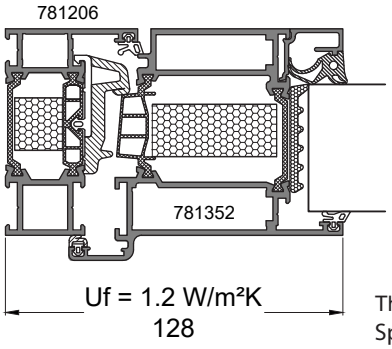

Table 4
Profiles / Profiles 781206/ 781352

IGU spacer	Linear thermal transmittance ψ_g	Glass U_g value W/m²K					
		0,5	0,6	0,7	0,8	0,9	1,0
		Window U_w value W/m²K					
TPS	0,038 W/mK	0,83	0,90	0,96	1,0	1,1	1,2
RST t=0.18	0,066 W/mK	0,90	0,97	1,0	1,1	1,2	1,2
Alum. t=0.3	0,106 W/mK	1,0	1,1	1,1	1,2	1,3	1,3

The thermal transmittance of the frames U_f are defined according to standard SFS-EN ISO 10077-2:2017
Specific values according to project are declared separately.

Product Passport

Window and door system in accordance to EN 14351-1

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LK78Xe inward opening window (1230x 1480 mm) U_w-values:

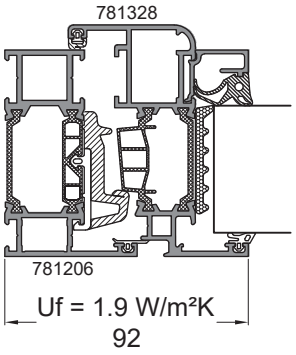

Table 5
Profiles 781206 / 781328

IGU spacer	Linear thermal transmittance ψ_g	Glass U_g value W/m²K					
		0,5	0,6	0,7	0,8	0,9	1,0
		Window U_w value W/m²K					
TPS	0,038 W/mK	0,96	1,0	1,1	1,2	1,3	1,3
RST t=0.18	0,066 W/mK	1,0	1,1	1,2	1,3	1,3	1,4
Alum. t=0.3	0,106 W/mK	1,1	1,2	1,3	1,4	1,4	1,5

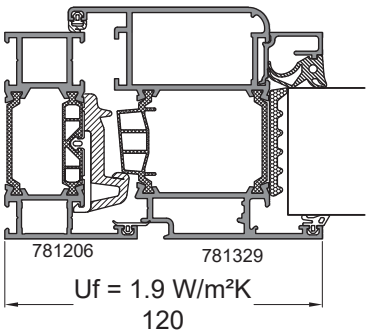

Table 6
Profiles 781206/ 781329

IGU spacer	Linear thermal transmittance ψ_g	Glass U_g value W/m²K					
		0,5	0,6	0,7	0,8	0,9	1,0
		Window U_w value W/m²K					
TPS	0,038 W/mK	1,0	1,1	1,2	1,3	1,3	1,4
RST t=0.18	0,066 W/mK	1,1	1,2,	1,3	1,3	1,4	1,5
Alum. t=0.3	0,106 W/mK	1,2	1,3	1,4	1,4	1,5	1,6

LK78Xe outward opening window (1230x 1480 mm) U_w-values:

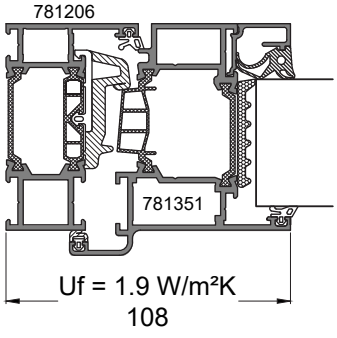

Table 7
Profiles 781206/ 781351

IGU spacer	Linear thermal transmittance ψ_g	Glass U_g value W/m²K					
		0,5	0,6	0,7	0,8	0,9	1,0
		Window U_w value W/m²K					
TPS	0,038 W/mK	1,0	1,1	1,2	1,2	1,3	1,4
RST t=0.18	0,066 W/mK	1,1	1,1	1,2	1,3	1,4	1,4
Alum. t=0.3	0,106 W/mK	1,2	1,1	1,3	1,4	1,5	1,5

