

Great question! **General extrusion** of polypropylene (PP) covers a wide variety of processes (sheet, film, profiles, pipes, laminates), and that's why producers like Braskem offer **several grades of homopolymer, random copolymer, and heterophasic copolymer PP**. Each family — and each grade within it — is tuned to balance **processability, mechanical properties, optical performance, and end-use requirements**. Let's break it down:

Why Multiple PP Grades Exist in General Extrusion

1. Processing Requirements

- **Melt Flow Index (MFI):**
 - **Low MFI grades** → higher viscosity, better melt strength, ideal for thick sheets, pipes, and profiles.
 - **High MFI grades** → easier flow, faster throughput, suited for thin films, laminates, and high-speed extrusion.
 - Extrusion demands **stable melt flow and cooling behavior**, so different grades are offered to match line speed, thickness, and geometry.
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2. Mechanical Property Needs

- **Homopolymer PP (HOMO):**
 - Provides **high stiffness, tensile strength, and heat resistance**.
 - Multiple grades allow fine-tuning between productivity and rigidity.
 - Common in rigid sheets, pipes, and industrial profiles.
 - **Random Copolymer PP (RACO):**
 - Offers **clarity, gloss, and flexibility**.
 - Different grades balance transparency with mechanical performance.
 - Used in consumer packaging, medical films, and applications where aesthetics matter.
 - **Heterophasic Copolymer PP (HECO):**
 - Provides **impact resistance and toughness**, especially at low temperatures.
 - Multiple grades balance toughness with stiffness depending on whether the extruded part must resist drops, shocks, or cold-chain logistics.
 - Common in automotive profiles, industrial sheets, and heavy-duty packaging.
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3. Application Diversity

- **Packaging films and sheets:** Require clarity and flexibility → random copolymer grades.
 - **Pipes and profiles:** Need stiffness and dimensional stability → homopolymer grades.
 - **Automotive and industrial extrusions:** Require toughness and impact resistance → heterophasic copolymer grades.
 - **Consumer goods (stationery, household items):** Balance of aesthetics and mechanical strength → random copolymer or homopolymer grades depending on design.
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4. Additive & Performance Packages

- Grades differ in **UV stabilizers, antioxidants, slip agents, antistatic agents, or nucleating agents** depending on whether the extrusion is for outdoor use, food contact, or industrial applications.
 - Some grades are optimized for **pigment dispersion** or **recycling compatibility**, which is increasingly important in general extrusion.
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Summary

- **Homopolymer PP grades** → chosen for **rigidity, strength, and dimensional stability**.
 - **Random copolymer PP grades** → chosen for **clarity, gloss, and flexibility**.
 - **Heterophasic copolymer PP grades** → chosen for **impact strength, toughness, and durability**.
 - Multiple grades exist because general extrusion applications range from **clear packaging films** to **rigid pipes and industrial sheets**, each requiring a different balance of **flowability, stiffness, toughness, and optical properties**.
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👉 I can also prepare a **comparison chart of Braskem's general extrusion PP grades** (melt flow, clarity, impact strength, typical applications) so you can see how each one is positioned in the portfolio. Would you like me to build that chart?