

TECHNICAL DATA-SHEET

Mater-Bi® EF04P

AVERAGE PHYSICAL AND MECHANICAL PROPERTIES¹

Property	Unit	Test	Value	Note
THERMAL				
Melting temperature	°C	ASTM D3418	115	raw pellets
RHEOLOGICAL				
Melt Flow Rate (MFR)	g/10'	ISO 1133-1	4	raw pellets, at 160°C; 5kg
MECHANICAL				
Tensile strength at break	MPa	ASTM D882	35	film thickness 15 µm (MD)
Elongation at break	%	ASTM D882	450	film thickness 15 µm (MD)
Young modulus	MPa	ASTM D882	220	film thickness 15 µm (MD)
OTHER				
Density	g/cm ³	ASTM D792	1.27	raw pellets, at 23°C
Water Vapour Transmission Rate (WVTR)	g/(m ² ·24h)	ASTM E96	800	38°C; 90%ΔRH; film thickness 15 µm
Tear Resistance (Elmendorf)	N	ASTM D1922	1.1	film thickness 15 µm (MD)
			2.2	film thickness 15 µm (TD)
Coefficient of Friction (CoF)	adimens.	ASTM D1894	0.30	static
			0.24	dynamic

¹ typical properties; not to be construed as product specifications

APPLICATIONS

Mater-Bi® EF04P is a thermoplastic biodegradable material for film blowing. It is mainly used for the production of mulch films.

TYPICAL EQUIPMENT & EXTRUSION CONDITIONS (FILM BLOWING)

1. **EXTRUDER:** Preferably with L/D = 27÷30, equipped with grooved barrel section.
2. **SCREW:** Screws for LDPE are generally suitable for Mater-Bi. Screws for LLDPE or HDPE may be suitable as well.
3. **THERMAL PROFILE:** Hopper: water cooled as much as possible (5÷10°C); Grooved feeding section = 90÷130°C; Barrel zones = 130÷145°C; Filter = 10÷150°C; Die head = 130÷145°C.
4. **DIE HEAD:** Suggested die gap = 1÷1.2mm; avoid sharp deceleration or stagnant melt zones along flow channels.
5. **BLOW UP RATIO (BUR):** Suggested > 3.2
6. **DRAW DOWN RATIO (DDR):** Blown film produced by different extrusion lines may exhibit some differences in properties. Before starting an industrial production, properties of blown film, along machine direction (MD) and transverse direction (TD), should be carefully evaluated in order to identify the best draw down ratio.
7. **BUBBLE COOLING:** Single or dual lip cooling ring, preferably with Internal Bubble Cooling (IBC) system. Chilled cooling air is recommended, T ≤ 18°C.
8. **FILTERING:** Screen size depends on filtering demand; reps screen (e.g. type 16/88 – French numbering) are generally enough.

Note: for agricultural black films, the amount of black master batch, to be added to Mater-Bi® EF08P0, must be enough in order to guarantee a film transmittance <3% as determined according to EN 17033:2018 standard (Plastics - Biodegradable mulch films for use in agriculture and horticulture - Requirements and test methods).

For agricultural black films it is suggested a thickness of 15µm, unless the production line is equipped with particular gauge control systems that guarantee a minimum thickness of 12µm.

GENERAL SUGGESTIONS

HANDLING: Mater-Bi® EF04P, as supplied by Novamont, is ready to use.

Mater-Bi® EF04P is moisture sensitive and tends to absorb it (or release it) when exposed to humid (or dry) environments; the original packaging must be opened just before production.

When production is finished, reseal hermetically remaining quantities of Mater-Bi® EF04P in its original packaging or other barrier containers. Novamont anyhow recommends to convert all the material, once the original packaging has been opened.

Purge barrel with LDPE (MFI = 2÷4 g/10 min) at start-up and end of production.

Please, refer to the Material Safety Data Sheet for a correct handling of the molten material and for a safe processing.

DISCLAIMER

The information and data contained herein are believed to be accurate and are given in good faith. However, accuracy is not guaranteed for the product referred to herein and Novamont SpA disclaims all liability accordingly, whether in contract, tort or otherwise.

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STORAGE: store Mater-Bi® EF04P in a cool and dry warehouse, sealed in its original packaging, away from heat and light. Novamont recommends to convert Mater-Bi® EF04P within 6 (six) months from the delivery date.

REGENERATION: the addition of regenerated material to the virgin one causes a general reduction of mechanical properties and their conservation in time; nevertheless, if of good quality and introduced up to certain percentages, regenerated material can determine a very low decrease of film properties. Please, get in touch with Novamont technical assistance for further information.









Scraps not reused in-line, addressed to the regeneration process, must be stored into barrier containers in order to preserve the original moisture content.

Mixing together scraps of different Mater-Bi® grades is not recommended.

Converters are invited to verify the properties of their products depending on storage and in-use conditions.

CERTIFICATES

COMPOSTABILITY: Mater-Bi® EF04P has got following certificates:

ABAM Cert. No. 10033 Seedling Logo® Cert. No. 7W2028		
BPI Cert. No. 890995	 COMPOSTABLE IN INDUSTRIAL FACILITIES <small>Check locally, as these do not exist in many communities. Not suitable for backyard composting. CERT # 890995</small>	
OK Biodegradable Soil® Cert. No. TA8031300563 OK Biodegradable Soil® Cert. No. O 15-1572-A (black film)		 SOIL S0001
Ok Compost® Cert. No. O 13-1159-B		 INDUSTRIAL S0001
Ok Compost Home® Cert. No. O 14-1459-B		 HOME S0001

Note to “Certificates”: the use of black masterbatches, already certified according to EN13432, facilitates the process of getting the biodegradability and/or compostability certificates for the black mulch produced with Mater-Bi®. For further information please get in contact with Novamont.

FOOD CONTACT APPROVAL: for Mater-Bi® EF04P the declaration of compliance to the Commission Regulation (EU) 10/2011 (PIM), on plastic materials and articles intended to come into contact with food, is available.

Substances subject to specific migration limit (SML) are present in the material and specific use conditions apply.

Please refer to the Declaration of Conformity according to 10/2011 Regulation:

- to check if the herein material is suitable for your intended application
- to plan adequate testing to check compliance to the relevant food contact legislation

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