



# Mold longer wear into your wearable electronics.

*Eastman specialty plastics add irresistible good looks while resisting chemicals and stress fatigue.*

Environmental stress cracking (ESC) is a major cause of failure in plastic parts\*—especially headphones and other wearable products that are exposed to repeated flex cycles with prolonged exposure to chemicals. Eastman Tritan™ copolyester and Eastman Trêva™ engineering bioplastic offer attributes that are in demand in wearable consumer electronics.

- Excellent durability and longevity
  - Withstands impact and assembly stress
  - Resistance to fatigue
- Best-in-class chemical resistance
  - Resistant to sweat and skin oils
  - Compatible with lotions and hygienic cleaners
- Consumer-preferred aesthetics
  - Stable clarity and color
  - Excellent tintability and gloss
- Compliant with California Proposition 65 (Prop 65)
  - Skin-safe materials that are BPA and BPS free
  - Made without bisphenols, styrenics, and halogens
- Unique acoustic performance
  - Excellent vibration damping
  - Improved distortion reduction

In addition, Trêva provides a biobased option from renewable sources—to satisfy consumer demand for environmentally friendly products.

\*Polypropylene Definitive User's Guide and Databook. Plastics Design Library. New York, U.S.A. 1998.



## Strong and durable performance under stress

Headphone bands create special challenges for engineering materials because of repeated flex stress and exposure to chemicals—a combination that can result in unanticipated failures.

Eastman conducted stress testing to replicate the flex fatigue challenges of headphones. This table shows that Eastman Tritan™ copolyester outperforms both polycarbonate (PC) and amorphous nylon in number of cycles to failure under 5% strain.

In companion testing, Tritan consistently outperformed the three competitive polymers above 3% strain—and at higher strains, Tritan outperformed by an even wider margin.

Tritan is an excellent choice for headphones because of flex fatigue performance, chemical resistance, and modulus.

Resilience of resins under 5% strain

Headband material	Number of cycles to failure @ 5% strain*
Eastman Tritan™ TX1001 copolyester	~72,000
Polycarbonate	~60,000
Amorphous nylon	~18,000

*\*5% strain is commonly used in FFU testing—compatible with 95th percentile of all heads.*

For more information about Eastman specialty polymers for electronics, visit [www.eastman.com/Consumer-Electronics](http://www.eastman.com/Consumer-Electronics).