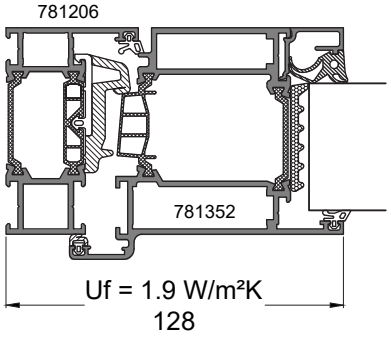

Table 8
Profiles 781206/ 781352

IGU spacer	Linear thermal transmittance ψ_g	Glass U_g value W/m²K					
		0,5	0,6	0,7	0,8	0,9	1,0
		Window U_w value W/m²K					
TPS	0,038 W/mK	1,1	1,1	1,2	1,3	1,3	1,4
RST t=0.18	0,066 W/mK	1,1	1,2	1,3	1,3	1,4	1,5
Alum. t=0.3	0,106 W/mK	1,2	1,3	1,4	1,4	1,5	1,6

The thermal transmittance of the frames U_f are defined according to standard SFS-EN ISO 10077-2:2017
Specific values according to project are declared separately.

Product Passport

Window and door system in accordance to EN 14351-1

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LK78X Fixed window (1230x 1480 mm) U_w-values:

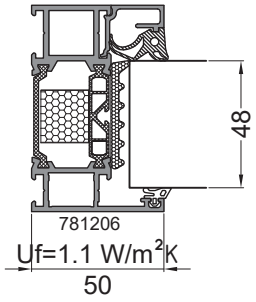

Table 9
Profile 781206

IGU spacer	Linear thermal transmittance ψ_g	Glass U_g value W/m²K					
		0,5	0,6	0,7	0,8	0,9	1,0
		Window U_w value W/m²K					
TPS	0,038 W/mK	0,69	0,78	0,86	0,95	1,0	1,1
RST t=0.18	0,066 W/mK	0,77	0,85	0,94	1,0	1,1	1,2
Alum. t=0.3	0,106 W/mK	0,88	0,96	1,0	1,1	1,2	1,3

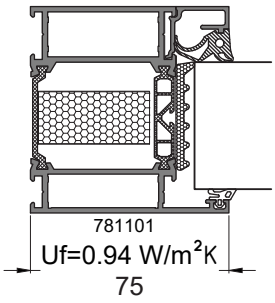

Table 10
Profile 781101

IGU spacer	Linear thermal transmittance ψ_g	Glass U_g value W/m²K					
		0,5	0,6	0,7	0,8	0,9	1,0
		Window U_w value W/m²K					
TPS	0,038 W/mK	0,69	0,77	0,85	0,93	1,0	1,1
RST t=0.18	0,066 W/mK	0,77	0,85	0,93	1,0	1,1	1,2
Alum. t=0.3	0,106 W/mK	0,87	0,95	1,0	1,1	1,2	1,3

LK78Xe Fixed window (1230x 1480 mm) U_w-values:

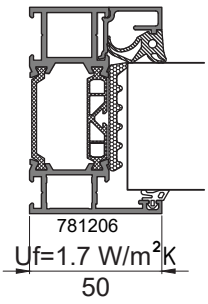

Table 11
Profile 781206

IGU spacer	Linear thermal transmittance ψ_g	Glass U_g value W/m²K					
		0,5	0,6	0,7	0,8	0,9	1,0
		Window U_w value W/m²K					
TPS	0,038 W/mK	0,78	0,86	0,95	1,0	1,1	1,2
RST t=0.18	0,066 W/mK	0,85	0,94	1,0	1,1	1,2	1,3
Alum. t=0.3	0,106 W/mK	0,96	1,1	1,1	1,2	1,3	1,4

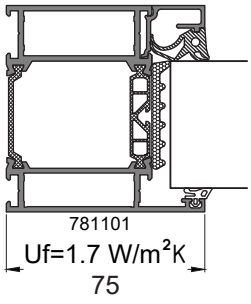

Table 12
Profile 781101

IGU spacer	Linear thermal transmittance ψ_g	Glass U_g value W/m²K					
		0,5	0,6	0,7	0,8	0,9	1,0
		Window U_w value W/m²K					
TPS	0,038 W/mK	0,85	0,93	1,0	1,1	1,2	1,2
RST t=0.18	0,066 W/mK	0,93	1,0	1,1	1,2	1,2	1,3
Alum. t=0.3	0,106 W/mK	1,0	1,1	1,2	1,3	1,3	1,4

The thermal transmittance of the frames U_f are defined according to standard SFS-EN ISO 10077-2:2017
Specific values according to project are declared separately.

