



# Total Solutions for Commercial Transportation

Multifunctional systems for the manufacture and repair  
of bus, truck, rail, recreation, industrial, emergency and  
agricultural vehicles



Automotive Systems

# Commercial Vehicle Expertise



Dow Automotive Systems provides manufacturers of commercial vehicles with total solutions that perform for interior, exterior, powertrain and under-the-bonnet applications. Our market areas of expertise include:

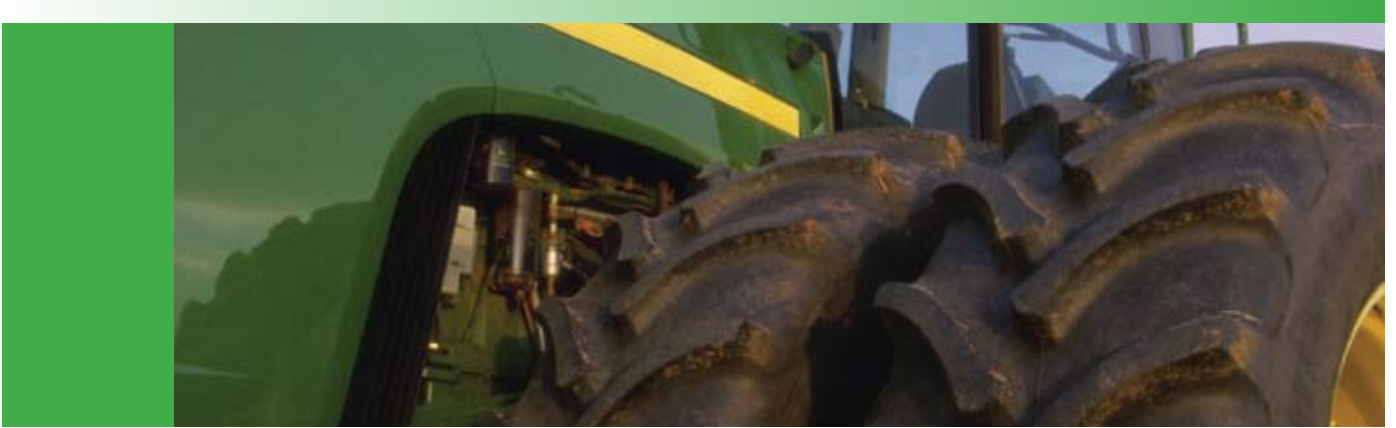
- **Buses/motor coaches**
- **Rail cars and coaches**
- **Medium- and heavy-duty truck cabs, sleepers and trailer bodies**
- **Recreational and leisure vehicles**
- **Emergency vehicles**
- **Industrial/agricultural equipment**
- **Aftermarket repair**

Additional benefits of Dow Automotive Systems solutions are interdependent upon our variety of multifunctional systems, which generate value across the entire vehicle.



