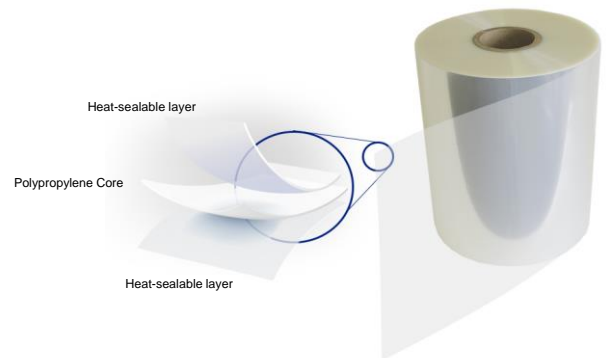


## Main Characteristics

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

## Typical Applications

- Overwrapping for soft cigarette pack (tobacco).



| Properties                     | Methodology | Unit   | Range               | 20TFC  | 25TFC     | 30TFC  |
|--------------------------------|-------------|--|---------------------|--------|-----------|--------|
| <b>Physical Properties</b>     |             |  |                     |        |           |        |
| Nominal Thickness              | DIN 53370   | µm   | Target              | 20.0   | 25.0      | 30.0   |
|                                |             |  | Min.                | 19.0   | 23.8      | 28.5   |
|                                |             |  | Max.                | 21.0   | 26.3      | 31.5   |
|                                |             | Gauge  | Target              | 78.7   | 98.4      | 118.1  |
|                                |             |  | Min.                | 74.8   | 93.5      | 112.2  |
|                                |             |  | Max.                | 82.7   | 103.3     | 124.0  |
| Unit Weight                    | ASTM D 4321 | g/m <sup>2</sup>   | Target              | 18.3   | 22.8      | 27.4   |
|                                |             |  | Min.                | 17.3   | 21.7      | 26.0   |
|                                |             |  | Max.                | 19.2   | 24.0      | 28.8   |
|                                |             | lb/ream  | Target              | 11.2   | 14.0      | 16.8   |
|                                |             |  | Min.                | 10.7   | 13.3      | 16.0   |
|                                |             |  | Max.                | 11.8   | 14.7      | 17.7   |
| Yield                          | ASTM D 4321 | m <sup>2</sup> /kg   | Target              | 54.8   | 43.8      | 36.5   |
|                                |             |  | Min.                | 52.2   | 41.7      | 34.8   |
|                                |             |  | Max.                | 57.6   | 46.1      | 38.4   |
|                                |             | in <sup>2</sup> /lb  | Target              | 38503  | 30803     | 25669  |
|                                |             |  | Min.                | 36670  | 29336     | 24447  |
|                                |             |  | Max.                | 40530  | 32424     | 27020  |
| Surface Treatment              | T           | ASTM D 2578  | dinas/cm            | Target | NA        |        |
|                                |             |  |                     | Min.   | NA        |        |
| Coefficient of Friction        | NT          | ASTM D 1894  | -                   | Target | 0.23      |        |
|                                |             |  |                     | Min.   | 0.18      |        |
|                                |             |  |                     | Max.   | 0.30      |        |
| <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 | 160       |        |
|                                | TD          |  |                     | 240    |           |        |
|                                | MD          |  | lbf/in <sup>2</sup> | Target | 23206     |        |
|                                | TD          |  |                     | 34809  |           |        |
| Elongation at Break            | MD          | ASTM D 882   | %                   | Target | 170       |        |
|                                | TD          |  |                     | 50     |           |        |
| Shrinkage                      | MD          | ASTM D 1204  | %                   | Target | 6         |        |
|                                | TD          |  |                     | 4      |           |        |
| 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       |        |
|                                |             |  |                     | 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              | ≤ 6.0  | ≤ 5.5     | ≤ 4.5  |
| WVTR   100°F / 90%RH           | ASTM F 1249 | g H <sub>2</sub> O / (100in <sup>2</sup> .day)             | Target              | ≤ 0.39 | ≤ 0.35    | ≤ 0.29 |
| 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 | ≤ 1700    | ≤ 1500 |
| OTR   73°F / 0%RH              | ASTM D 3985 | cm <sup>3</sup> O <sub>2</sub> / (100in <sup>2</sup> .day) | Target              | ≤ 135  | ≤ 109     | ≤ 96   |

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: 10%</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
Sealing
Treatment  
20 T F C 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

FC - Heat-sealable transparent for cigarettes.

#### 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.