

Why Multiple PP Grades for Compression Molding?

Excellent question! Compression molding of polypropylene (PP) is a specialized process, and the reason Braskem (and other producers) offer several grades of homopolymer and heterophasic copolymer PP for this application is that compression molding covers a wide range of part sizes, performance requirements, and processing conditions. Each grade is engineered to optimize a different balance of flow, stiffness, toughness, and cycle efficiency.

Why Multiple Grades Exist in Compression Molding

1. Processing Behavior

- Melt Flow Index (MFI):
 - Low MFI grades → higher viscosity, ideal for large parts that need dimensional stability during compression.
 - High MFI grades → easier flow, faster mold filling, suited for thin-walled or intricate parts.
- Compression molding requires controlled flow and cooling rates, so different grades ensure stable processing across part geometries.

2. Mechanical Property Requirements

- Homopolymer PP (HOMO):
 - Provides high stiffness, rigidity, and heat resistance.
 - Multiple grades allow fine-tuning between productivity and mechanical strength.
 - Used in applications where dimensional stability is critical (e.g., appliance housings, rigid caps).
- Heterophasic Copolymer PP (HECO):
 - Offers impact resistance and toughness, especially at low temperatures.
 - Different grades balance toughness with stiffness depending on whether the molded part must resist drops, shocks, or mechanical stress.
 - Common in automotive and industrial compression-molded components.

3. Application Diversity

- Automotive parts (battery cases, interior panels): Require impact resistance and durability → heterophasic copolymer grades.
- Packaging (caps, closures, rigid containers): Need stiffness and dimensional accuracy → homopolymer grades.
- Industrial goods (large technical parts, crates): Require a balance of rigidity and toughness → both HOMO and HECO grades depending on stress conditions.

4. Additive & Performance Packages

- Grades differ in stabilization packages (UV resistance, antistatic, slip agents) depending on whether the part is for outdoor use, food contact, or industrial environments.
- Some grades are optimized for pigment dispersion or recycling compatibility, which is increasingly important in compression molding of caps and closures.

Summary

- Homopolymer PP grades → chosen for rigidity, heat resistance, and dimensional stability.
- Heterophasic copolymer PP grades → chosen for impact strength, toughness, and durability.
- Multiple grades exist because compression molding applications range from tiny bottle caps to large automotive housings, each requiring a different balance of flowability, stiffness, and toughness.

👉 If you'd like, I can prepare a side-by-side chart of Braskem's compression molding PP grades (with melt flow, impact strength, and typical applications) so you can see how each one is positioned in the portfolio.