PRODUCT BROCHURE

POLFLAM FIRE-RESISTANT GLASS





THE COMPANY

The company has been in the glass sector since 1992 and has specialised in the production of fire-resistant glass since 2005. In February 2019 the acquisition of POLFLAM by Baltisse was completed.

IPOLFLAM® is the leading manufacturer of fire-resistant glass in Poland and is expanding rapidly worldwide with a wide range of products for various applications.

We are specialised in the following areas:

- production and distribution of fire-resistant glass,
- laboratory facilities for testing fire-resistant glass and complete fire-resistant systems,
- advisory services and training.

IPOLFLAM®'s mission is to provide fire-resistant glass that ensures the highest level of safety.

We cooperate with:

- aluminium, steel and timber system providers,
- joineries and drywall builders,
- installers,
- glass traders and distributors,
- architects,
- and many more.









APPLICATIONS

POLFLAM® produces fire-resistant glass for internal and external applications.

POLFLAM fire-resistant glass is used in the following applications:

- partitions,
- frameless butt-jointed partitions,
- windows and doors,
- façades,
- гооfs,
- smoke barriers.

POLFLAM fire-resistant glass can be installed in various tested and certified framing systems:

- aluminium systems,
- steel systems,
- timber systems.

For additional functional properties or extended design features, POLFLAM fire-resistant glass can be also combined with the following glass products:

- low emissivity glass,
- solar control glass,
- sound control glass,
- laminated safety glass,
- anti-burglary and bulletproof glass,
- opaque glass,
- coloured and decorative glass,
- anti-reflective glass,
- etc.

FOUR DIFFERENT PRODUCT LINES

POLFLAM EI

Integrity with full thermal insulation

A separating element acting as a barrier against flames and hot gases and effectively blocking heat transfer from the exposed side to the unexposed side. The mean temperature rise on the unexposed side is limited to 140 °C above the initial mean temperature, with the maximum temperature rise at any point limited to 180 °C above the initial temperature.

Fire resistance performance according to EN 13501-2: **EI tt**

POLFLAM EW

Integrity with reduced heat radiation (radiation control)

A separating element acting as a barrier against flames and hot gases and reduces the transfer of heat radiation to the unexposed side and does not exceed a maximum value of 15 kW/m² of radiation measured in 1 m distance.

Fire resistance performance according to EN 13501-2: EW tt





POLFLAM E

Integrity only (barrier against flames and hot gases)

A separating element acting as a barrier against flames and hot gases for a designated time. The transfer of heat radiation is not reduced!

Fire resistance performance according to EN 13501-2: **E tt**



SMOKEFLAM

Static smoke barrier (SSB)

The objective of the smoke barrier is to control the movement of smoke and hot gasses.

Fire resistance performance according to EN 13501-4: DH tt, D tt



tt: classification period declared in minutes

PRODUCT OVERVIEW

Four Product Lines and Two Technologies

The POLFLAM product range is generally based on two technologies. On the one hand, the state-ofthe-art hydrogel technology for EI and EW requirements, on the other hand, the specially tempered glass technology for E requirements and smoke barrier applications. When developing new POLFLAM fire-resistant glass products, we use glass structures and technology tailored to the classification requirements.



POLFLAM fire-resistant glass is marked with a permanent product marking as well as a data matrix code for traceability purposes.



HYDROGEL TECHNOLOGY

POLFLAM EI fire-resistant glass meets full thermal insulation and POLFLAM EW fireresistant glass meets enhanced integrity according to EN 13501-2 and it's based on the hydrogel technology developed by POLFLAM.

POLFLAM fire-resistant glass is made of two thermally toughened safety glasses according with EN 12150. The cavity between the two glasses is filled with a colourless hydrogel interlayer. The thickness of the hydrogel interlayer determines the fire resistance class of the unit.

The hydrogel interlayer is produced at **POLFLAM**[®] factory according to the company's own proprietary formula. The technology enables the company to produce fire-resistant glass with state-of-the-art properties.

POLFLAM fire-resistant glass is designed for both internal and external building applications.



