

Great question! Biaxially Oriented Polypropylene (BOPP) film is one of the most important PP applications worldwide, used in packaging, labeling, and industrial films. Producers like Braskem offer **several homopolymer PP grades** for BOPP because the process and end-use requirements demand different balances of **processability, mechanical properties, and optical performance**. Here's why multiple grades exist:

Why Multiple Homopolymer PP Grades Exist in BOPP

1. Processing Requirements

- **Melt Flow Index (MFI):**
 - **Low MFI grades** → higher viscosity, better melt strength, ideal for stable film extrusion and orientation.
 - **High MFI grades** → easier flow, faster throughput, suited for thinner films and high-speed lines.
 - BOPP requires **uniform melt rheology** to ensure consistent stretching in both machine and transverse directions. Different grades are tuned for line speed, film thickness, and orientation ratios.
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2. Mechanical Property Needs

- Homopolymer PP provides **high stiffness, tensile strength, and dimensional stability**, which are critical for BOPP films.
 - Multiple grades allow fine-tuning of:
 - **Modulus and tensile strength** (important for packaging films that must resist tearing).
 - **Shrinkage and orientation behavior** (to ensure balanced properties in both directions).
 - **Barrier properties** (for moisture resistance in food packaging).
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3. Application Diversity

- **Food packaging films:** Require clarity, stiffness, and barrier properties → mid-range homopolymer grades.
- **Label films:** Need dimensional stability and printability → specialized grades with optimized surface properties.
- **Industrial films (lamination, adhesive tapes):** Require toughness and high productivity → high MFI grades.

- **Metallizable films:** Need excellent barrier and adhesion to aluminum → grades with tailored crystallinity and surface energy.
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4. Additive & Performance Packages

- Different grades incorporate **antioxidants, slip agents, antistatic agents, or nucleating agents** depending on whether the film is for food contact, labeling, or industrial use.
 - Some grades are optimized for **pigment dispersion or metallization compatibility**, which is critical for decorative and barrier films.
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Summary

- **Homopolymer PP grades** are chosen for **strength, stiffness, and barrier performance** in BOPP films.
 - Multiple grades exist because BOPP applications range from **clear food packaging films** to **metallized industrial laminates**, each requiring a different balance of **melt flow, orientation behavior, mechanical strength, and surface properties**.
 - By offering several grades, producers ensure that customers can match the PP resin to their **specific BOPP process and end-use performance needs**.
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👉 I can also prepare a **comparison chart of Braskem's BOPP PP grades** (melt flow, orientation properties, barrier performance, typical applications) so you can see how each one is positioned in the portfolio. Would you like me to build that chart?