Product Passport

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LK78X single leaf door(1230x 2180 mm) U_D-values:

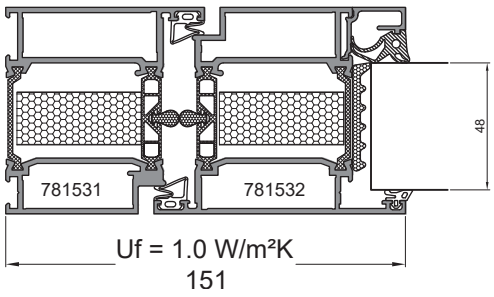

Table 13
Profiles 781531/781532, 781536/781530

IGU spacer	Linear thermal transmittance ψ_g	Glass U_g value W/m²K					
		0,5	0,6	0,7	0,8	0,9	1,0
		Oven U_D value W/m²K					
TPS	0,038 W/mK	0,77	0,84	0,90	0,97	1,0	1,1
RST t=0.18	0,066 W/mK	0,83	0,90	0,96	1,0	1,1	1,2
Alum. t=0.3	0,106 W/mK	0,92	0,98	1,0	1,1	1,2	1,2

LK78X double leaf door(2000x 2180 mm) U_D-values:

Table 14
Profiles 781531/781532, 781536/781530

IGU spacer	Linear thermal transmittance ψ_g	Glass U_g value W/m²K					
		0,5	0,6	0,7	0,8	0,9	1,0
		Oven U_D value W/m²K					
TPS	0,038 W/mK	0,79	0,86	0,92	0,99	1,1	1,1
RST t=0.18	0,066 W/mK	0,86	0,92	0,99	1,1	1,1	1,2
Alum. t=0.3	0,106 W/mK	0,96	1,0	1,1	1,2	1,2	1,3

LK78Xe single leaf door (1230x 2180 mm) U_D-values:

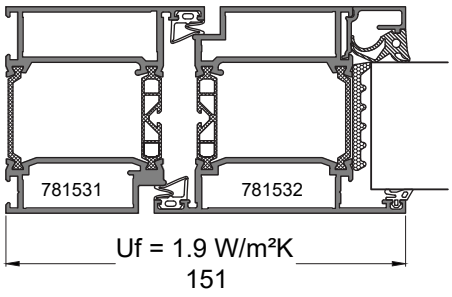

Table 15
Profiles 781531/781532, 781536/781530

IGU spacer	Linear thermal transmittance ψ_g	Glass U_g value W/m²K					
		0,5	0,6	0,7	0,8	0,9	1,0
		Oven U_D value W/m²K					
TPS	0,038 W/mK	1,1	1,1	1,2	1,3	1,3	1,4
RST t=0.18	0,066 W/mK	1,1	1,2	1,3	1,3	1,4	1,4
Alum. t=0.3	0,106 W/mK	1,2	1,3	1,3	1,4	1,5	1,5

LK78Xe double leaf door (2000x 2180 mm) U_D-values:

Table 16
Profiles 781531/781532, 781536/781530

IGU spacer	Linear thermal transmittance ψ_g	Glass U_g value W/m²K					
		0,5	0,6	0,7	0,8	0,9	1,0
		Oven U_D value W/m²K					
TPS	0,038 W/mK	1,1	1,1	1,2	1,3	1,3	1,4
RST t=0.18	0,066 W/mK	1,1	1,2	1,3	1,3	1,4	1,5
Alum. t=0.3	0,106 W/mK	1,2	1,3	1,4	1,4	1,5	1,6

Tabulated U_D-values can be used for single leaf door (1230x 2180 mm) when the door size ≤ 3,6 m².
Tabulated U_D-values can be used for double leaf door (2000x 2180 mm) when the door size > 3,6 m².
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

Product Passport

Window and door system in accordance to EN 14351-1

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LK78X and LK78Xe windows, determination of sound insulation based on IGU data according to standard EN 14351-1 annex B (for windows:**R_w < 39 dB** tai **$R_w + C_{tr}$ < 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 ≤ 2,7 m²	30	31	32	33	34	35	36	37	38
2,7 m² < A ≤ 3,6 m²	29	30	31	32	33	34	35	36	37
3,6 m² < A ≤ 4,6 m²	28	29	30	31	32	33	34	35	36
4,6 m² < 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 ≤ 2,7 m²	26	27	28	29	30	31	32	33	34
2,7 m² < A ≤ 3,6 m²	25	26	27	28	29	30	31	32	33
3,6 m² < A ≤ 4,6 m²	24	25	26	27	28	29	30	31	32
4,6 m² < 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

