

3M *Holding Fast*

High Performance Solutions for the Automotive Aftermarket

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3M Adhesive Technology – Ahead of the Curve

3M attachment tape technology has been important to the automotive industry since the 1960s when neoprene tapes were first introduced to attach lightweight nameplates and badges. But in this industry, nothing remains the same for long. For instance, paint systems underwent a major change from low solids enamels to one- and two-part urethane basecoat/clearcoat systems that were able to provide ten or more years of durability. These new paints posed bonding challenges due to lower surface energies, causing the surfaces to be more difficult for bonding. At the same time, new plastics and other material changes were underway with the advent of injection-molded and thermoformed plastic parts such as body side moldings, claddings, wheel flares and ground effects.

What now? Some auto makers began to attach parts with mechanical fasteners such as screws, rivets and clips, requiring holes in body panels that often lead to corrosion, deterioration and rust. Mechanical attachment can require a labor-intensive assembly process and, over time, resulted in loose, rattling parts. Tools were often needed for mechanical assemblies and had to be acquired and maintained.

In order to avoid the problems associated with the use of mechanical fasteners, auto makers needed an alternative tape attachment system that could meet the new and growing challenges. Not only must the parts fit right, but they had to be quickly and easily installed in an assembly plant setting.

The solution came in the form of 3M™ Acrylic Foam Tape, which was first used for an OEM body side molding application. The strength, environmental performance and viscoelastic properties of acrylic foam tape made it superior to traditional neoprene tapes and opened a new era of attachment effectiveness and automotive manufacturing efficiency.

These same technologies were made available to the aftermarket. Aftermarket accessory manufacturers have come to depend on 3M acrylic foam tape to reliably bond everything from extruded body side moldings to stainless rocker panels, to molded plastic parts, ground effects, wheel flares, spoilers, interior dash kits and more. 3M also supplies the automotive body repair market with the same tapes the factories use in order to ensure a factory-level repair.

Since first introduced in the 1960s, 3M has continued to refine automotive attachment tape performance and develop new attachment options for both OEM and aftermarket uses.



New black 3M™ Acrylic Plus Tapes provide a tight, sleek bond line for this vent visor from Auto Ventshade Company.

And as the world of vehicle design continues to change from relatively flat surfaces to more contoured and in some cases complex, compound curves, 3M continues to keep pace by providing effective attachment solutions.

3M's ongoing technological leadership and development in automotive tape attachment are demonstrated by two recent tape developments: 3M™ Acrylic Plus Tapes, the new technology and highest performing tapes for bonding all exterior and interior automotive accessories and trim, and 3M™ Primerless Acrylic Foam Tape 5849 for flexible interior dash overlay trim bonded to low surface energy plastics, now commonly used in automotive interiors.

Unprecedented Advancement in Tape Technology

New 3M™ Acrylic Plus Tape, introduced in 2002, marks a breakthrough in 3M adhesive technology as significant to the automotive industry as were the very first acrylic foam tapes. This latest 3M foam tape represents a completely new acrylic tape technology with extremely aggressive adhesion, improved wet-out properties, and superior stability under demanding environmental conditions. The new tape provides a sleeker bond line due to its low elongation and black color. This proprietary new technology gives a more rapid adhesion build to optimum adhesion within 24 hours. And its higher adhesion level remains consistent over a wide variety of substrates and changing environmental conditions.

This proprietary, new 3M tape technology makes it possible to produce high performance 3M™ Acrylic Plus Tapes that are black in color, a feature long desired by the automotive industry. The black color of 3M Acrylic Plus Tapes delivers improved bond line aesthetics and gives components an original equipment appearance.

These new tapes allow for reliable attachment of larger, more complex parts, and their superior performance reduces the potential for rework or warranty issues. 3M Acrylic Plus Tapes meet or exceed automotive OEM specifications.

There are currently four tapes in the new Acrylic Plus line: 3M™ Automotive Acrylic Plus Attachment Tape (0.045" thick) for trim replacement and automotive repair applications; 3M™ Acrylic Plus Tape PT 1100 (0.045") and PT 1500 (0.060") for exterior accessory and trim attachment; and 3M™ Acrylic Plus Sealing Tape ST 1200 (0.045") for bonding extruded weatherstrips and seals.

Primerless Tape Takes the Next Step

3M™ Primerless Acrylic Foam Tape for dash overlays was first introduced to the market in 1998 in a 0.045" thick construction. The newest 0.020" thick 3M primerless tape 5849 was introduced at the 2002 SEMA show and is designed specifically for the attachment of very thin and highly flexible dash overlays. Since this tape is a mere 0.020" thick, it gives a much cleaner, more integrated and low-profile appearance to complement the latest in dash trim designs. The new, thinner tape provides excellent holding strength on properly cleaned surfaces without the need for adhesion promoters.

Low-profile primerless tape 5849 is intended only for very flexible, thin dash trim parts. And like other 3M primerless tapes for dash trim, it can be identified by its distinctive maroon liner, which is printed with white 3M logos.

Why it Works

The unique properties of 3M's acrylic foam tapes are related to viscoelastic characteristics. The adhesive "wets" surfaces as a liquid and flows to establish a firm grip, and then acts as a solid to provide internal, cohesive strength to support the load. In the same manner, the foam core conforms to surface irregularities, absorbs and dissipates stresses, and provides physical support.



3M™ Primerless Acrylic Foam Tape 5849 is designed for attachment of very thin, flexible dash trim components as shown on this interior dash kit from B&I Trim Manufacturers, Inc.

3M's Acrylic Plus Tapes deliver high performance on the newest automotive paints and substrates. 3M recommends performance testing of fastening applications on specific substrates or surface finishes to confirm the suitability and performance of 3M automotive attachment tapes.

Acrylic foam tapes are available in a range of thicknesses, from 0.015" to 0.125". The thicker tapes generally provide greater stress handling and conformability and are suited to large, heavy accessories. Most automotive and weatherseal fastening requirements are met with 0.030" to 0.045" thick tapes.

As the inevitable evolution continues, the automotive industry depends on 3M to stay ahead of the curve with worry-free attachment solutions.

***The right tapes at the right time providing reliable performance
on new materials and substrates — 3M Automotive.***

3M

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