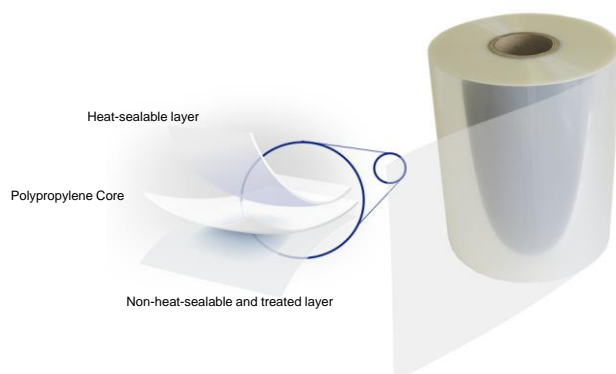


Main Characteristics

- Non-treated side heat-sealable from 105°C;
- Surface treatment on inner or outer layer;
- Optimum optical properties (gloss and transparency).

Typical Applications

- Flexible packaging for food: cookies, snacks, chocolate bars, cereal bars, labels and decorative applications in general;
- Non-food flexible packaging: monolayers or laminate.



Properties		Methodology	Unit	Range	15TSB	17TSB	20TSB	25TSB	30TSB	45TSB	50TSB
Physical Properties											
Nominal Thickness	DIN 53370	µm	Target	15.0	17.0	20.0	25.0	30.0	45.0	50.0	
			Min.	14.3	16.2	19.0	23.8	28.5	42.8	47.5	
		Max.	15.8	17.9	21.0	26.3	31.5	47.3	52.5		
		Gauge	Target	59.1	66.9	78.7	98.4	118.1	177.2	196.9	
Min.	56.1		63.6	74.8	93.5	112.2	168.3	187.0			
Max.	62.0	70.3	82.7	103.3	124.0	186.0	206.7				
Unit Weight	ASTM D 4321	g/m²	Target	13.6	15.4	18.1	22.6	27.2	40.7	45.3	
			Min.	12.9	14.6	17.2	21.5	25.8	38.7	43.0	
		Max.	14.3	16.2	19.0	23.8	28.5	42.8	47.5		
		lb/ream	Target	8.3	9.5	11.1	13.9	16.7	25.0	27.8	
Min.	7.9		9.0	10.6	13.2	15.8	23.8	26.4			
Max.	8.8	9.9	11.7	14.6	17.5	26.3	29.2				
Yield	ASTM D 4321	m²/kg	Target	73.7	65.0	55.2	44.2	36.8	24.6	22.1	
			Min.	70.2	61.9	52.6	42.1	35.1	23.4	21.0	
		Max.	77.5	68.4	58.2	46.5	38.8	25.8	23.3		
		in²/lb	Target	51792	45698	38844	31075	25896	17264	15537	
Min.	49325		43522	36994	29595	24663	16442	14798			
Max.	54517	48104	40888	32710	27259	18172	16355				
Surface Treatment	T	ASTM D 2578	dinas/cm	Target	42						
				Min.	38						
Coefficient of Friction	NT	ASTM D 1894	-	Target	0.35						
				Min.	0.20						
				Max.	0.42						
Optical Properties											
Haze	ASTM D 1003	%	Target	1.5	1.7	1.7	1.7	1.8	1.8	1.8	
			Max.	3.0							
Gloss (45°)	ASTM D 2457	u.b.	Target	95							
			Min.	80							
Mechanical Properties											
Tensile Strength	MD	ASTM D 882	N/mm²	Target	140						
	TD			240							
	MD		lbf/in²	Target	20305						
	TD			34809							
Elongation at Break	MD	ASTM D 882	%	Target	160	170	185	200	210	225	240
	TD			40							
Shrinkage	MD	ASTM D 1204	%	Target	3						
	TD			1							
Sealing Range	NT	ASTM F 88	°C	Target	105 - 130						
			°F	Target	221 - 266						
Sealing Strength	NT	ASTM F 88	g/25mm or gf/in	Target	350	400	450	550	600	700	800
				Min.	350						
Barrier Properties											
TPVA 38°C / 90%UR	ASTM F 1249	g H ₂ O / (m².dia)	Target	≤ 9.5	≤ 9.0	≤ 8.5	≤ 6.5	≤ 5.5	≤ 4.5	≤ 3.5	
WVTR 100°F / 90%RH	ASTM F 1249	g H ₂ O / (100in².day)	Target	≤ 0.61	≤ 0.58	≤ 0.55	≤ 0.42	≤ 0.35	≤ 0.29	≤ 0.22	
TPO ₂ 23°C / 0%UR	ASTM D 3985	cm³ O ₂ / (m².dia)	Target	≤ 3800	≤ 3300	≤ 3100	≤ 2500	≤ 2200	≤ 1700	≤ 1250	
OTR 73°F / 0%RH	ASTM D 3985	cm³ O ₂ / (100in².day)	Target	≤ 244	≤ 212	≤ 199	≤ 161	≤ 141	≤ 109	≤ 80	

1. Acronyms:

MD: Machine Direction | TD: Transverse Direction;
NT: Non Treated Layer | T: Treated Layer.

2. Additional:

The restrained information in this datasheet represent typical data, and does not constitute genuine warranty liability as far as the product process and or application. In case of doubts or development of other thicknesses or applications, consult your dealer or send e-mail to: contato@polofilms.com.br.

Food Contact Regulations

SEAL Family films comply with Mercosul, ANVISA, FDA (Food and Drug Administration) and the European Community legislations for applications involving direct contact with food. Full details are provided in the Declaration of Conformity. Customers intending to use SEAL Family films for applications intended to come into contact with food should request a copy of that document from POLO Films. The MSDS (Material Safety Data Sheet), as well as the evaluation of conformity for contact with food from other legislations are also available upon request. Contact your dealer for any questions.

Storage and Transportation Terms & Conditions

All products are stored and transported in dry, covered and clean environments. It is recommended that storage and transportation take place at temperature around 30°C and 60% relative humidity.

If the temperature and humidity are not as recommended, the following issues may occur:

- Decreased level of surface treatment, leading to printing and/or lamination difficulties;
- Decreased film transparency;
- Too low CoF, making processing and machinability difficult.

BOPP films are recommended to be kept at operating room temperature for 24 hours before use.

Dimensional Specifications / Product Validity

Width	Minimum: 0 mm Maximum: 2 mm (from standard width)
Outer Diameter*	Minimum: 30 mm Maximum: 20 mm (from standard diameter)
Core	Minimum: 1 mm Maximum: 1 mm (from standard diameter)
Splices per roll	Maximum: 2
% of Splices per order	Maximum: 30%
Shelf Life (after production)	6 months

* For other dimensional information, consult your dealer.

Polo Films Nomenclature

Unit Weight or Thickness | Technology | Main Feature | Sealing | Treatment

20 TSB12

Unit Weight/ Thickness

Expressed in g/m². Used for white/opaque films;
Expressed in µm. Used for transparent, matte and metallized films.

Technology

T - Tenter | C - Cast.

Main Feature

SB - Transparent heat-sealable base metallization.

Specialty

Not applicable.

Sealing

0 - Not Sealable;
1 - Sealing on the Inner Face;
2 - Sealing on the Outer Face;
3 - Sealing on both Sides.

Treatment

0 - No Treatment;
1 - Treatment on Inner Face;
2 - Treatment on Outer Face;
3 - Treatment on both Sides.