

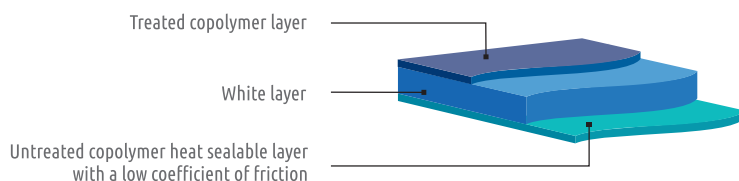


# **BOPP FILMS**

## **TECHNICAL DATA SHEETS**

## Description

**BOPP film white,  
heat sealable with medium seal threshold,  
with activation on one side,  
for printing, lamination and packaging,  
in cases requiring protection from UV light**



Properties	Unit	Limit	Method	Value					
Thickness	µm	±5%	ISO 4591, 4593 GOST 17035	15	20	25	30	35	
Density	g/cm <sup>3</sup>	±10%	WATERFALL PRO	0,93					
Weight m <sup>2</sup>	g/m <sup>2</sup>	±5%	GOST 13199	13,95	18,60	23,25	27,90	32,55	
Tensile strength	MD	N/mm <sup>2</sup> (Мпа)	not less	ASTM D882 ISO 527 GOST 14236	110		120		
	TD				220		230		
Elongation at break	MD	%	not more	ASTM D1894 GOST 27492	200				
	TD				70				
Kinetic coefficient of friction*	UT / UT	-	±0,10	ASTM D1894 GOST 27492	0,25				
Shrinkage at 120°C, 5 мин	MD	%	not more	ASTM D1204	4				
	TD				2				
Heat sealing strength at 115°C, 1 bar, 1 sec. *	UT / UT	N/15 mm	not less	ASTM F88/F88M, D882 ISO 527	2,2				
Minimal heat sealing temperature not less than 1H/15mm at 1 bar, sec.*	UT / UT	°C	-	WATERFALL PRO	105				
Haze	-	%	not more	ASTM D1003 GOST R 8.829	60	50	45	40	35
Gloss	T	%	not less	ASTM D2457	45				
Surface tension**	T	mN/m (dyn/cm)	not less	ASTM D2578 ISO 8296	38				
MD – machine direction TD – transverse direction		T – treated side UT – untreated side		* these are typical values, guaranteed for the untreated side only. When processing on both sides, this value is 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

- 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 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

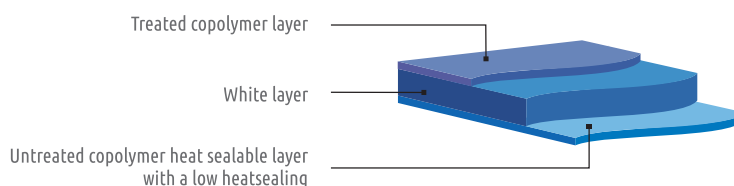
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## Description

**BOPP film white,  
heat sealable with a low sealing threshold,  
with activation on one side,  
for printing, lamination and packaging,  
in cases requiring protection from UV light and  
lower heat sealing temperatures**



Properties		Unit	Limit	Method	Value					
Thickness		µm	±5%	ISO 4591, 4593 GOST 17035	15	20	25	30	35	
Density		g/cm <sup>3</sup>	±10%	WATERFALL PRO	0,93					
Weight m <sup>2</sup>		g/m <sup>2</sup>	±5%	GOST 13199	13,95	18,60	23,25	27,90	32,55	
Tensile strength	MD	N/mm <sup>2</sup> (Мпа)	not less	ASTM D882 ISO 527 GOST 14236	110			120		
	TD				220			230		
Elongation at break	MD	%	not more	ASTM D1894 GOST 27492	200					
	TD				70					
Kinetic coefficient of friction		UT / UT	-	ASTM D1894 GOST 27492	0,25					
Shrinkage at 120°C, 5 мин	MD	%	not more	ASTM D1204	4					
	TD				2					
Heat sealing strength at 95°C, 1 бар, 1 sec.		UT / UT	N/15 mm	not less	ASTM F88/F88M, D882 ISO 527					
Minimal heat sealing temperature not less than 1H/15mm at 1 бар, sec.		UT / UT	°C	-	WATERFALL PRO					
Haze		-	%	not more	ASTM D1003 GOST R 8.829	60	50	45	40	35
Gloss		T	%	not less	ASTM D2457	45				
Surface tension		T	mN/m (dyn/cm)	not less	ASTM D2578 ISO 8296	38				
MD – machine direction TD – transverse direction		T – treated side UT – untreated side								

### 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 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

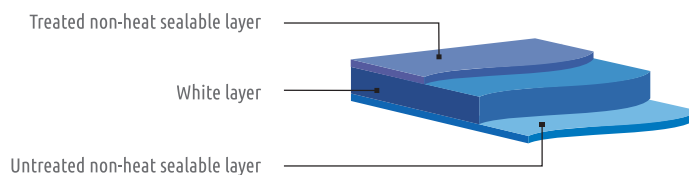
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## Description

**BOPP film white,  
non-heat sealable,  
with activation on one side,  
for printing, lamination and production  
of adhesive tapes – scotch tape**



