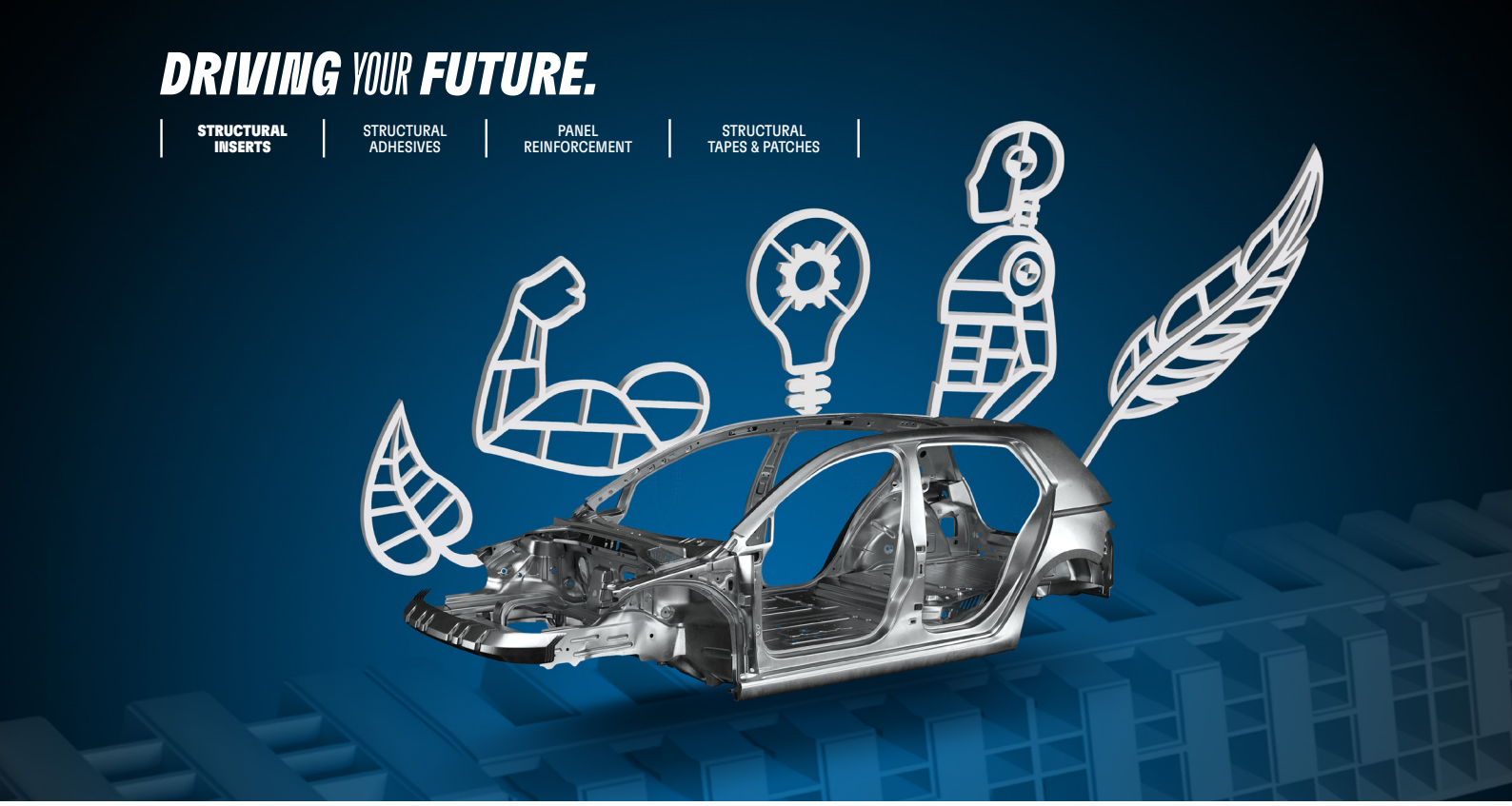
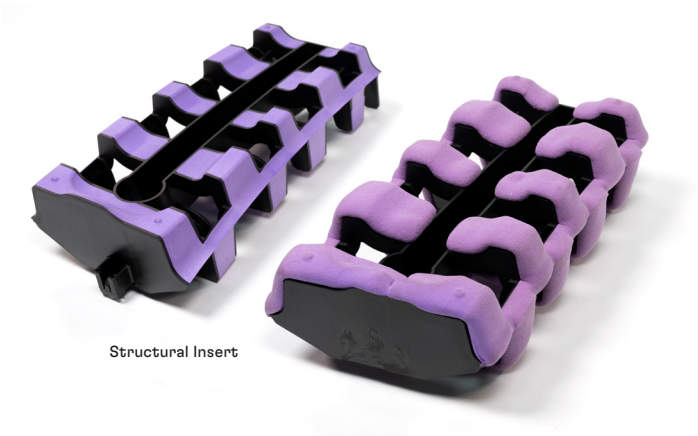


