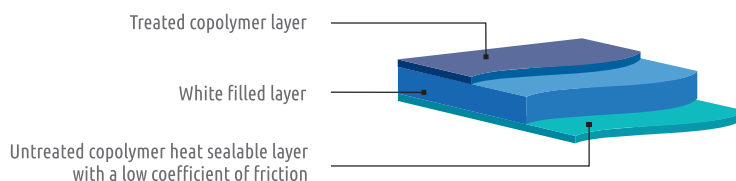


## Description

**White heat sealable BOPP film with a low coefficient of friction for printing, lamination and packaging**



Properties	Unit	Limit	Method	Value				
Thickness	μm	±5%	WATERFALL PRO	15	20	25	30	35
Density	g/cm <sup>3</sup>	±10%		0,96				
Weight m <sup>2</sup>	g/m <sup>2</sup>	±5%		14,40	19,20	24,00	28,80	33,60
Tensile strength	MD	N/mm <sup>2</sup> (MPa)	not less	110		120		
	TD			210	220	230		
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				
Shrinkage at 120°C, 5 min	MD	%	not more	ASTM D1204 ISO 11501 GOST 18616				
	TD			4				
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				
	untreated side/ untreated side			2,5				
Heat sealing temperature*	untreated side/ untreated side	°C	-	WATERFALL PRO				
Optical transmission	-	%	not more	60	50	45	40	35
Gloss	untreated side	%	not less	ASTM D2457 ISO 2813				
Surface tension**	treated side	mN/n (dyn/cm)	not less	ASTM D2578 ISO 8296				

MD – Machine Direction; TD – Transverse Direction

\* the typical values are indicated, guaranteed only for untreated side

\*\* 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

With double-side processing – strength and range of welding are not applicable

Kinetic coefficient of friction in 15 days from the date of production

### Main characteristics

- all white non-transparent appearance
- stable low coefficient of friction
- good UV light protection of packaged goods

### Application

- for the production of flexible packaging for products which require protection from UV-light: ice cream, chocolate, flour, curd products, sweets and etc.
- for the production of cut-and-stack bottle labels in the original films form or in lamination

#### 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
- with the use of 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

In the process of printing and lamination it is recommended to perform corona treatment.

### Reeling

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

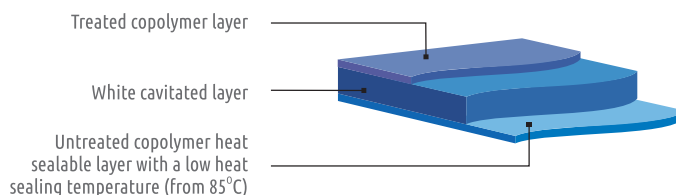
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## Description

**White heat sealable BOPP film with low threshold of heat sealability for printing, lamination and packaging**



Properties		Unit	Limit	Method	Value				
Thickness		μm	±5%	WATERFALL PRO	15	20	25	30	35
Density		g/cm <sup>3</sup>	±10%		0,96				
Weight m <sup>2</sup>		g/m <sup>2</sup>	±5%		14,40	19,20	24,00	28,80	33,60
Tensile strength	MD	N/mm <sup>2</sup> (MPa)	not less	ASTM D882 ISO 527 GOST 14236	110		120		
	TD				210	220	230		
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	0,25				
Shrinkage at 120°C, 5 min	MD	%	not more	ASTM D1204 ISO 11501	4				
	TD			GOST 18616	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				
Optical transmission	-	%	not more	ASTM D1003 ISO 14782 GOST 15875	60	50	45	40	35
Gloss	untreated side	%	not less	ASTM D2457 ISO 2813	45				
Surface tension**	treated side	mN/n (dyn/cm)	not less	ASTM D2578 ISO 8296	38				

MD – Machine Direction; TD – Transverse Direction

\* typical values are indicated, guaranteed only for untreated layer

\*\* 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

With double-side processing – strength and range of welding are not applicable

Kinetic coefficient of friction in 15 days from the date of production

### Main characteristics

- low heat sealing temperature
- all white non-transparent appearance
- stable low coefficient of friction
- very high UV light protection of packaged goods

### Application

- For flexible packaging of products which require protection from UV-light: ice cream, chocolate, flour, curd products, sweets and etc.
- for the production of wrap-around bottle labels in the original films form or in lamination

#### 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 using solvent or non-solvent (extrusive) lamination method
- with method of the solvent or nonsolvent (extrusion) lamination

#### For printing

- high-quality rotogravure and flexographic print
- with the use of 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

In the process of printing and lamination it is recommended to perform corona treatment.

### Reeling

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

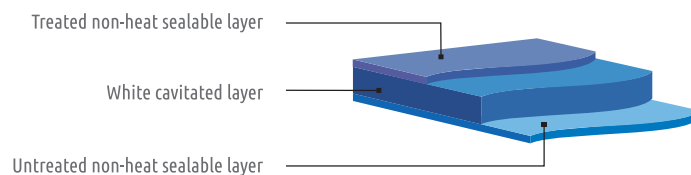
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## Description

