

Eastman **TRĒVA™**
engineering bioplastic

Eastman **TRITAN™**
copolyester

Irresistible good looks that **resist stress** and **chemicals**

*Better resistance to stress cracking and chemical
attack is always in style.*



Environmental stress cracking is a major cause of failure in plastic parts.* And products frequently exposed to skin, sweat, oils, or a variety of chemical substances are most at risk. As such, housings for consumer electronics, medical, and mobile devices are most susceptible to such stress cracking.

But plastic performance is still difficult to predict because it varies drastically in use and environments—and stress cracking usually manifests later in the product life cycle. To put the odds in your favor, choose a durable material that has inherent chemical resistance.

The new standard in chemical resistance

Tough Eastman Tritan™ copolyester can be an ideal choice for products that must endure demanding environments and consumers alike. It empowers manufacturers to design with:

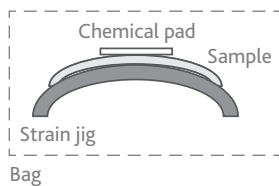
- Longevity and function in mind
- Dramatic shapes
- Vibrant colors and glossy surfaces
- Unique acoustic properties such as improved sound damping and lower frequency response

Parts made with Tritan exhibit low molded-in stress and significantly lower levels of applied stress than polycarbonate and polycarbonate blends and alloys. During chemical-resistance testing, opaque and clear samples molded with Tritan retained a higher percentage of impact strength after exposure to key chemicals of concern for consumer electronics products.

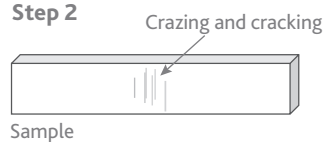
Low molded-in stress and high chemical resistance also give Tritan superior performance during secondary operations, including bonding, painting, and in-mold decoration processes.

Chemical-resistance testing protocol

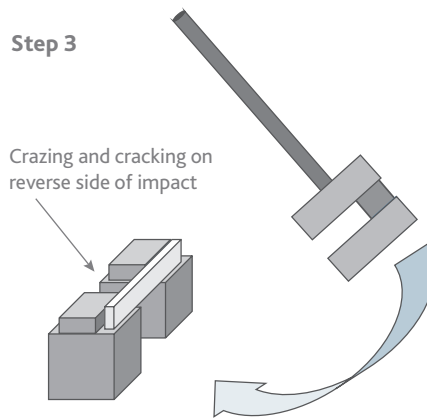
Step 1



Step 2



Step 3



Step 4

After chemical exposure under stress, impact energy was measured to calculate the percent retention of properties.

CHEMICAL-RESISTANT EASTMAN PLASTICS ARE IDEAL FOR:

- Mobile devices
- Headphones
- Wearable electronics
- Audio equipment
- Personal care devices (electric shavers and toothbrushes)



*Maier, Clive; Calafut, Theresa. Polypropylene Definitive User's Guide and Databook. New York: Plastics Design Library, 1998.

Chemical resistance of Eastman Tritan™ copolyester and Eastman Trēva™ engineering bioplastic after exposure to key chemicals of concern

		% Retention in impact energy						
		Chemical	Tritan TX1001	Tritan TX1501HF	Trēva GC6021	PC	PC/ABS	ABS
Human interface	Sebum (skin oil)	●	●	●	◐	◑	◑	
	Artificial sweat	●	●	●	●	●	●	
	Mayonnaise	●	◐	●	◐	◑	◑	
Cleaners	70% IPA	●	●	●	●	◑	◑	
	Formula 409® cleaner	●	●	●	◐	◑	◑	
	Windex®	●	●	●	◐	◑	◑	
	Acetone	◐	◐	◐	◑	◑	◑	
	Purell® Hand Sanitizer	●	●	●	●	●	◑	
Laundry	Tide® Original Powder	●	●	●	◐	◑	◑	
Outdoor	Banana Boat® SPF 100	◐	◐	●	●	◑	◑	
	40% DEET	◐	◐	◐	◑	◑	◑	

Based on reverse-side impact test method after 24 hours strain exposure

- 80% to 100% property retention
- ◐ 60% to 80%
- ◑ 30% to 60%
- 0% to 30%

A naturally better alternative

Eastman Trēva™ engineering bioplastic is a cellulose-based material that offers both high performance and sustainable advantages. Trēva has excellent chemical resistance, standing up to some of the harshest chemicals people come in contact with every day—including skin oils, popular sunscreens, and household cleaners.

Made from cellulose derived from sustainable-harvested trees, durable Trēva helps create products that last and function longer. Its excellent flow means it can be used in thin walls and complex part designs.

Trēva advantages

- Exceptional chemical resistance
- Excellent flow
- Low birefringence
- Sourced from sustainably managed forest

Sound-damping benefits

Eastman testing indicates Eastman Tritan™ copolyester has unique advantages in damping vibration transmitted through various product components. This effect could potentially be beneficial in applications where better isolation of microphone and speakers is required to reduce seismic interference, such as:

- Voice activated smart assistants
- Portable Bluetooth® speakers
- Headphones and voice-activated AR/VR devices
- Microphone booms in headsets

To learn more, visit [Eastman.com/electronics](https://www.eastman.com/electronics).

Did you know?

- › Thanks to aggressive disinfection, the number of healthcare associated infections (HAI) has been reduced significantly. But devices designed just a few years ago with inferior plastics are experiencing performance issues and premature failure as a result.
- › An example case of Augmented Reality application is warehouse picking, which will substantially expose devices to sweat and skin oils.

A common complaint on Amazon reviews of headphones is about plastic parts prematurely breaking. For example:

★☆☆☆☆ The sound and noise cancelling is very good. Broken headband from regular use (CHEAP PLASTIC).

"Unfortunately that's moot because after a month and a half of regular use the side of the headband cracked. Rendering it useless. Looked online and saw there are MANY people with the same problem and concerns. Someone from Sony even left a comment under a review on Amazon saying the issue has been looked at and 'measures had been taken.'"

By E.B. on January 9, 2018

★★☆☆☆ Good headphones, bad materials.

"The headphones are good, sound is OK and they are very comfortable. But the materials feel cheap. All the headband and ear cups are peeling away. Bad really bad materials."

By Perez on August 17, 2018

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