

3M structural adhesives help to lightweight wheelchair-accessible vehicles and improve efficiency

“From the offset, we knew that bonding a composite tub into a vehicle would be challenging. But 3M’s adhesive, as well as their constant, ongoing support, has been instrumental in bringing our product to market”

Simon Pearson, Managing Director,
Sirus Automotive Ltd.

Executive Summary

Since 2004, Sirus Automotive Ltd. has specialised in designing and manufacturing wheelchair-accessible vehicles which allow disabled users to drive themselves or travel as the front passenger, greatly improving their independence and quality of life.

In 2015, Sirus focused its growth-driven strategy on reducing production times and costs by light weighting its vehicles, primarily by bonding a single-piece composite floor pan to the original vehicle. However, bonding composites such as these is traditionally very difficult using standard methods such as welding, which left Sirus to look for an innovative new solution to solve this problem from a leading structural adhesive specialist.



Following an engaging consultation period with 3M, Sirus chose 3M™ Scotch-Weld™ Adhesive DP490, a thixotropic, gap-filling, two component epoxy adhesive with excellent heat and environmental resistance, and designed for use in the construction of composite assemblies.

- ▶ Build efficiency increased by 30-40 percent
- ▶ Finished vehicles became significantly lighter due to the reduction of steel used

Challenges

Sirus Automotive Ltd. was extremely proud of the vehicles they were producing, and fully expected sales to continue rising. The challenge was that its wheelchair-accessible vehicles were becoming increasingly expensive to manufacture. In order for volumes to increase, build times needed to be brought down to make the vehicles more affordable. A one-piece bonded floor pan was decided upon as the best method of achieving this.

As a small business, Sirus did not have the resources available for extensive testing. After approaching 3M and two other adhesive suppliers, Sirus was able to select, test and approve 3M Scotch-Weld Adhesive DP490 for use within just five months.

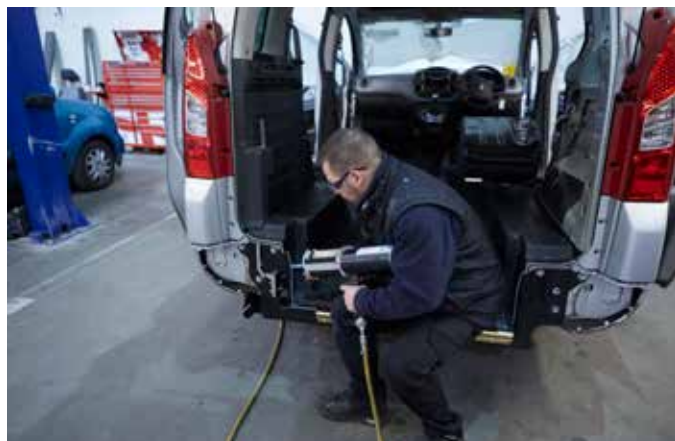


Fig 1. Structural Adhesive - Transportation Application

How the Product Helped

By using 3M Scotch-Weld Adhesive DP490, Sirus no longer has to weld the main floor pan into the car, helping to lightweight the vehicles, reduce production time and free up the time of previously-required skilled welders for key projects.

Results, Return on Investment and Future Plans

Sirus Automotive Ltd. now produces up to 25 wheelchair-accessible vehicles per month. The structural epoxy adhesive supplied by 3M has seen the business increase build efficiency by 30-40 percent. Finished vehicles are significantly lighter, as the amount of steel used has been reduced, resulting in a much-improved, more affordable, vehicle for the end-user.

“Working with 3M helped to increase our build efficiency by 30-40 percent. The service was exceptional and I would highly recommend them.”

Simon Pearson, Managing Director,
Sirus Automotive Ltd.



Fig 2. Transportation Application