POLFLAM® PRODUCT STRUCTURE

PRODUCT ADVANTAGES



Symmetrical design



Temperature range from -40 °C to +50 °C



High light transmittance – τ_v up to 87 %



UV radiation resistance no need of PVB interlayers



Lower weight than other fire-resistant glass



Extra large glass sheets possible up to 2200 mm x 4200 mm



Reaction to fire: B-s1, d0



High sound reduction index – R_w up to 52 dB (TGU)



High mechanical resistance (thermal toughened glass)



Reduced thickness than other fire-resistant glass



Curved fire-resistant glass



Irregular glass shapes available



No need of repositioning



Highest pendulum body impact resistance 1(B)1 (acc. with EN 12600)



High water resistance - no need to protect glass edges

C C POLFLAM fire-resistant glass is CE-marked and complies with the relevant harmonised European Standards (EN 14449, EN 12150 and EN 1279).

POLFLAM MONOLITHIC FIRE-RESISTANT GLASS

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POLFLAM fire-resistant glass is available in the fire resistance classes:

- El 30 up to El 180,
- EW 30 up to EW 120,
- E 30.

POLFLAM		E 30	EW 30	ΕW	60	EI 15	EI 30	EI	60	EI	90	EL	120	EI 180
Nominal thickness [mm]		6	16	16	20	16	20	25	28	32	35	35	40	55
Thickness tolerance [mm]		± 0.2	± 2	± 2	± 2	± 2	± 2	± 2	± 2	± 3	± 3	± 3	± 3	± 3
Weight [kg/m²]		15	33	33	38	33	38	45	49	52	57	57	64	83
Fire resistance	EN 13501-2	E 30	EW 30	EW 60	EW 60	EI 15	EI 30	EI 60	EI 60	EI 90	EI 90	EI 120	EI 120	EI 180
Light transmittance τ_v [%]	EN 410	90	88*	88*	87	88*	87	87	87	85	87	87	86	85
Total solar energy transmittance g [%]	EN 410	NPD	73*	73*	72	73*	72	70	71	68	70	70	68	66
Thermal properties U _g [W/m²K]	EN 673	5.7	4.8*	4.8*	4.4	4.8*	4.4	4.0*	3.7	3.6*	3.3	3.3	3.0	NPD
Sound reduction index R _w (C; C _{tr}) [dB]	EN 12758	31 (-2; -3)	41 (-2;-3)	41 (-2;-3)	42 (-2;-3)	41 (-2;-3)	42 (-2;-3)	44 (-2;-4)	45 (-1;-3)	44 (-2;-3)	47 (-1;-4)	47 (-1;-4)	48 (-1;-4)	45 (-1;-4)
Pendulum body impact resistance	EN 12600	1(C)1		1(B)1						^				
Reaction to fire	EN 13501-1	A1		B-s1, d0										
Max. temperature range		NPD		-40 °C / +50 °C										
Curved glass		No				Yes								

* estimated values

POLFLAM BR FIRE-RESISTANT GLASS

POLFLAM BR fire-resistant glass can be installed with the vertical sides of the glasses directly connected (butt-joint) to each other without the use of vertical posts or framing system.

POLFLAM BR		EI 30	EI 60		EI 90	EI 120		
Nominal thickness [mm]		30	35	38	45	50		
Thickness tolerance [mm]		± 2	± 3	± 3	± 3	± 3		
Weight [kg/m²]		65	69	75	82	90		
Fire resistance	EN 13501-2	EI 30	EI 60	EI 60	EI 90	EI 120		
Light transmittance τ_v [%]	EN 410	84	84	84	84	84		
Total solar energy transmittance g [%]	EN 410	68	67	67	64	66		
Thermal properties U _g [W/m²K]	EN 673	4.6*	4.2*	3.6*	3.8*	2.9		
Sound reduction index R _w (C; C _{tr}) [dB]	EN 12758	43 (-3; -3)	44 (-2; -2)	44 (-1; -3)*	47 (-2; -3)	46 (-1; -3)		
Pendulum body impact resistance	EN 12600	1(B)1						
Reaction to fire	EN 13501-1	B-s1, d0						
Max. temperature range		-40 °C / +50 °C						
Curved glass				Yes				

* estimated values

POLFLAM BR CURVED FIRE-RESISTANT GLASS

POLFLAM[®] also produces curved fire-resistant glass in XXL dimensions and with large arcing radius.