### White non-heat sealable BOPP film for adhesive tapes production



Properties		Unit	Limit	Method	Value					
Thickness		μm	±5%	WATERFALL PRO	23	25	27	30	35	40
Density		g/cm <sup>3</sup>	±10%		0,93					
Weight m <sup>2</sup>		g/m <sup>2</sup>	±5%		21,39	23,25	25,11	27,90	32,55	37,20
Tensile strength	MD	N/mm <sup>2</sup> (MPa)	not less	ASTM D882 ISO 527 GOST 14236	120		140			
	TD				240		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*	untreated side / untreated side	N/15 mm	not less	ASTM F88/F88M D882 ISO 527 GOST 27319	non-heat sealable					
Heat sealing temperature*	untreated side / untreated side	°C	-	ISO 527	non-heat sealable					
Optical transmission	-	%	not more	GOST 27319	50					
Gloss	untreated side	%	not less	ASTM D2457 ISO 2813	50					
Surface tension*	treated side	mN/n (dyn/cm)	not less	ASTM D2578 ISO 8296	38					

MD – Machine Direction; TD – Transverse Direction

\*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

- full white appearance with high level of non-transparency which allows to exclude usage of white glue and white paint
- high mechanical properties
- low heat sealing wrap for preserving print size when drying glue
- does not contain migrating additives

### Application

- used for adhesive tapes production – the scotch with hot and water-dispersible glues, with polyurethane glue if necessary
- manual application in decorative wrapping

#### For lamination

- with other films and materials (if necessary)
- using solvent or non-solvent (extrusive) lamination method

#### For printing

- high-quality rotogravure and flexographic print
- with the use of solvent paint
- allows to exclude usage of white glue or white 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 6 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

In the process of printing and lamination it is recommended to perform corona treatment.

### Reeling

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

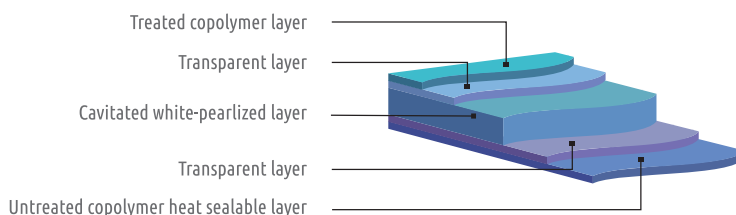
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## Description

**White-pearlized cavitated heat sealable BOPP film for printing, lamination and packaging**



Properties		Unit	Limit	Method	Value			
Thickness		μm	±5%	WATERFALL PRO	30	35	40	45
Density		g/cm <sup>3</sup>	±10%		0,72			
Weight m <sup>2</sup>		g/m <sup>2</sup>	±5%		21,60	25,20	28,80	32,40
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			
Optical transmission	-	%	not more	ASTM D1003 ISO 14782 GOST 15875	40	35		30
Gloss	untreated side	%	not less	ASTM D2457 ISO 2813	80			
Surface tension**	treated side	mN/n (dyn/cm)	not less	ASTM D2578 ISO 8296	38			

MD – Machine Direction; TD – Transverse Direction

\* the typical values are indicated, guaranteed only for untreated side

\*\* 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

With double-side processing – strength and range of welding are not applicable

Kinetic coefficient of friction in 15 days from the date of production

### Main characteristics

- protection from UV light
- all white appearance with a high level of non-transparency and gloss
- lowered density and high yield
- film color allows to exclude white paint from printing
- color printing on this film is brighter

### Application

- For packaging of products which require protection from UV-light: ice cream, chocolate, flour, curd products, sweets and etc.

#### 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
- with the use of 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

In the process of printing and lamination it is recommended to perform corona treatment.

### Reeling

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

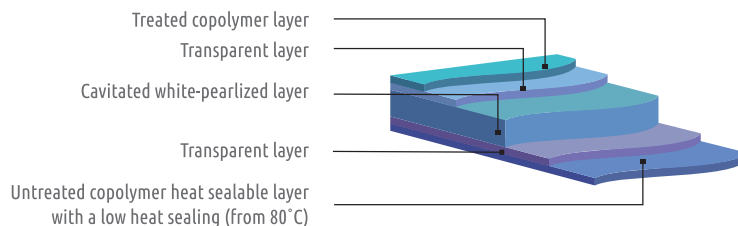
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## Description

**White-pearlized cavitated heat sealable with low heat sealability BOPP film for printing, lamination and packaging**



Properties		Unit	Limit	Method	Value			
Thickness		μm	±5%	WATERFALL PRO	30	35	40	45
Density		g/cm <sup>3</sup>	±10%		0,72			
Weight m <sup>2</sup>		g/m <sup>2</sup>	±5%		21,60	25,20	28,80	32,40
Tensile strength	MD	N/mm <sup>2</sup> (MPa)	not less	ASTM D882 ISO 527	70			
	TD				140			
Elongation at break	MD	%	not more	GOST 14236	200			
	TD				60			
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	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	80-140			
Optical transmission	-	%	not more	ASTM D1003 ISO 14782 GOST 15875	40	35	30	
Gloss	untreated side	%	not less	ASTM D2457 ISO 2813	80			
Surface tension**	treated side	mN/n (dyn/cm)	not less	ASTM D2578 ISO 8296	38			

MD – Machine Direction; TD – Transverse Direction

\* the typical values are indicated, guaranteed only for untreated side

\*\* 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

With double-side processing – strength and range of welding are not applicable

Kinetic coefficient of friction in 15 days from the date of production

### Main characteristics

- low heat sealing temperature
- protection from UV light
- all white appearance with a high level of non-transparency and gloss
- lowered density and high yield
- film color allows to exclude white paint from printing
- color printing on such film is brighter

### Application

- for packaging of products which require protection from UV-light: ice cream, chocolate, flour, curd products, sweets and etc.

#### 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
- with method of the solvent or nonsolvent (extrusion) lamination

#### For printing

- high-quality rotogravure and flexographic print
- with the use of 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

In the process of printing and lamination it is recommended to perform corona treatment.

### Reeling

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

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