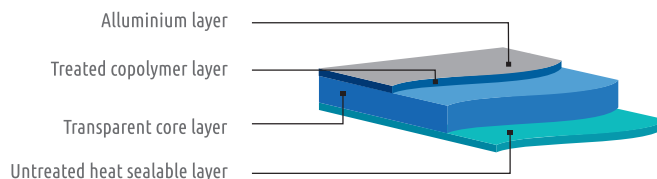


## Description

**Metallized on transparent base heat sealable BOPP film for printing, lamination and packaging**



Properties		Unit	Limit	Method	Value											
Thickness*		µm	±5%	WATERFALL PRO	12	15	18	20	25	30	35	40	42			
Density		g/cm <sup>3</sup>	±10%		0,91											
Weight m <sup>2</sup> *		g/m <sup>2</sup>	±5%		10,92	13,65	16,38	18,20	22,75	27,30	31,85	36,40	38,22			
Tensile strength*	MD	N/mm <sup>2</sup> (MPa)	not less	ASTM D882 ISO 527 GOST 14236	130			140								
	TD				230			250								
Elongation at break*	MD	%	not more		220			200								
	TD				80			70								
Kinetic coefficient of friction	untreated side/ untreated side	-	±0,10		ASTM D1894 ISO 8295 GOST 27492	0,3										
Shrinkage at 120°C, 5 min*	MD	%	not more		ASTM D1204 ISO 11501 GOST 18616	5			4							
	TD			3			2									
Heat sealing strength at 130°C, 1 bar, 1 sec*	untreated side/ untreated side	N/15 mm	not less	ASTM F88/F88M D882 ISO 527 GOST 27319	2,0		2,2	2,3	2,5	2,8						
Heat sealing temperature*	untreated side/ untreated side	°C	-	WATERFALL PRO	105-140											
Surface tension**	treated side	mN/n (dyn/cm)	not less	ASTM D2578 ISO 8296	36											
Optical density	-	OD	not less	WATERFALL PRO	1,8											
WVTR-water vapour transmission rate at 38°C, 90% rel. humidity, 24 h		g/m <sup>2</sup> /24h	not more	ASTM F1249	1,0											
OTR-oxygen transmission rate at 23°C, 0% rel. humidity, 24 h		sm <sup>3</sup> /m <sup>2</sup> /24h	not more	ASTM D3985	100											

MD – Machine Direction; TD – Transverse Direction

\* performance is measured on BOPP film – base for metallization.

For double-sided processing, the strength and welding range are not regulated

\*\* with double-side treatment (if ordered), the activation of the second side (usually the inside of the roll) is not less than 36 mN/m

### Main characteristics

- long-term activation
- excellent adhesion of aluminium cover
- excellent optical properties
- excellent barrier properties
- stable regular coefficient of friction

### Application

- for improvement of barrier properties of package
- for wrap-around label for bottles

#### For packing

- on the high-speed HFFS and VFFS packaging machines
- with hot (heat sealing) and cold (using cold glue) seal formation
- Flow-Pack

#### For lamination

- with other films and materials in duplex, triplex
- using solvent and nonsolvent (extrusive) lamination

#### For printing

- high-quality rotogravure and flexographic print
- using solvent paint

### Storage

- Films should be stored on the pallets in a closed dry place and should not be exposed to direct sunlight, at a safe distance of not less than 1 m from heating devices or anything that can cause damage the package.
- The film should be kept in workplace not less than 48 hours before being used.
- Guaranteed storage period – 6 months from production date.

### Treatment

- the guaranteed period for maintaining the minimum permissible level of surface tension on the activated film surface from the date of manufacture, subject to proper storage conditions, is 3 months
- in the interests of minimizing the deterioration of surface dressing level, it is recommended to store the film at a temperature of no higher than 30°C and use it in a short time.

### Recycling

- It's recommended to use primer when printing on metallized surface.

### Reeling

- Maximum roll diameter: 800 mm
- Film width in roll from 290 to 2000 mm
- Diameter of paper cores (inside): 76, 152 mm

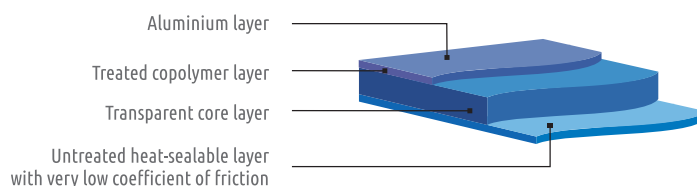
Attention! Information specified in this document is for reference only; it contains averaged technical characteristics of Waterfall Pro LLC products based on results of laboratory tests performed in Waterfall Pro LLC standard operation conditions. Waterfall Pro LLC gives no representations and/or warranties and is expressly relieved from any liability for infringement of any third parties' intellectual property rights arising from processing of Waterfall Pro LLC products.

