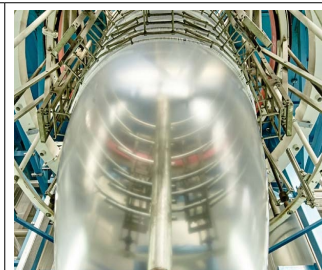




## ESTABIO F04 TR

**Transparent, biodegradable and compostable thermoplastic compound as a blend of biodegradable polyesters, partially from renewable resources. The product is suitable for the production of blow films. The film is suitable for low temperature usage (-15°C).**



### Mechanical and Physical properties: average values \*

|                               | Unit              | Standard       | Value         | Note   |
|-------------------------------|-------------------|----------------|---------------|--|
| <b>Thermal properties</b>     |                   |                |               |  |
| Melting point                 | °C                | ASTM D3418     | 125-150       | Pellets  |
| <b>Rheological properties</b> |                   |                |               |  |
| Melt Flow Rate MFR            | g/10 min          | ASTM D1238     | < 3           | Pellets @ 190°C: 2.16 Ka                       |
| <b>Mechanical Properties</b>  |                   |                |               |  |
| Tensile strength at break     | MPa               | ASTM D882      | 33            | Film thickness: 20 microns . measured in MD**  |
| "                             | MPa               | ASTM D882      | 35            | Film thickness: 20 microns . measured in TD*** |
| Tensile elongation at break   | %                 | ASTM D882      | 510           | Film thickness: 20 microns . measured in MD**  |
| "                             | %                 | ASTM D882      | 530           | Film thickness: 20 microns . measured in TD*** |
| <b>Other properties</b>       |                   |                |               |  |
| Density                       | g/cm <sup>3</sup> | ASTM D792      | 1,26-1,28     | Plate  |
| Bulk density                  | g/cm <sup>3</sup> | Internal Meth. | 0,82 +/- 0,05 | Pellets  |

\* Data shown are to be considered indicative, therefore they cannot be considered product specifications

\*\* Measurement in MD (machine direction) are carried out on specimens taken from the film

\*\*\* Measurement in TD (transverse machine direction) are carried out on specimens taken from the film

Specimens used for the mechanical properties tests are 1 mm wide and the traction speed was 500mm / min.

**Extruder:** ideally on single-screw extruder with L/D 27-30 with cylinder for an optimized feed of the screw.

| Extrusion condition (recommended)                 |                    |
|---|--------------------|
| Extrusion profile temperature                     | From 145 to 170°C  |
| Necklace and head                                 | From 165 to 185°C. |
| Residual humidity on pellets before the extrusion | < 200 ppm          |

In the end of extrusion (or during a stop of the process higher than 60 minutes) it is recommended to clean the machine with LDPE (MFR 2-4 g/10 min) to avoid the degradation of ESTABIO F04 TR on the screw.

**Screw:** screws for extrusion of LDPE are generally suitable also for ESTABIO F04 TR. On some plants, screws for LLDPE and for HDPE are usable too.

**Head:** it is recommended to use a gap of 1-1,3 mm.

**Blowing ratio:** it is recommended to use a blowing ratio > 3.

**Draw ratio:** Known that different filming plants produce films with very different mechanical properties, it is recommended to check the tensile properties in MD e TD to select the appropriate draw ratio. A not-appropriate draw ratio affect mechanical properties (elongation at break) in extrusion machine direction (MD).

**Filter:** The mesh size of the filter used depends on the required degree of filtration.

It is recommended to check the pressure during the filter process to avoid the degradation of the material.

**Welding:** The welding process temperature is between 350 and 450 °C, for the welding of bottom/handle between 27 and 33%.

**Printing:** Tests are positive performed with solventless inks; however it is recommended to perform a mild corona treatment.

**Manipulation:** ESTABIO F04 TR is ready to use. As other biodegradable, material it is sensitive to moist that affect mechanical properties of the final product. It is recommended to open the original packaging only at the time of use; in case of leftovers reseal the packaging to avoid moisture contamination.

**Storage:** It is recommended to store the product in its original packaging in a cool and dry place. In any case it is recommended to use the material within 6 months from the arrival.

**Processing waste:** processing waste can be recycled and added with new material in less than 10%; higher amount or adding other biodegradable material affect the mechanical characteristics of the final film.

**Certificate:**

OK Compost  
N. certificate  
O 17-2604-A  
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