TEROSON® EP 1475 AND TEROSON® EP 1465

HIGH-EXPANSION FOAMS DELIVER *SUPERIOR DESIGN FLEXIBILITY, STRUCTURAL STIFFNESS* AND *CRASH PERFORMANCE*

TEROSON EP 1475 and TEROSON EP 1465 epoxy-based structural foams are innovative choices for OEMs to reduce body-in-white mass while simultaneously increasing stiffness and structural integrity. Both products are ADCA-free and significantly enhance the structural integrity of the BIW structure. The custom designed inserts, based on glass fiber-reinforced PA6 or PA66 carriers in combination with the structural foam, allow BIW cavities to be reinforced, meeting customer requirements for crash and stiffness.

Integrate these solutions into the design phase to take full advantage of their features at the most competitive cost possible.


Structural Insert

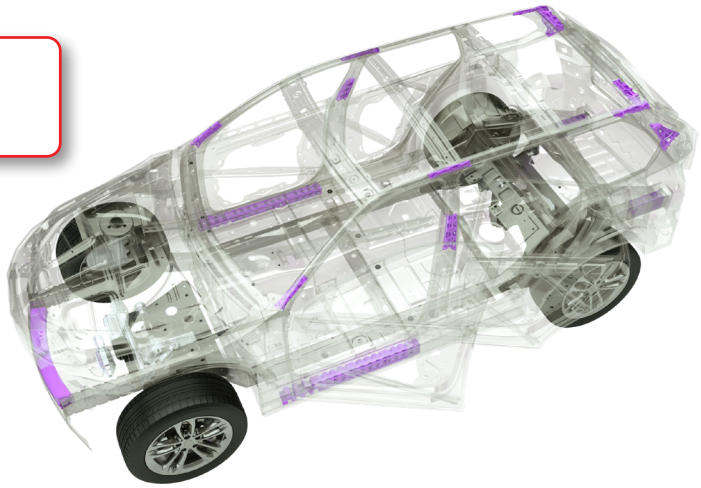
TEROSON EP 1475 offers superior compression strength for excellent crash performance, with up to a 300% expansion rate for large gap-filling capability. For slower-heating areas of the body-in-white, TEROSON EP 1475 cures at 140°C in 10 minutes.

TEROSON EP 1465 offers high stiffness and crash performance, with up to a 200% expansion rate and outstanding compression strength. It cures at 150°C in 15 minutes with a low cured density.

In a major case study where Henkel and OEM engineers collaborated in an EV design partnership, TEROSON EP 1475 achieved a high IIHS Roof Crush Test performance rating while reducing mass and meeting low-cure performance requirements.

Henkel

ROOF CRUSH
A-/B-pillars
Roof rail



TORSIONAL AND BENDING STIFFNESS
Pillar junctions
Liftgate
Doors
Rocker

REAR CRUSH
Longitudinal rear

FRONTAL OFFSET CRASH
Bumper, longitudinal front
Shot gun
A-pillar, rocker front

TEROSON EP 1475 and TEROSON EP 1465 can be applied to a variety of areas, bringing enhanced BIW stiffness and improved NVH to the OEM's design.

SIDE AND POLE CRASH
B-pillar
Rocker
Transversal beam

Enhanced Sustainability and Lightweighting

TEROSON EP 1475's expansion rate of up to 300% allows Henkel to design parts using up to 40% less foam material than other structural foam solutions. This can lead to weight reductions up to 35% compared with other structural foams – helping to reduce weight, thereby increasing range. A low cure temperature of 140°C (10 minutes) sets the stage for OEMs to reduce oven temperatures and related CO_2 emissions.

HENKEL PRODUCT	TEROSON EP 1475	TEROSON EP 1465
Density uncured	1.3g/cm^3	1.3g/cm^3
Density after curing	<0.5 g/cm^3	<0.5 g/cm^3
Expansion rate (free)	Up to 300%	Up to 200%
Compression strength	>15MPa	>12MPa
Young's modulus	>700MPa	>700MPa
Curing temperature (minimum)	>140°C (10 min.)	>150°C (15 min.)
Benefits and performance	ADCA-free Superior compression strength for high crash performance Extreme gap-filling capability Reduced vibration and increased driving stability due to improved BIW stiffness	ADCA-free Good crash performance for common body cavity locations Medium to large gap-filling capability Good stiffening performance for improved vehicle ride and handling

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