Testing of Waterfall Pro LLC products in order to determine their suitability in terms of meeting specific objectives of a person intending to purchase Waterfall Pro LLC products is the sole responsibility of such a person who shall be responsible for any consequences related to processing and use of Waterfall Pro LLC products.

This document does not constitute a quotation and its provision to any person shall not create any rights and duties on the part of Waterfall Pro LLC.

## Description

**Metallized on transparent base heat sealable with very low coefficient of friction BOPP film for printing, lamination and packaging**



Properties		Unit	Limit	Method	Value					
Thickness*		µm	±5%	WATERFALL PRO	15	20	25	30	35	40
Density		g/cm <sup>3</sup>	±10%		0,91					
Weight m <sup>2</sup> *		g/m <sup>2</sup>	±5%		13,65	18,20	22,75	27,30	31,85	36,40
Tensile strength*	MD	N/mm <sup>2</sup> (MPa)	not less	ASTM D882 ISO 527 GOST 14236	130		140			
	TD				230		250			
Elongation at break*	MD	%	not more		220		200			
	TD			80		70				
Kinetic coefficient of friction	untreated side/ untreated side	-	±0,10	ASTM D1894 ISO 8295 GOST 27492	0,2					
Shrinkage at 120°C, 5 min*	MD	%	not more	ASTM D1204 ISO 11501 GOST 18616	5		4			
	TD				3		2			
Heat sealing strength at 130°C, 1 bar, 1 sec*	untreated side/ untreated side	N/15 mm	not less	ASTM F88/F88M D882 ISO 527 GOST 27319	2,0	2,3	2,5	2,8		
Heat sealing temperature*	untreated side/ untreated side	°C	-	WATERFALL PRO	105-140					
Surface tension**	treated side	mN/n (dyn/cm)	not less	ASTM D2578 ISO 8296	36					
Optical density	-	OD	not less	WATERFALL PRO	1,8					
WVTR-water vapour transmission rate at 38°C, 90% rel. humidity, 24 h		g/m <sup>2</sup> /24h	not more	ASTM F1249	1,0					
OTR-oxygen transmission rate at 23°C, 0% rel. humidity, 24 h		sm <sup>3</sup> /m <sup>2</sup> /24h	not more	ASTM D3985	100					

MD – Machine Direction; TD – Transverse Direction

\* performance is measured on BOPP film – base for metallization

\*\* guaranteed conservation period of activation on metallized side of film is 3 months from production date specified on identification roll tag

### Main characteristics

- long-term activation
- excellent adhesion of aluminium cover
- excellent optical properties
- excellent barrier properties
- stable regular coefficient of friction

### Application

- for improvement of barrier properties of package
- for wrap-around label for bottles

#### For packing

- on the high-speed HFFS and VFFS packaging machines
- with hot (heat sealing) and cold (using cold glue) seal formation
- Flow-Pack

#### For lamination

- with other films and materials in duplex, triplex
- with method of the solvent or nonsolvent (extrusion) lamination

#### For printing

- high-quality rotogravure and flexographic print
- using solvent paint

### Storage

- Films should be stored on the pallets in a closed dry place and should not be exposed to direct sunlight, at a safe distance of not less than 1 m from heating devices or anything that can cause damage the package.
- The film should be kept in workplace not less than 48 hours before being used.
- Guaranteed storage period – 6 months from production date.

### Treatment

The guaranteed period for maintaining the minimum permissible level of surface tension on the activated film surface from the date of manufacture, subject to proper storage conditions, is 3 months.

In the interests of minimizing the deterioration of surface dressing level, it is recommended to store the film at a temperature of no higher than 30°C and use it in a short time.

### Recycling

- It's recommended to use primer when printing on metallized surface.

### Reeling

- Maximum roll diameter: 800 mm
- Film width in roll from 290 to 2000 mm
- Diameter of paper cores (inside): 76, 152 mm

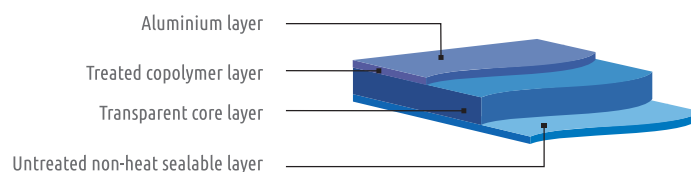
Attention! Information specified in this document is for reference only; it contains averaged technical characteristics of Waterfall Pro LLC products based on results of laboratory tests performed in Waterfall Pro LLC standard operation conditions. Waterfall Pro LLC gives no representations and/or warranties and is expressly relieved from any liability for infringement of any third parties' intellectual property rights arising from processing of Waterfall Pro LLC products.

