

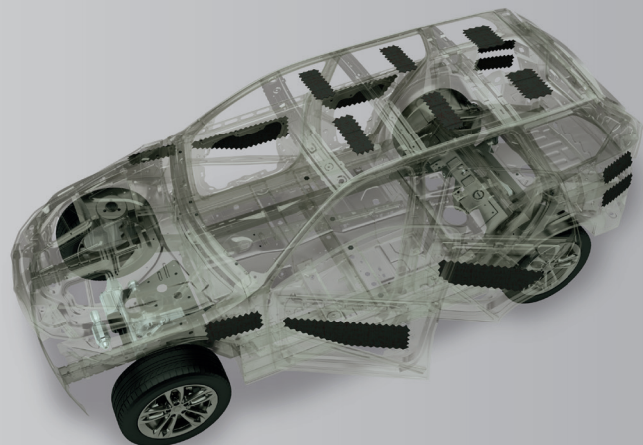


## BEST PRACTICE

### Solve Oil-Canning and Floor Stiffness Issues with Henkel Panel Reinforcement and Rigidity Solutions

#### CHALLENGE

A high-volume, global OEM was challenged to improve door oil-canning performance and eliminate floor vibrations in its Crossover Utility Vehicle. Henkel responded to the challenge with engineering expertise backed by a comprehensive portfolio of panel reinforcement and rigidity solutions.



## SOLUTION

Addressing floor stiffness as a function of the vehicle's compact size, Henkel engineers set out to improve Z-direction stiffness. Yet the complex floor design would result in air pockets upon application unless complex installation procedures were introduced. Because an advantage parent design solution was not feasible in this case, Henkel needed to brainstorm unique alternatives. In order to explore solutions, Henkel reproduced a 3D-printed model of the floor structure's high-contour surface and began conducting trials. Ultimately, a finger-design structural patch was developed that was able to accommodate the surface complexity and ensure adequate adhesive wettability.

## BENEFITS

- Provided Henkel technical services application expertise for an end-to-end solution
- Utilized a custom portfolio of solutions that could be used even during pre-launch phase
- Improved oil-canning performance to less than 6mm at 155 N – a resistance increase of more than 90% compared to a blank steel panel
- Halted floor vibrations with an effective stiffness solution
- Enhanced floor stiffness bending performance more than 200% compared to a blank steel panel
- Increased panel integrity and durability to enhance vehicle life

## PORTFOLIO OF PANEL REINFORCEMENT SOLUTIONS

TYPE OF REINFORCEMENT PRODUCT	PRODUCT NAME	CHEMISTRY BASIS	EXPANSION RATE	CURE SCHEDULE	DENSITY [g/cm <sup>3</sup> ]	SPECIAL CHARACTERISTICS
Patch	EP 7850	Epoxy	260%	160°C ~ 190°C 15-60 min.	0.37	Very high stiffening power, lower thickness patches
Patch	EP 2800	Epoxy-rubber blend	290%	160°C ~ 190°C 15-60 min.	0.36	High stiffening power patches
Patch	RB 5200	Rubber	200%	165°C 10 min.	0.54	Very low readthrough, damping properties
Patch	EP 16005	Epoxy	0%	160°C ~ 170°C 20 min.	1.94	Magnetic
Sprayable	RB 5185	Rubber	35%-100%	150°C ~ 190°C 10-30 min.	0.77-0.93	Jet stream, flat stream, swirl
Sprayable	EP 5041	Epoxy	35%-40%	140°C @ 30 min.+ 160°C @ 30 min.	1.03	Jet stream, flat stream, swirl, shovel spray

## GET IN TOUCH WITH US

For more information on our panel reinforcement and rigidity solutions, as well as our other services along the automotive value chain, visit:

[www.henkel-adhesives.com](http://www.henkel-adhesives.com)

Or contact us directly at:

[aaoglobalmarketing@henkel.com](mailto:aaoglobalmarketing@henkel.com)

