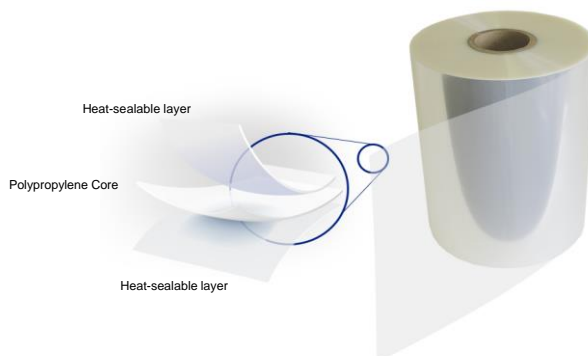


## Main Characteristics

- Both sides heat-sealable from 105°C;
- No surface treatment;
- Optimum optical properties (gloss and transparency);
- Excellent performance in packing machines.

## Typical Applications

- Overwrapping for food: bonbon boxes, cookies and food in general;
- Non-food overwrapping: toilet soap, toothpaste grouping;
- Overwrapping in general.



Properties	Methodology	Unit	Range	19TFWHSK	20TFWHSK
<b>Physical Properties</b>					
Nominal Thickness	DIN 53370	µm	Target	19.0	20.0
			Min.	18.1	19.0
			Max.	20.0	21.0
		Gauge	Target	74.8	78.7
			Min.	71.1	74.8
			Max.	78.5	82.7
Unit Weight	ASTM D 4321	g/m <sup>2</sup>	Target	17.3	18.3
			Min.	16.5	17.3
			Max.	18.2	19.2
		lb/ream	Target	10.7	11.2
			Min.	10.1	10.7
			Max.	11.2	11.8
Yield	ASTM D 4321	m <sup>2</sup> /kg	Target	57.6	54.8
			Min.	54.9	52.2
			Max.	60.7	57.6
		in <sup>2</sup> /lb	Target	40530	38503
			Min.	38600	36670
			Max.	42663	40530
Surface Treatment	T	ASTM D 2578	dinas/cm	Target	NA
				Min.	NA
Coefficient of Friction	NT	ASTM D 1894	-	Target	0.30
				Min.	0.24
				Max.	0.36
<b>Optical Properties</b>					
Haze	ASTM D 1003	%	Target	1.8	
			Max.	2.5	
Gloss (45°)	ASTM D 2457	u.b.	Target	95	
			Min.	85	
<b>Mechanical Properties</b>					
Tensile Strength	MD	ASTM D 882	N/mm <sup>2</sup>	Target	170
	TD			300	
	MD		lbf/in <sup>2</sup>	Target	24656
	TD			43511	
Elongation at Break	MD	ASTM D 882	%	Target	150
	TD			50	
Shrinkage	MD	ASTM D 1204	%	Target	9
	TD			10	
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	470
				Min.	300
<b>Barrier Properties</b>					
TPVA   38°C / 90%UR	ASTM F 1249	g H <sub>2</sub> O / (m <sup>2</sup> .dia)	Target	≤ 7.0	
WVTR   100°F / 90%RH	ASTM F 1249	g H <sub>2</sub> O / (100in <sup>2</sup> .day)	Target	≤ 0.45	
TPO <sub>2</sub>   23°C / 0%UR	ASTM D 3985	cm <sup>3</sup> O <sub>2</sub> / (m <sup>2</sup> .dia)	Target	≤ 2100	
OTR   73°F / 0%RH	ASTM D 3985	cm <sup>3</sup> O <sub>2</sub> / (100in <sup>2</sup> .day)	Target	≤ 135	

1. Acronyms:

MD: Machine Direction | TD: Transverse Direction;  
NT: Non Treated Layer | T: Treated Layer;  
NA: Not Applicable.

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

<b>Width</b>	<b>Minimum: 1 mm   Maximum: 1 mm (from standard width)</b>
<b>Outer Diameter*</b>	<b>Minimum: 10 mm   Maximum: 10 mm (from standard diameter)</b>
<b>Core</b>	<b>Minimum: 1 mm   Maximum: 1 mm (from standard diameter)</b>
<b>Splices per roll</b>	<b>Maximum: 1</b>
<b>% of Splices per order</b>	<b>Maximum: 30%</b>
<b>Shelf Life (after production)</b>	<b>9 months</b>

\* For other dimensional information, consult your dealer.

## Polo Films Nomenclature

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

# 20 TFW HSK 30

### Unit Weight/ Thickness

Expressed in g/m<sup>2</sup>. Used for white/opaque films;  
Expressed in µm. Used for transparent, matte and metallized films.

### Technology

T - Tenter | C - Cast | P - BOPET.

### Main Feature

FW - Transparent heat-sealable for overwrapping.

### Specialty

HSK - High shrinkage and stiffness.

### 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.