Testing of Waterfall Pro LLC products in order to determine their suitability in terms of meeting specific objectives of a person intending to purchase Waterfall Pro LLC products is the sole responsibility of such a person who shall be responsible for any consequences related to processing and use of Waterfall Pro LLC products.

This document does not constitute a quotation and its provision to any person shall not create any rights and duties on the part of Waterfall Pro LLC.

## Description

**Metallized on transparent base non-heat sealable BOPP film for printing, lamination and decorative packaging**



Properties		Unit	Limit	Method	Value					
Thickness*		μm	±5%	WATERFALL PRO	15	20	25	30	35	40
Density		g/cm <sup>3</sup>	±10%		0,91					
Weight m <sup>2</sup> *		g/m <sup>2</sup>	±5%		13,65	18,20	22,75	27,30	31,85	36,40
Tensile strength*	MD	N/mm <sup>2</sup> (MPa)	not less	ASTM D882 ISO 527 GOST 14236	140					
	TD				250					
Elongation at break*	MD	%	not more		200					
	TD			70						
Kinetic coefficient of friction	untreated side/ untreated side	-	±0,10	ASTM D1894 ISO 8295 GOST 27492	0,35					
Shrinkage at 120°C, 5 min*	MD	%	not more	ASTM D1204 ISO 11501 GOST 18616	4					
	TD			2						
Heat sealing strength at 130°C, 1 bar, 1 sec*	-	N/15 mm	not less	ASTM F88/F88M D882 ISO 527 GOST 27319	non heat sealable					
Heat sealing temperature*	-	°C	-	WATERFALL PRO	non heat sealable					
Surface tension**	treated side	mN/n (dyn/cm)	not less	ASTM D2578 ISO 8296	36					
Optical density	-	OD	not less	WATERFALL PRO	1,8					

MD – Machine Direction; TD – Transverse Direction

\* performance is measured on BOPP film – base for metallization

\*\* Guaranteed conservation period of activation on metallized side of film is 3 months from production date specified on identification roll tag

### Main characteristics

- long-term activation
- excellent adhesion of aluminium cover
- excellent optical properties
- excellent barrier properties
- high coefficient of friction

### Application

- for decorative packaging/wrapping
- for packet machines
- for packaging tape production
- for wrap-around label for bottles

#### For packing

- in cases, when heat sealing is not required
- with hot (heat sealing) and cold (using cold glue) seal formation
- manual application in decorative packaging

#### For lamination

- with other films and materials
- using solvent and nonsolvent (extrusive) lamination

#### For printing

- high-quality rotogravure and flexographic print
- using solvent paint

### Storage

- Films should be stored on the pallets in a closed dry place and should not be exposed to direct sunlight, at a safe distance of not less than 1 m from heating devices or anything that can cause damage the package.
- The film should be kept in workplace not less than 48 hours before being used.
- Guaranteed storage period – 6 months from production date.

### Treatment

The guaranteed period for maintaining the minimum permissible level of surface tension on the activated film surface from the date of manufacture, subject to proper storage conditions, is 3 months.

In the interests of minimizing the deterioration of surface dressing level, it is recommended to store the film at a temperature of no higher than 30°C and use it in a short time.

### Recycling

- It's recommended to use primer when printing on metallized surface.

### Reeling

- Maximum roll diameter: 800 mm
- Film width in roll from 290 to 2000 mm
- Diameter of paper cores (inside): 76, 152 mm

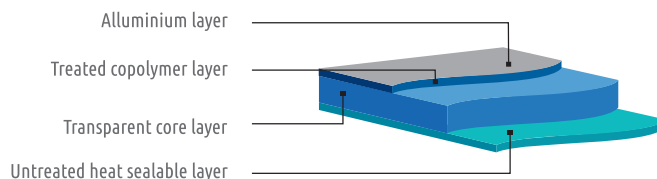
Attention! Information specified in this document is for reference only; it contains averaged technical characteristics of Waterfall Pro LLC products based on results of laboratory tests performed in Waterfall Pro LLC standard operation conditions. Waterfall Pro LLC gives no representations and/or warranties and is expressly relieved from any liability for infringement of any third parties' intellectual property rights arising from processing of Waterfall Pro LLC products.