Properties		Unit	Limit	Method	Value					
Thickness		µm	±5%	ISO 4591, 4593 GOST 17035	23	25	27	30	35	40
Density		g/cm <sup>3</sup>	±10%	WATERFALL PRO	0,93					
Weight m <sup>2</sup>		g/m <sup>2</sup>	±5%	GOST 13199	21,39	23,25	25,11	27,90	32,55	37,20
Tensile strength	MD	N/mm <sup>2</sup> (Мпа)	not less	ASTM D882 ISO 527 GOST 14236	120			140		
	TD				240			250		
Elongation at break	MD	%	not more	ASTM D1894 GOST 27492	200					
	TD				70					
Kinetic coefficient of friction*		UT / UT	-	ASTM D1894 GOST 27492	0,35					
Shrinkage at 120°C, 5 мин	MD	%	not more	ASTM D1204	4					
	TD				2					
Heat sealing strength		-	N/15 mm	ASTM F88/F88M, D882 ISO 527	non-heat sealable					
Minimal heat sealing temperature		-	°C	WATERFALL PRO	non-heat sealable					
Haze		-	%	ASTM D1003 GOST R 8.829	50					
Gloss		T	%	ASTM D2457	50					
Surface tension**		T	mN/m (dyn/cm)	ASTM D2578 ISO 8296	38					
MD – machine direction TD – transverse direction		T – treated side UT – untreated side		* these are typical values, guaranteed for the untreated side only. When processing on both sides, this value is 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

- 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

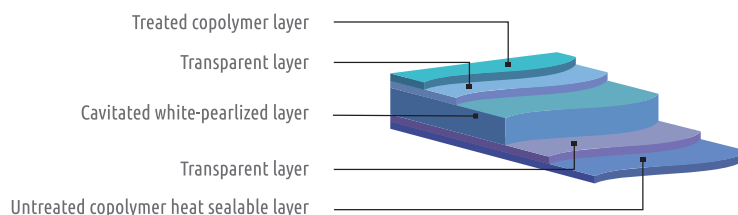
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## Description

**BOPP film white-pearl filled,  
heat sealable with an average seal threshold,  
with activation on one side,  
for printing, lamination and packaging,  
in cases requiring protection from UV light**



Properties	Unit	Limit	Method	Value		
Thickness	µm	±5%	ISO 4591, 4593 GOST 17035	30	35	40
Density	g/cm <sup>3</sup>	±10%	WATERFALL PRO	0,72		
Weight m <sup>2</sup>	g/m <sup>2</sup>	±5%	GOST 13199	21,60	25,20	28,80
Tensile strength	MD	N/mm <sup>2</sup> (Мпа)	not less	ASTM D882 ISO 527 GOST 14236	70	
	TD				140	
Elongation at break	MD	%	not more	ASTM D1894 GOST 27492	200	
	TD				60	
Kinetic coefficient of friction*	UT / UT	-	+0,10 -0,15	0,3		
Shrinkage at 120°C, 5 мин	MD	%	not more	ASTM D1204	4	
	TD				2	
Heat sealing strength at 115°C, 1 bar, 1 sec. *	UT / UT	N/15 mm	not less	ASTM F88/F88M, D882 ISO 527	2,5	
Minimal heat sealing temperature not less than 1H/15mm at 1 bar, sec.	UT / UT	°C	-	WATERFALL PRO	105	
Optical transmission	-	%	not more	ASTM D1003 GOST R 8.829	40	35
Gloss	T	%	not less	ASTM D2457	80	
Surface tension**	T	mN/m (dyn/cm)	not less	ASTM D2578 ISO 8296	38	
MD – machine direction TD – transverse direction		MT – treated side UT – untreated side		* these are typical values, guaranteed for the untreated side only. When processing on both sides, this value is 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

- 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 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

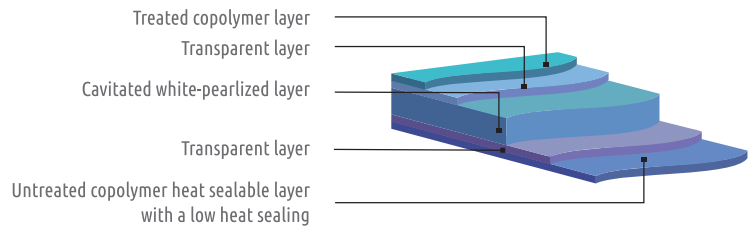
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## Description

**White-pearl filled BOPP film,  
heat sealable with a low sealing threshold,  
with activation on one side,  
for printing, lamination and packaging,  
in cases requiring protection from UV light and  
lower heat sealing temperatures**



Properties	Unit	Limit	Method	Value		
Thickness	µm	±5%	ISO 4591, 4593 GOST 17035	30	35	40
Density	g/cm <sup>3</sup>	±10%	WATERFALL PRO	0,72		
Weight m <sup>2</sup>	g/m <sup>2</sup>	±5%	GOST 13199	21,60	25,20	28,80
Tensile strength	MD	N/mm <sup>2</sup> (Мпа)	not less	ASTM D882 ISO 527 GOST 14236	70	
	TD				140	
Elongation at break	MD	%	not more	ASTM D1894 GOST 27492	200	
	TD				60	
Kinetic coefficient of friction	UT / UT	-	±0,10	0,2		
Shrinkage at 120°C, 5 мин	MD	%	not more	ASTM D1204	4	
	TD				2	
Heat sealing strength at 95°C, 1 бар, 1 sec.	UT / UT	N/15 mm	not less	ASTM F88/F88M, D882 ISO 527	2,2	
Minimal heat sealing temperature not less than 1H/15mm at 1 бар, sec.	UT / UT	°C	-	WATERFALL PRO	80	
Optical transmission	-	%	not more	ASTM D1003 GOST R 8.829	40	35
Gloss	T	%	not less	ASTM D2457	80	
Surface tension	T	mN/m (dyn/cm)	not less	ASTM D2578 ISO 8296	38	

MD – machine direction  
TD – transverse direction  
T – treated side  
UT – untreated side

### 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 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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