

ESA PROTECTION® BIO-BASED FOAMS



ESA PROTECTION® offers a comprehensive range of material formulations, each designed for specific applications. Our materials come in sheet form with various thickness options, providing you with the flexibility to die-cut and integrate them into your products. This adaptability helps meet specific requirements and speeds up the product development process.

ESA PROTECTION® BIO-BASED FOAMS is an intelligent energy absorbing gel (non-Newtonian fluid) and a polymer composite made of a new type of impact resistant material, which can be hardened and softened under different impact forces. Under normal conditions, it has a soft and flexible touch, once impacted, the molecules immediately lock with each other and quickly tighten and harden to digest the external force, when the external force disappears, the material will return to its initial state of relaxation and soft elasticity. It can immediately absorb and disperse more than 90% of the energy generated by the impact, with excellent impact resistance and cushioning performance.

ESA PROTECTION® BIO-BASED FOAMS has a bio-based content of up to 40%, which provides excellent impact protection and resistance to compression deformation, maintaining more than 95% of the initial performance over the product's life cycle, and providing long-lasting durability without deformation.

Performances	Method Reference*	ESA Cold Soft Foams
Density (g/cm ³)	DIN 53479	0.40-0.45
Hardness (Asker C)	ASTM D2240	45±5
Tensile Strength at Break (MPa)	DIN 53504	> 1.6
Tensile Elongation at Break (%)	DIN 53504	> 160
Type C Tear Strength (N/mm)	DIN ISO 34-1	> 4.0
Permanent Compression Deformation (%)	ASTM D395:2003	< 5
Rebound Rate (%)	ASTM D2632:2001	< 10
Impact Value (10mm,50J) (kJ)	EN1621-1:2012	≤35
Bio-based content	ASTM D6866	40

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*Values shown represent typical product characteristics

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