Testing of Waterfall Pro LLC products in order to determine their suitability in terms of meeting specific objectives of a person intending to purchase Waterfall Pro LLC products is the sole responsibility of such a person who shall be responsible for any consequences related to processing and use of Waterfall Pro LLC products.

This document does not constitute a quotation and its provision to any person shall not create any rights and duties on the part of Waterfall Pro LLC.

## Description

### Metallized on transparent base BOPP film for printing, lamination and packaging



Properties		Unit	Limit	Method	Value					
Thickness*		μm	±5%	WATERFALL PRO	18	20	25	30	35	40
Density		g/cm <sup>3</sup>	±10%		0,91					
Weight m <sup>2</sup> *		g/m <sup>2</sup>	±5%		16,38	18,20	22,75	27,30	31,85	36,40
Tensile strength*	MD	N/mm <sup>2</sup> (MPa)	not less	ASTM D882 ISO 527 GOST 14236	130		140			
	TD				230		250			
Elongation at break*	MD	%	not more		220		200			
	TD			80		70				
Kinetic coefficient of friction	untreated side/ untreated side	-	±0,10	ASTM D1894 ISO 8295 GOST 27492	0,3					
Shrinkage at 120°C, 5 min*	MD	%	not more	ASTM D1204	5	4				
	TD			ISO 11501 GOST 18616	3	2				
Heat sealing strength at 130°C, 1 bar, 1 sec*	untreated side/ untreated side	N/15 mm	not less	ASTM F88/F88M D882 ISO 527 GOST 27319	2,0	3,0			3,2	
Heat sealing temperature*	untreated side/ untreated side	°C	-	WATERFALL PRO	105-140					
Surface tension**	treated side	mN/n (dyn/cm)	not less	ASTM D2578 ISO 8296	36					
Optical density	-	OD	not less	WATERFALL PRO	2,3					
WVTR-water vapour transmission rate at 38°C, 90% rel. humidity, 24 h		g/m <sup>2</sup> /24h	not more	ASTM F1249	1,0					
OTR-oxygen transmission rate at 23°C, 0% rel. humidity, 24 h		sm <sup>3</sup> /m <sup>2</sup> /24h	not more	ASTM D3985	50					

MD – Machine Direction; TD – Transverse Direction

\* performance is measured on BOPP film – base for metallization

\*\* guaranteed conservation period of activation on metallized side of film is 3 months from production date specified on identification roll tag

### Main characteristics

- excellent barrier properties
- long-term activation
- excellent adhesion of aluminium cover
- excellent optical properties
- stable regular coefficient of friction

### Application

- for packaging of products which require high barrier properties: biscuits, chips, waffles and etc.
- for extension of products storage period

#### For packing

- on the high-speed HFFS and VFFS packaging machines
- with hot (heat sealing) and cold (using cold glue) seal formation
- Flow-Pack

#### For lamination

- with other films and materials
- with method of the solvent or nonsolvent (extrusion) lamination

#### For printing

- high-quality rotogravure and flexographic print
- using solvent paint

### Storage

- Films should be stored on the pallets in a closed dry place and should not be exposed to direct sunlight, at a safe distance of not less than 1 m from heating devices or anything that can cause damage the package.
- The film should be kept in workplace not less than 48 hours before being used.
- Guaranteed storage period – 6 months from production date.

### Treatment

The guaranteed period for maintaining the minimum permissible level of surface tension on the activated film surface from the date of manufacture, subject to proper storage conditions, is:

- for all film types (except metallized) – 6 months;
- for metallized film – 3 months.

In the interests of minimizing the deterioration of surface dressing level, it is recommended to store the film at a temperature of no higher than 30°C and use it in a short time.

### Recycling

- It's recommended to use primer when printing on metallized surface.

### Reeling

- Maximum roll diameter: 800 mm
- Film width in roll from 290 to 2000 mm
- Diameter of paper cores (inside): 76, 152 mm

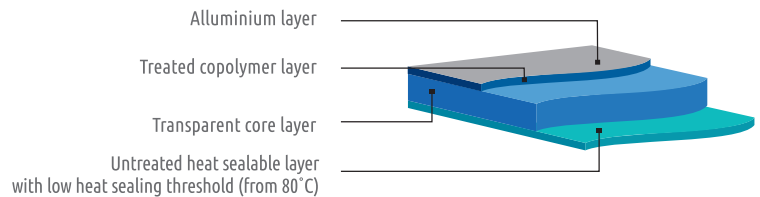
Attention! Information specified in this document is for reference only; it contains averaged technical characteristics of Waterfall Pro LLC products based on results of laboratory tests performed in Waterfall Pro LLC standard operation conditions. Waterfall Pro LLC gives no representations and/or warranties and is expressly relieved from any liability for infringement of any third parties' intellectual property rights arising from processing of Waterfall Pro LLC products.