POLFLAM IGU FIRE-RESISTANT GLASS

POLFLAM DGU and TGU fire-resistant glass creates façades with extraordinary transparency and excellent performance. The latest structural glazing systems with POLFLAM SG fire-resistant glass allow for a perfectly smooth surface from the outside.

An extremely high light transmittance value provides an optimal light transmittance > 70 %.

POLFLAM fire-resistant insulated glass units can also be combined with

- low emissivity (Low-E) glass or
- high selective solar control glass

to achieve the same uniform appearance as IGUs without fire resistance requirements to improve building's energy balance.

POLFLAM fire-resistant insulated glass units can also be combined with additional functional properties such as safety, sound control and higher security glass panes as well as with opaque glass, anti-reflective glass etc. for additional design properties. POLFLAM fire-resistant insulated glass units for façade applications can be used in various available framing systems:

- aluminium systems,
- steel systems,
- timber systems.

POLFLAM fire-resistant insulated glass units for façade applications offers many advantages:

- a wide range of coatings available in double glass units (DGU) or triple glass units (TGU),
- extremely low U_g-value of 0.5 W/m²K for triple glass units with highly selective coatings,
- large dimensions of IGUs (Insulated Glass Units) available: 2200 mm x 4200 mm,
 i.e. provides improved thermal insulation properties of the entire façade.



POLFLAM IGU FIRE-RESISTANT GLASS

Product overview for Double Glazed Units (DGU)

POLFLAM DGU with low emissivity glass (e.g. ClimaGuard 1.0 T ESG)

POLFLAM DGU		El 30 El 60		EI	90	EI 120			
Glass composition		6 mm ClimaGuard 1.0 T ESG 16 mm Argon POLFLAM EI 30 (20 mm)	6 mm ClimaGuard 1.0 T ESG 16 mm Argon POLFLAM EI 60 (25 mm)	6 mm ClimaGuard 1.0 T ESG 16 mm Argon POLFLAM EI 60 (28 mm)	6 mm ClimaGuard 1.0 T ESG 16 mm Argon POLFLAM EI 90 (32 mm)	6 mm ClimaGuard 1.0 T ESG 16 mm Argon POLFLAM EI 90 (35 mm)	6 mm ClimaGuard 1.0 T ESG 16 mm Argon POLFLAM EI 120 (35 mm)	6 mm ClimaGuard 1.0 T ESG 16 mm Argon POLFLAM EI 120 (40 mm)	
Nominal thickness [mm]		42	47	50	54	57	57	62	
Thickness tolerance [mm]		± 3.5	± 3.5	± 3.5	± 4.5	± 4.5	± 4.5	± 4.5	
Weight [kg/m²]		53	59	63	68	72	72	78	
Fire resistance	EN 13501-2	EI 30	EI 60	EI 60	EI 90	EI 90	EI 120	EI 120	
Light transmittance τ_v [%]	EN 410	72	72	72	71	71	70	70	
Total solar energy transmittance g [%]	EN 410	48	48	49	48	49	49	49	
Thermal properties U _g [W/m²K]	EN 673	1.0	1.0	0.9	0.9	0.9	0.9	0.9	
Sound reduction index R _w (C; C _{tr}) [dB]	EN 12758	44 (-2; -7)	46 (-3;-8)	NPD	NPD	48 (-2;-7)	48 (-2;-7)	NPD	
Pendulum body impact resistance	EN 12600	1(C)1 / 1(B)1							
Reaction to fire	EN 13501-1	B-s1, d0							
Max. temperature range			-40 °C / +50 °C						

POLFLAM DGU with high selective solar control glass (e.g. SunGuard SN 70S HT ESG)

