



EASTMAN

**Resin
selector guide**
for oral care

Looking for the right resin for your oral care product? Don't worry. At Eastman, we cut our teeth on molding innovation and polymer expertise and have a broad BPA-free portfolio to help you differentiate your brand.

For example, Eastar™ copolyesters have a long history of providing exceptional clarity and unparalleled sparkle. And our Tenite™ cellulose—sustainable choices made from renewable softwood materials—are known for their high surface gloss, chemical resistance, and pleasing haptics.

This guide is intended to help you choose the material that offers the clarity, chemical resistance to mouthwashes and toothpastes, durability, flexibility, and processing characteristics you need.

The Eastman oral care portfolio

- **Eastar™ BR003 copolyester and Eastar™ BR203 copolyester** contain an additive that provides optimum molding efficiency. They have excellent appearance and are nearly water clear. With superior chemical resistance, they maintain their physical properties and appearance when exposed to aromatic oils. Both BR003 and BR203 are specifically formulated to provide the optimal combination of chemical resistance, bristle retention, strength, stiffness, processability, clarity, colorability, and feel for toothbrushes. BR003 also offers greater design flexibility and can work for virtually any toothbrush configuration; as a result, brands can offer unique models that are tough to replicate—and launch them quicker. With BR003, molders can also consolidate resins versus having single resins for single designs.
- **Eastar™ BR303 copolyester** is a brilliantly clear polymer with excellent impact strength, chemical resistance, and low shrinkage.
- **Eastar™ BR403 copolyester** is a water-clear polymer that is great for toothbrush applications. It will not crystallize and thus offers wider processing latitude than conventional crystallizable polyesters while still providing an excellent combination of clarity, toughness, and melt strength.

- **Eastar™ EN076 copolyester** offers good processability with the benefits of glass, such as high clarity, brightness, and good color.
- **Tenite™ cellulose** are noted for their excellent balance of properties: toughness, hardness, strength, surface gloss, clarity, and a warm feel. With >40% biocontent, Tenite provides sustainability attributes without sacrificing toothbrush aesthetics.
- **Eastman Trêva™ engineering bioplastic** is a plasticizer-free cellulose-based plastic that offers higher performance and lower environmental impact. Sourced from sustainably managed forests, Trêva is chemically resistant and dimensionally stable. Its excellent flow characteristics empower molders and designers to create intricate, thin-walled parts that other thermoplastics can't handle.



Which Eastman solution is right for you?

	Clarity	Processability	Design flexibility	Sustainability	Durability	Chemical resistance
Eastar BR003	●●●●●	●●●●●	●●●●●	●	●●●●●	●●●●●
Eastar BR203	●●●●●	●●●	●●●●●	●	●●●●●	●●●●●
Eastar BR303	●●●●●	●●●●●	●●●●●	●	●●●●●	●●●●●
Eastar BR403	●●●●●	●●●●●	●●●●●	●	●●●	●●●
Eastar EN076	●●●●●	●●	●●	●●	●●●	●●●
Tenite 377E4861312	●●●●●	●●●	●●●●●	●●●●●	●●●	●●●●●
Trēva*	●●●	●●●●	●●●●	●●●●●	●●●●	●●●●

*Contact us to discuss the specific grade that is right for your application.

● = Differentiating attributes

Material and processing data

	Eastar BR003	Eastar BR203	Eastar BR303	Eastar BR403	Eastar EN076	Tenite 77E4861312	Trēva*
Flexural modulus (ASTM D790), MPa (psi)	2,000 (2.9 x 10 ⁵)	1,900 (2.75 x 10 ⁵)	1,800 (2.6 x 10 ⁵)	2,060 (3.0 x 10 ⁵)	2,350 (3.4 x 10 ⁵)	1,448 (2.1 x 10 ⁵)	1,879 (2.7 x 10 ⁵)
Rockwell hardness (ASTM D785), R scale	103	105	105	108	111	78	100
Izod impact strength, notched (ASTM D256), J/m							
@ 23°C	80	370	No break	105	67	416	193
@ -40°C	40	60	79	40	33	107	88
Haze, %	0.3	0.3	<1.0	0.2	0.8	NA	NA
Total transmittance, %	91	91	92	90	89	>90	NA
Recommended drying temperature, °C (°F)	70 (160)	70 (160)	71 (163)	70 (160)	150 (302)	60 (140)	71 (160)
Recommended drying time, hrs	3	3	6	6	4-6	6	4
Processing melt temperature, °C (°F)	230-280 (450-530)	250-290 (480-550)	249-271 (480-520)	249-271 (480-520)	277-293 (530-560)	210-230 (410-440)	240-255 (464-490)
Recommended mold temperature, °C (°F)	15-30 (60-80)	15-30 (60-80)	16-38 (60-100)	16-38 (60-100)	16-32 (60-90)	65-77 (150-170)	71-83 (160-180)
Crystallization half time, min	33	8	52	2,500	4.5	NA	NA
Renewable content, %	0	0	0	0	0	≥40	≥42

*Contact us to discuss the specific grade that is right for your application. These are representative properties of the family. Actuals may vary.

To further specify the right polymer for your needs, contact your Eastman representative or visit eastman.com/oralcare.

EASTMAN
The results of *insight*™

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