Testing of Waterfall Pro LLC products in order to determine their suitability in terms of meeting specific objectives of a person intending to purchase Waterfall Pro LLC products is the sole responsibility of such a person who shall be responsible for any consequences related to processing and use of Waterfall Pro LLC products.

This document does not constitute a quotation and its provision to any person shall not create any rights and duties on the part of Waterfall Pro LLC.

## Description

**Metallized on transparent base heat sealable with low heat sealing threshold BOPP film for printing, lamination and packaging**



Properties		Unit	Limit	Method	Value					
Thickness*		µm	±5%	WATERFALL PRO	15	20	25	30	35	40
Density		g/cm <sup>3</sup>	±10%		0,91					
Weight m <sup>2</sup> *		g/m <sup>2</sup>	±5%		13,65	18,20	22,75	27,30	31,85	36,40
Tensile strength*	MD	N/mm <sup>2</sup> (MPa)	not less	ASTM D882 ISO 527 GOST 14236	130		140			
	TD				230		250			
Elongation at break*	MD	%	not more		220		200			
	TD			80		70				
Kinetic coefficient of friction	untreated side/ untreated side	-	±0,10	ASTM D1894 ISO 8295 GOST 27492	0,3					
Shrinkage at 120°C, 5 min*	MD	%	not more	ASTM D1204 ISO 11501 GOST 18616	5	4				
	TD				3	2				
Heat sealing strength at 130°C, 1 bar, 1 sec*	untreated side/ untreated side	N/15 mm	not less	ASTM F88/F88M D882 ISO 527 GOST 27319	2,0	2,3	2,5	2,8		
Heat sealing temperature*	untreated side/ untreated side	°C	-	WATERFALL PRO	80-140					
Surface tension**	treated side	mN/n (dyn/cm)	not less	ASTM D2578 ISO 8296	36					
Optical density	-	OD	not less	WATERFALL PRO	1,8					
WVTR-water vapour transmission rate at 38°C, 90% rel. humidity, 24 h		g/m <sup>2</sup> /24h	not more	ASTM F1249	1,0					
OTR-oxygen transmission rate at 23°C, 0% rel. humidity, 24 h		sm <sup>3</sup> /m <sup>2</sup> /24h	not more	ASTM D3985	100					

MD – Machine Direction; TD – Transverse Direction

\* performance is measured on BOPP film – base for metallization

\*\* guaranteed conservation period of activation on metallized side of film is 3 months from production date specified on identification roll tag

### Main characteristics

- long-term activation
- low heat sealing temperature
- excellent adhesion of aluminium cover
- excellent optical properties
- excellent barrier properties
- stable regular coefficient of friction

### Application

- for improvement of package's barrier properties
- for decreasing temperature of heat sealing
- for increasing speed of heat sealing
- [For packing](#)
- on the high-speed HFFS and VFFS packaging machines
- with hot (heat sealing) seal formed at lower heat sealing temperatures (from 80°C)
- Flow-Pack

#### [For lamination](#)

- with other films and materials in duplex, triplex
- with method of the solvent or nonsolvent (extrusion) lamination

#### [For printing](#)

- high-quality rotogravure and flexographic print
- using solvent paint

### Storage

- Films should be stored on the pallets in a closed dry place and should not be exposed to direct sunlight, at a safe distance of not less than 1 m from heating devices or anything that can cause damage the package.
- The film should be kept in workplace not less than 48 hours before being used.
- Guaranteed storage period – 6 months from production date.

### Treatment

The guaranteed period for maintaining the minimum permissible level of surface tension on the activated film surface from the date of manufacture, subject to proper storage conditions, is:

- for all film types (except metallized) – 6 months;
- for metallized film – 3 months.

In the interests of minimizing the deterioration of surface dressing level, it is recommended to store the film at a temperature of no higher than 30°C and use it in a short time.

### Recycling

- It's recommended to use primer when printing on metallized surface.

### Reeling

- Maximum roll diameter: 800 mm
- Film width in roll from 290 to 2000 mm
- Diameter of paper cores (inside): 76, 152 mm

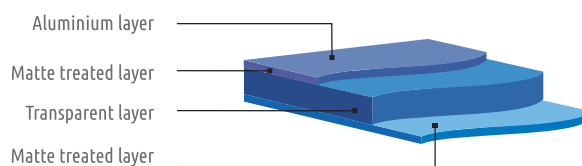
Attention! Information specified in this document is for reference only; it contains averaged technical characteristics of Waterfall Pro LLC products based on results of laboratory tests performed in Waterfall Pro LLC standard operation conditions. Waterfall Pro LLC gives no representations and/or warranties and is expressly relieved from any liability for infringement of any third parties' intellectual property rights arising from processing of Waterfall Pro LLC products.