POLFLAM DGU		EI 30 EI 60		EI 90		El 120		
Glass composition		6 mm SunGuard SN 70S HT ESG 16 mm Argon POLFLAM EI 30 (20 mm)	6 mm SunGuard SN 70S HT ESG 16 mm Argon POLFLAM EI 60 (25 mm)	6 mm SunGuard SN 70S HT ESG 16 mm Argon POLFLAM EI 60 (28 mm)	6 mm SunGuard SN 70S HT ESG 16 mm Argon POLFLAM EI 90 (32 mm)	6 mm SunGuard SN 70S HT ESG 16 mm Argon POLFLAM EI 90 (35 mm)	6 mm SunGuard SN 70S HT ESG 16 mm Argon POLFLAM EI 120 (35 mm)	6 mm SunGuard SN 70S HT ESG 16 mm Argon POLFLAM EI 120 (40 mm)
Nominal thickness [mm]		42	47	50	54	57	57	62
Thickness tolerance [mm]		± 3.5	± 3.5	± 3.5	± 4.5	± 4.5	± 4.5	± 4.5
Weight [kg/m²]		53	59	63	68	72	72	78
Fire resistance	EN 13501-2	EI 30	EI 60	EI 60	EI 90	EI 90	EI 120	EI 120
Light transmittance τ_v [%]	EN 410	68	68	68	67	67	67	66
Total solar energy transmittance g [%]	EN 410	39	39	39	39	39	39	39
Thermal properties U _g [W/m²K]	EN 673	1.0	1.0	0.9	0.9	0.9	0.9	0.9
Sound reduction index R _w (C; C _{tr}) [dB]	EN 12758	44 (-2; -7)	46 (-3;-8)	NPD	NPD	48 (-2;-7)	48 (-2;-7)	NPD
Pendulum body impact resistance	EN 12600	1(C)1 / 1(B)1						
Reaction to fire	EN 13501-1	B-s1, d0						
Max. temperature range					-40 °C / +50 °C			

For more information about POLFLAM TGU, please contact your local Sales Manager.

POLFLAM H FIRE-RESISTANT GLASS

POLFLAM H fire-resistant glass is used for roof applications.

In case of fire, the fire-resistant glass installed in an appropriate framing system forms a barrier to prevent a fire from spreading (flashover) to an adjacent higher building or the next fire compartment.

POLFLAM H fire-resistant glass is combined with:

- low emissivity (Low-E) glass or
- high selective control glass.

POLFLAM H is tested in steel and aluminium framing systems.

POLFLAM H		EI 30 DGU	EI 30 TGU		
Glass composition		6 mm SunGuard SN 70/35 HT ESG 16 mm Argon POLFLAM H EI 30 (22 mm)	6mm SunGuard SN 70/35HT ESG 16mm Argon 6mm ClimaGuard Premium 2T ESG 16mm Argon POLFLAM H EI 30 (22mm)		
Nominal thickness [mm]		44	66		
Thickness tolerance [mm]		±3.5	±4.1		
Weight [kg/m²]		58	69		
Fire resistance	EN 13501-2	REI 30	REI 30		
Light transmittance $\tau_v[\%]$	EN 410	67	60		
Total solar energy transmittance g [%]	EN 410	35	31		
Thermal properties Ug [W/m²K]	EN 673	1.5*	0.8*		
Sound reduction index R _w (C; C _{tr}) [dB]	EN 12758	NPD	NPD		
Pendulum body impact resistance	EN 12600	1(C)1 / 1(B)1	1(C)1/1(C)1/1(B)1		
Reaction to fire EN 135		B-s1, d0			
Max. temperature range		-40 °C / +50 °C			

* installation angle: 15°

SMOKEFLAM

SMOKEFLAM is a transparent static smoke barrier (SSB) and tested according with EN 12101-1. The smoke barrier is made of specially super toughened glass according with EN 12150-2. The objective of the smoke barrier is to control the movement of smoke and hot gases.

SMOKE FLAM®



SMOKEFLAM		DH 30 / D 120
Nominal thickness [mm]		6
Thickness tolerance [mm]		± 0.2
Weight [kg/m²]		16
Fire resistance	EN 13501-4	DH 30 / D 120
Light transmittance τ_v [%]	EN 410	90
Light reflectance in / out [%]	EN 410	8/8
Pendulum body impact resistance	EN 12600	1(C)1
Reaction to fire	EN 13501-1	A1
Application		Static Smoke Barrier (SSB)
Dimensions [mm]		Width 500 – 2420 / Height 1300
Irregular shapes		Tested and approved
Number of fittings		2-3 (depending on glass dimension / weight of the glass)
Fixation		Appropriate installation kit

FRAMING SYSTEMS



IPOLFLAM® is cooperating since many years with system providers of steel, aluminium and timber systems making Polflam fire-resistant glass available in a wide range of systems for every market.







BR SYSTEM



POLFLAM BR fire-resistant glass can be also installed in a frameless butt-jointed system - BR SYSTEM - for EI 30, EI 60, EI 90 and EI 120, allowing fire-resistant glass to be installed directly within walls of various materials without the need for a commercial fire-resistant framing system and without vertical posts (butt-joint glazing).

