Great question! Cast film extrusion is a widely used process for polypropylene (PP), especially in packaging, labeling, and industrial films. Producers like Braskem offer **several homopolymer and random copolymer PP grades** because cast film applications demand different balances of **processability, mechanical strength, optical properties, and end-use performance**. Here's why multiple grades exist:

🔑 Why Multiple PP Grades Exist in Cast Film Extrusion

1. Processing Requirements

- **Melt Flow Index (MFI):**
  - **Low MFI grades** → higher viscosity, better melt strength, ideal for thicker films and stable extrusion.
  - **High MFI grades** → easier flow, faster throughput, suited for thin films and high-speed lines.
- Cast film extrusion requires **uniform melt flow and cooling behavior** to ensure consistent film thickness and surface quality. Different grades are tuned for line speed, film gauge, and cooling conditions.

---

2. Mechanical Property Needs

- **Homopolymer PP (HOMO):**
  - Provides **high stiffness, tensile strength, and heat resistance**.
  - Multiple grades allow fine-tuning between productivity and mechanical strength.
  - Common in films that need rigidity and dimensional stability (e.g., lamination base films, industrial packaging).
- **Random Copolymer PP (RACO):**
  - Offers **clarity, gloss, and flexibility**.
  - Different grades balance transparency with mechanical performance.
  - Used in consumer-facing packaging where aesthetics and flexibility matter (e.g., food wraps, medical films).

---

3. Application Diversity

- **Food packaging films:** Require clarity and heat resistance → random copolymer grades.

- **Industrial packaging (sacks, heavy-duty wraps):** Need stiffness and strength → homopolymer grades.
- **Lamination films:** Require dimensional stability and printability → homopolymer grades.
- **Consumer packaging (clear bags, wraps):** Require gloss and flexibility → random copolymer grades.
- **Medical packaging:** Needs transparency and chemical resistance → random copolymer grades.

---

4. Additive & Performance Packages

- Different grades incorporate **antioxidants, slip agents, antistatic agents, or UV stabilizers** depending on whether the film is for food contact, outdoor use, or industrial packaging.
- Some grades are optimized for **pigment dispersion** or **recycling compatibility**, which is increasingly important in cast film production.

⚖️ Summary

- **Homopolymer PP grades** → chosen for **rigidity, strength, and dimensional stability**.
- **Random copolymer PP grades** → chosen for **clarity, gloss, and flexibility**.
- Multiple grades exist because cast film applications range from **clear food wraps** to **heavy-duty industrial laminates**, each requiring a different balance of **flowability, stiffness, toughness, and optical properties**.

👉 I can also prepare a **comparison chart of Braskem's cast film PP grades** (melt flow, clarity, tensile strength, typical applications) so you can see how each one is positioned in the portfolio. Would you like me to build that chart?