Testing of Waterfall Pro LLC products in order to determine their suitability in terms of meeting specific objectives of a person intending to purchase Waterfall Pro LLC products is the sole responsibility of such a person who shall be responsible for any consequences related to processing and use of Waterfall Pro LLC products.

This document does not constitute a quotation and its provision to any person shall not create any rights and duties on the part of Waterfall Pro LLC.

## Description

**Metallized on a matte base on both sides  
non-heat-sealed BOPP film for decorative  
packaging (activated on both sides)**



Properties		Unit	Limit	Method	Value	
Thickness*		μm	±5%	WATERFALL PRO	35	40
Density		g/cm <sup>3</sup>	±10%		0,91	
Weight m <sup>2</sup> *		g/m <sup>2</sup>	±5%		31,85	36,40
Tensile strength*	MD	N/mm <sup>2</sup> (MPa)	not less	ASTM D882 ISO 527 GOST 14236	120	
	TD				240	
Elongation at break*	MD	%	not more		220	
	TD				80	
Kinetic coefficient of friction	untreated side / untreated side	-	±0,15	ASTM D1894 ISO 8295 GOST 27492	0,35	
Shrinkage at 120°C, 5 min*	MD	%	not more	ASTM D1204 ISO 11501 GOST 18616	4	
	TD				2	
Heat sealing strength at 140°C, 1 bar, 1 sec*	-	N/15 mm	not less	ASTM F88/F88M D882 ISO 527 GOST 27319	non heat sealable	
Heat sealing temperature*	-	°C	-	WATERFALL PRO	non heat sealable	
Surface tension	treated side	mN/n (dyn/cm)	not less	ASTM D2578 ISO 8296	36	
Optical density	-	OD	not less	WATERFALL PRO	1,6	

MD – Machine Direction; TD – Transverse Direction  
\* Performance is measured on BOPP film – base for metallization

### Characteristics

- matte appearance on both sides of graphite color
- excellent adhesion of aluminium cover
- does not contain antistatic additives

### Application

- to give the package a matte “silk” or “paper” look with the color graphite
- for decorative packaging / wrappers
- heat sealing by string is possible
- [For packing](#)
- for manual and machine wrapping of products (flowers, gifts, stationery, textile products, etc.)

### Storage

- Films should be stored on the pallets in a closed dry place and should not be exposed to direct sunlight, at a safe distance of not less than 1 m from heating devices or anything that can cause damage the package.
- The film should be kept in workplace not less than 48 hours before being used.
- Guaranteed storage period – 6 months from production date.

### Treatment

- the guaranteed period for maintaining the minimum permissible level of surface tension on the activated film surface from the date of manufacture, subject to proper storage conditions, is 3 months
- in the interests of minimizing the deterioration of surface dressing level, it is recommended to store the film at a temperature of no higher than 30°C and use it in a short time.

### Recycling

It's recommended to use primer when printing on metallized surface.

### Reeling

- Maximum roll diameter: 800 mm
- Film width in a roll from 290 to 2000 mm
- Diameter of paper cores (inside): 76, 152 mm

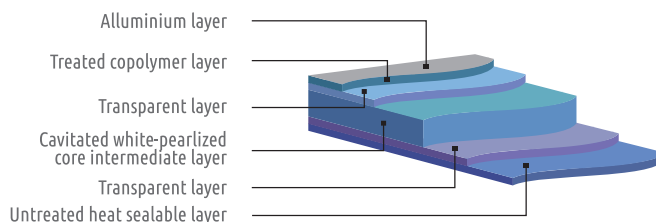
Attention! Information specified in this document is for reference only; it contains averaged technical characteristics of Waterfall Pro LLC products based on results of laboratory tests performed in Waterfall Pro LLC standard operation conditions. Waterfall Pro LLC gives no representations and/or warranties and is expressly relieved from any liability for infringement of any third parties' intellectual property rights arising from processing of Waterfall Pro LLC products.

Testing of Waterfall Pro LLC products in order to determine their suitability in terms of meeting specific objectives of a person intending to purchase Waterfall Pro LLC products is the sole responsibility of such a person who shall be responsible for any consequences related to processing and use of Waterfall Pro LLC products.

This document does not constitute a quotation and its provision to any person shall not create any rights and duties on the part of Waterfall Pro LLC.