The BR System can be up to 4800 mm in height with unlimited length of the partition by installing multiple POLFLAM BR fire-resistant glass panes butt-jointed to each other.

The BR System can be installed into walls made of different materials such as aerated concrete, perforated brick or solid brick, concrete or reinforced concrete and can be combined with commercially available fire-resistant door systems.

The relevant technical information of POLFLAM BR fire-resistant glass can be found on page 9.

FR SYSTEM



POLFLAM FR fire-resistant glass is installed in the FR System for EI 30, EI 60, EI 90, EI 120 and EI 180, allowing fire-resistant glass to be installed directly in openings of walls of various materials without the need for a commercial fire-resistant framing system. The surface of the FR frameless system can be as large as 4.5 m².

POLFLAM FR		EI 30	EI 60	EI 90	EI 120	EI 180
Nominal thickness [mm]		20	25	35	35	55
Thickness tolerance [mm]		± 2	± 3	± 3	± 3	± 3
Weight [kg/m²]		38	45	57	57	83
Fire resistance	EN 13501-2	EI 30	EI 60	EI 90	EI 120	EI 180
Light transmittance $\tau_v[\%]$	EN 410	87	87	87	87	85
Total solar energy transmittance g [%]	EN 410	72	70	70	70	66
Thermal properties Ug [W/m²K]	EN 673	4.4	4.0*	3.3	3.4*	NPD
Sound reduction index R _w (C; C _{tr}) [dB]	EN 12758	42 (-2; -3)	44 (-2; -4)	47 (-1; -4)	45 (-1; -4)	45 (-1; -4)
Pendulum body impact resistance	EN 12600		·	1(B)1		
Reaction to fire	EN 13501-1	B-s1, d0				
Max. temperature range		-40 °C / +50 °C				
Curved glass				Yes		

* estimated values

FR FLOOR SYSTEM

POLFLAM F fire-resistant glass is used for floor applications.

It is available for internal applications in the fire resistance classes REI 30, 45, 60, 90 and 120. Fire-resistant glazed floors provide for more daylight saturation while giving building occupants maximum protection in the event of fire.

IPOLFLAM® offers fire-resistant glass for glazed floors with a load-bearing capacity up to qk = 5 kN/m². POLFLAM F fire-resistant glass can be provided with anti-slip screen printing and is also available as irregular glass shapes.

POLFLAM	F62	F72	F110	
Fire resistance	REI 30, REI 60	REI 30	REI 30, REI 60, REI 90, REI 120	
Total thickness [mm]	62	72	110	
Thickness tolerance [mm]	±3	±3	±3	
Weight [kg/m²]	136	136	158	
Light transmittance $\tau_{v}[\%]$	75*	69*	55*	
Thermal properties U _g [W/m²K]	4.0*	2.8*	0.8**	
Sound reduction index R _w (C; C _{tr}) [dB]	53 (-3; -7)*	53 (-3; -7)*	54 (-3; -7)*	
Pendulum body impact resistance	1(B)1		1(B)1/1(B)1	
Max. temperature range				
Maximum glass dimensions [mm]	2200x1650 REI 30 1900x1650 REI 60	2200x1650	2200x1650	

* estimated values;

** estimated values; 2 x Low-E 1.1; other glass compositions on request



Please visit our website www.polflam.com for more information about "FR FLOOR SYSTEM".

TIMBER SYSTEMS



IPOLFLAM® has successfully completed a wide range of fire tests on timber partitions for classifications EW 30, EW 60 and EI 15 up to EI 120.

During the certification process, monolithic and insulating glass configurations were tested, allowing for the use of single, double and triple insulating glass units, with the use of laminated glass (up to P5A), toughened glass or float glass, as well as with coatings or without.

The insulating glass units can be used with different types of spacer bar materials and take into account fire resistance on both sides.

Other important system options include glazing beads on one or both sides, irregular frame shapes, fixing with pins or screws and pre-fabricated frames with on-site assembly.

Please visit our website www.polflam.com for more information about "TIMBER SYSTEMS".





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CE marking confirms that a product complies with the relevant harmonised European Norm.

Technical specification of the products are available at www.polflam.com



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