LK78X ja LK78Xe Windows, determination of sound insulation based on sound insulation testing (for windows **R_w ≥ 39 dB** or **$R_w + C_{tr}$ ≥ 35 dB**)

Window type	**Tested glazing**	**Glass properties**		**R_w**	**R_w + C**	**$R_w + C_{tr}$**
		R_w	$R_w + C_{tr}$	[dB]	[dB]	[dB]
Inward opening	6 - 12 - 4 - 12 - 8,8Lp	42 dB	35 dB	40	39	35
Outward opening	6 - 12 - 4 - 12 - 8,8Lp	42 dB	35 dB	41	39	36
Fixed with transom	6 - 12 - 4 - 12 - 8,8Lp	42 dB	35 dB	41	40	37
Fixed window	6 - 12 - 4 - 12 - 8,8Lp	42 dB	35 dB	40	39	34
Fixed window	6 - 12 - 4 - 12 - 4	36 dB	30 dB	37	35	31
Fixed window	13,1Lp - 12 - 6 - 12 - 9,1Lp	49 dB	43 dB	44	43	41

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:

	Total area of window			
Properties	A ≤ 2,7 m²	2,7 m² < A ≤ 3,6 m²	3,6 m² < A ≤ 4,6 m²	4,6 m² < A
R_w, R_w+C and R_w+C_{tr}	- 0 dB	- 1 dB	- 2 dB	- 3 dB

Product Passport

Window and door system in accordance to EN 14351-1

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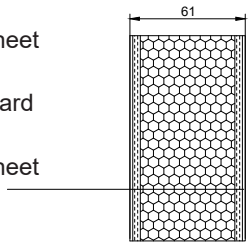
LK78X & LK78Xe Inward and outward opening doors acoustic performance:

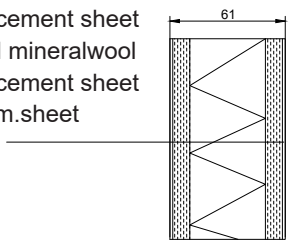
Number of door leaves	Door type	Tested glazing | panel	R_w [dB]	$R_w + C$ [dB]	$R_w + C_{tr}$ [dB]
1	Fully glazed door	Glass-1	34	33	29
1	Fully glazed door	Glass-2	41	40	38
1	Glass door with transom	Glass-1	35	33	29
1	Glass door with transom	Glass-2	40	40	38
1	Glass door with transom	Glass-3	36	34	30
1	Glass door with transom	Glass-4	38	37	34
1	Panel door with transom	Panel-1	32	30	28
1	Panel door with transom	Panel-2	39	38	35
1	Glass door with panel	Glass-1 | Panel-1	33	32	29
1	Glass door with panel	Glass-1 | Panel-2	36	35	31
1	Glass door with panel	Glass-2 | Panel-1	40	39	37
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	Panel-1	32	31	28
2	Panel door with transom	Panel-2	40	39	35
2	Glass door with panel	Glass-1 | Panel-1	33	32	29
2	Glass door with panel	Glass-1 | Panel-2	37	35	32
2	Glass door with panel	Glass-2 | Panel-1	40	39	37

Panel-1:
1,5 mm Alum.sheet
4 mm plywood
50 mm PUR-board
4 mm plywood
1,5 mm Alum.sheet



Tested glass		Glass properties R_w [dB]	$R_w + C$ [dB]	$R_w + C_{tr}$ [dB]
Glass-1	4 - 16 - 4 - 16 - 4 (RST)	32	31	27
Glass-2	13,1Lp - 12 - 6 - 12 - 9.1Lp	49	48	43
Glass-3	4 - 16 - 4 - 16 - 4 (TPS)	32	31	27
Glass-4	8 - 15 - 4 - 12 - 6	-	-	-

Panel-2:
1,5 mm Alum.sheet
9 mm fibre-cement sheet
40 mm hard mineralwool
9 mm fibre-cement sheet
1,5 mm Alum.sheet



Tested door sizes and maximum total areas (A):
Single leaf door: **990x 2090 mm** **0 m² < A ≤ 3,1 m²**
Double leaf door: **1520x 2090 mm** **0 m² < A ≤ 4,8 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)