## Description

**Metallized on cavitated white-pearlized layer heat sealable BOPP film for printing and lamination**



Properties		Unit	Limit	Method	Value		
Thickness*		µm	±5%	WATERFALL PRO	30	35	40
Density*		g/cm <sup>3</sup>	±10%		0,70		
Weight m <sup>2</sup> *		g/m <sup>2</sup>	±5%		21,00	24,50	28,00
Tensile strength*	MD	N/mm <sup>2</sup> (MPa)	not less	ASTM D882 ISO 527 GOST 14236	70		
	TD				140		
Elongation at break*	MD	%	not more		200		
	TD			60			
Kinetic coefficient of friction	untreated side/ untreated side	-	+0,10 -0,15	ASTM D1894 ISO 8295 GOST 27492	0,3		
Shrinkage at 120°C, 5 min*	MD	%	not more	ASTM D1204 ISO 11501 GOST 18616	4		
	TD				2		
Heat sealing strength at 130°C, 1 bar, 1 sec*	untreated side/ untreated side	N/15 mm	not less	ASTM F88/F88M D882 ISO 527 GOST 27319	2,5		
Heat sealing temperature*	untreated side/ untreated side	°C	-	WATERFALL PRO	105-140		
Surface tension**	treated side	mN/n (dyn/cm)	not less	ASTM D2578 ISO 8296	36		
Optical density	-	OD	not less	WATERFALL PRO	1,8		
WVTR-water vapour transmission rate at 38°C, 90% rel. humidity, 24 h		g/m <sup>2</sup> /24h	not more	ASTM F1249	1,5		
OTR-oxygen transmission rate at 23°C, 0% rel. humidity, 24 h		sm <sup>3</sup> /m <sup>2</sup> /24h	not more	ASTM D3985	150		

MD – Machine Direction; TD – Transverse Direction

\* performance is measured on BOPP film – base for metallization

\*\* guaranteed conservation period of activation on metallized side of film is 3 months from production date specified on identification roll tag

### Main characteristics

- long-term activation
- activation on both sides on demand
- excellent adhesion of aluminium cover
- excellent optical properties
- excellent barrier properties
- high coefficient of friction
- lowered density and high yield

### Application

- for packaging of products which require high barrier properties and protection from UV-light: ice-cream, chocolate and etc.
- for extension of products storage period

#### For packing

- on the high-speed HFFS and VFFS packaging machines
- with hot (heat sealing) and cold (using cold glue) seal formation
- Flow-Pack

#### For lamination

- with other films and materials in duplex, triplex
- with method of the solvent or nonsolvent (extrusion) lamination

#### For printing

- high-quality rotogravure and flexographic print
- using solvent paint

### Storage

- Films should be stored on the pallets in a closed dry place and should not be exposed to direct sunlight, at a safe distance of not less than 1 m from heating devices or anything that can cause damage the package.
- The film should be kept in workplace not less than 48 hours before being used.
- Guaranteed storage period – 6 months from production date.

### Treatment

The guaranteed period for maintaining the minimum permissible level of surface tension on the activated film surface from the date of manufacture, subject to proper storage conditions, is:

- for all film types (except metallized) – 6 months;
- for metallized film – 3 months.

In the interests of minimizing the deterioration of surface dressing level, it is recommended to store the film at a temperature of no higher than 30°C and use it in a short time.

### Recycling

- It's recommended to use primer when printing on metallized surface.

### Reeling

- Maximum roll diameter: 800 mm
- Film width in roll from 290 to 2000 mm
- Diameter of paper cores (inside): 76, 152 mm

Attention! Information specified in this document is for reference only; it contains averaged technical characteristics of Waterfall Pro LLC products based on results of laboratory tests performed in Waterfall Pro LLC standard operation conditions. Waterfall Pro LLC gives no representations and/or warranties and is expressly relieved from any liability for infringement of any third parties' intellectual property rights arising from processing of Waterfall Pro LLC products.

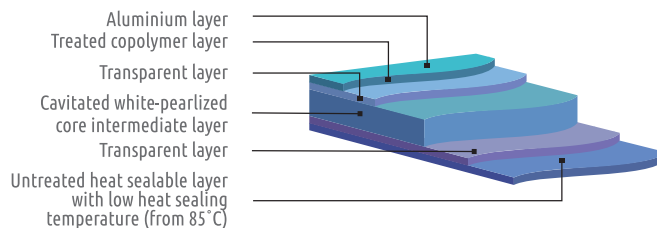
Testing of Waterfall Pro LLC products in order to determine their suitability in terms of meeting specific objectives of a person intending to purchase Waterfall Pro LLC products is the sole responsibility of such a person who shall be responsible for any consequences related to processing and use of Waterfall Pro LLC products.

