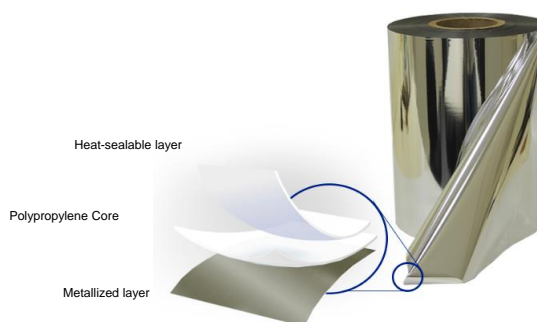


Main Characteristics

- Heat-sealable on non-metallized side from 105°C;
- Medium water vapor barrier;
- Excellent light barrier;
- Stable CoF at higher temperature than room temperature (Stable Hot Slip);
- Excellent performance in horizontal and vertical form-fill-seal packing machines.

Typical Applications

- Flexible packaging for food: cookies, snacks, chocolate bars, ice cream, cereal bars;
- Non-food flexible packaging: decorative applications in general;
- Developed for HFFS - Horizontal Form Fill Seal and VFFS - Vertical Form Fill Seal filling processes.



Properties	Methodology	Unit	Range	17TMSHTS	20TMSHTS	
Physical Properties						
Nominal Thickness	DIN 53370	µm	Target	17.0	20.0	
			Min.	16.2	19.0	
			Max.	17.9	21.0	
Gauge			Target	66.9	78.7	
			Min.	63.6	74.8	
			Max.	70.3	82.7	
Unit Weight	ASTM D 4321	g/m ²	Target	15.4	18.1	
			Min.	14.6	17.2	
			Max.	16.2	19.0	
		lb/ream	Target	9.5	11.1	
			Min.	9.0	10.6	
			Max.	9.9	11.7	
Yield	ASTM D 4321	m ² /kg	Target	65.0	55.2	
			Min.	61.9	52.6	
			Max.	68.4	58.2	
		in ² /lb	Target	45698	38844	
			Min.	43522	36994	
			Max.	48104	40888	
Surface Treatment	ASTM D 2578	dinas/cm	Target	NA		
			Min.	NA		
Coefficient of Friction	NT	ASTM D 1894	-	Target	0.25	
				Min.	0.15	
				Max.	0.35	
Optical Properties						
Optical Density	-	%	Target	≥ 2.0		
Mechanical Properties						
Tensile Strength	MD	ASTM D 882	N/mm ²	Target	150	
	TD			270		
	MD		lbf/in ²	Target	21756	
	TD			39160		
Elongation at Break	MD	ASTM D 882	%	Target	190	
	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	450	500
				Min.	300	
Barrier Properties						
TPVA 38°C / 90%UR	ASTM F 1249	g H ₂ O / (m ² .dia)	Target	≤ 0.8	≤ 0.5	
WVTR 100°F / 90%RH	ASTM F 1249	g H ₂ O / (100in ² .day)	Target	≤ 0.05	≤ 0.03	
TPO ₂ 23°C / 0%UR	ASTM D 3985	cm ³ O ₂ / (m ² .dia)	Target	≤ 120	≤ 100	
OTR 73°F / 0%RH	ASTM D 3985	cm ³ O ₂ / (100in ² .day)	Target	≤ 7.7	≤ 6.4	

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.

Notes:

The use of metallized films in the conversion process is recommended within a maximum period of 2 months from the billing date, in order to minimize the risk of loss of integrity of the metal layer and damage to the barrier properties. Climatic conditions have a very relevant influence on the surface energy of the metallized face. Therefore, we recommend the application of primer or corona treatment on the metallized face before printing or laminating with another substrate.



Food Contact Regulations

METAL 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 METAL 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 | Specialty | Sealing | Treatment

20TMSHTS10

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 | P - BOPET.

Main Feature

MS - Heat-sealable metallized for printing and/or lamination.

Specialty

HTS - Stable slip at high temperatures.

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.