This document does not constitute a quotation and its provision to any person shall not create any rights and duties on the part of Waterfall Pro LLC.



## Description

**Metallized on cavitated white-pearlized base heat sealable with low heat sealing threshold BOPP film for printing and lamination**



Properties	Unit	Limit	Method	Value	
Thickness*	μm	±5%	WATERFALL PRO	30      35      40	
Density*	g/cm <sup>3</sup>	±10%		0,70	
Weight m <sup>2</sup> *	g/m <sup>2</sup>	±5%		21,00      24,50      28,00	
Tensile strength*	MD	N/mm <sup>2</sup> (MPa)	not less	ASTM D882 ISO 527 GOST 14236	70
	TD				140
Elongation at break*	MD	%	not more	ASTM D1894 ISO 8295 GOST 27492	200
	TD				60
Kinetic coefficient of friction	untreated side / untreated side	-	±0,10	ASTM D1894 ISO 8295 GOST 27492	0,3
Shrinkage at 120°C, 5 min*	MD	%	not more	ASTM D1204 ISO 11501 GOST 18616	4
	TD				2
Heat sealing strength at 130°C, 1 bar, 1 sec*	untreated side / untreated side	N/15 mm	not less	ASTM F88/F88M D882 ISO 527 GOST 27319	2,5
Heat sealing temperature*	untreated side / untreated side	°C	-	WATERFALL PRO	85-140
Surface tension**	treated side	mN/n (dyn/cm)	not less	ASTM D2578 ISO 8296	36
Optical density	-	OD	not less	WATERFALL PRO	1,8
WVTR-water vapour transmission rate at 38°C, 90% rel. humidity, 24 h		g/m <sup>2</sup> /24h	not more	ASTM F1249	1,5
OTR-oxygen transmission rate at 23°C, 0% rel. humidity, 24 h		cm <sup>3</sup> /m <sup>2</sup> /24h	not more	ASTM D3985	150

MD – Machine Direction; TD – Transverse Direction

\* Performance is measured on BOPP film – base for metallization

\*\* Guaranteed conservation period of activation on metallized side of film is 3 months from its production date specified on identification roll tag

### Main characteristics

- low heat sealing temperature
- long-term activation
- activation on both sides on demand
- excellent adhesion of aluminium cover
- excellent optical properties
- excellent barrier properties
- high coefficient of friction
- lowered density and high yield

### Application

- for packaging of products which require high barrier properties and protection from UV-light: ice-cream, chocolate and etc.
- for extension of products storage period

#### For packing

- on the high-speed HFFS and VFFS packaging machines
- with hot (heat sealing) seal formation at lower temperatures (from 85°C) and cold (using cold glue)
- Flow-Pack

#### For lamination

- with other films and materials in duplex, triplex
- using solvent and nonsolvent (extrusive) lamination

#### For printing

- high-quality rotogravure and flexographic print
- using solvent paint

### Storage

- Films should be stored on the pallets in a closed dry place and should not be exposed to direct sunlight, at a safe distance of not less than 1 m from heating devices or anything that can cause damage the package.
- The film should be kept in workplace not less than 48 hours before being used.
- Guaranteed storage period – 6 months from production date.

### Treatment

The guaranteed period for maintaining the minimum permissible level of surface tension on the activated film surface from the date of manufacture, subject to proper storage conditions, is:

- for all film types (except metallized) – 6 months;
- for metallized film – 3 months.

In the interests of minimizing the deterioration of surface dressing level, it is recommended to store the film at a temperature of no higher than 30°C and use it in a short time.

### Recycling

It's recommended to use primer when printing on metallized surface.

### Reeling

- Maximum roll diameter: 800 mm
- Film width in a roll from 290 to 2000 mm
- Diameter of paper cores (inside): 76, 152 mm

Attention! Information specified in this document is for reference only; it contains averaged technical characteristics of Waterfall Pro LLC products based on results of laboratory tests performed in Waterfall Pro LLC standard operation conditions. Waterfall Pro LLC gives no representations and/or warranties and is expressly relieved from any liability for infringement of any third parties' intellectual property rights arising from processing of Waterfall Pro LLC products.

Testing of Waterfall Pro LLC products in order to determine their suitability in terms of meeting specific objectives of a person intending to purchase Waterfall Pro LLC products is the sole responsibility of such a person who shall be responsible for any consequences related to processing and use of Waterfall Pro LLC products.

This document does not constitute a quotation and its provision to any person shall not create any rights and duties on the part of Waterfall Pro LLC.