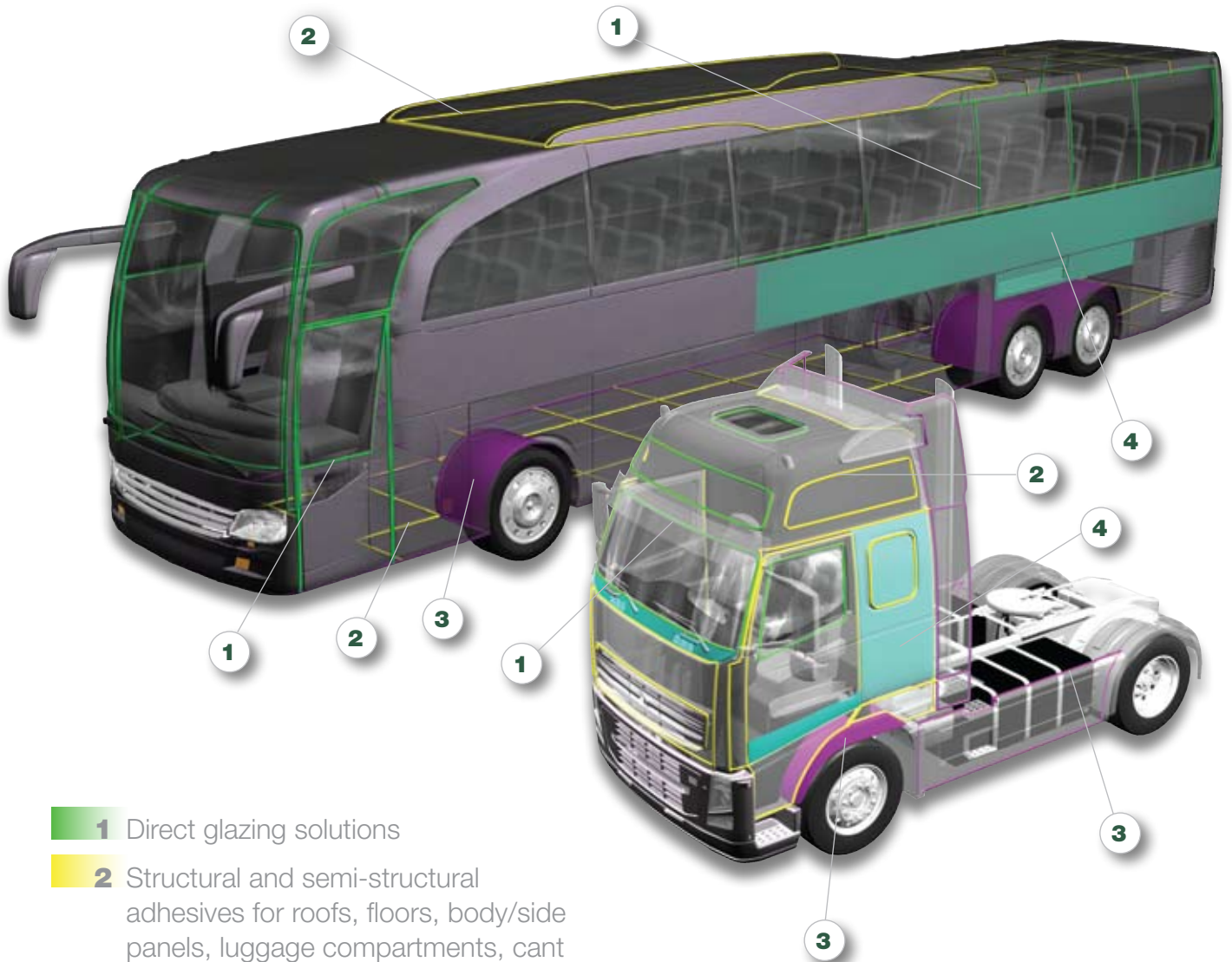
Our adhesives and sealants help increase a vehicle's structural integrity. We provide superior sealing solutions; improve acoustical performance for a quieter riding experience; or enhance thermal management for occupant comfort in all-climate environments.

## Solutions to Handle the Load



With decades of experience in body structural enhancement, Dow Automotive Systems has the experience and expertise to deliver bonding, sealing and direct glazing solutions to the commercial transportation market. And with robust product performance and easy application processes, we can help you deliver strong and durable bonding to your customers.

# Key Product Solutions from Dow Automotive Systems



**1** Direct glazing solutions

**2** Structural and semi-structural adhesives for roofs, floors, body/side panels, luggage compartments, cant rails and other component bonding

**3** Sealer systems for seam sealing, gap filling and underbody coating

**4** Acoustical/structural foams that provide acoustical or energy management properties

# Best-in-class Innovation



Bonding technologies from Dow Automotive Systems are designed to meet the specific needs of traditional and hybrid material assembly with the ability to bond dissimilar substrates. Thick bond lines offer high strength, fatigue and crash resistance with excellent elasticity – even after weathering. The potential for reducing weight can also help enable CO<sub>2</sub> emission reduction through improved fuel efficiency.

Our range of adhesives and surface preparation products include:

- **BETAMATE™ glass bonding systems** - for structural and stationary direct glazing, meeting globally mandated requirements for rollover and roof crush
- **BETAMATE™ structural adhesives** - replace mechanical fasteners to help enable increased stiffness for improved crash resistance and reduce vibration to improve acoustical performance – all while reducing weight versus fasteners by up to 20 percent
- **BETAFILL™ polyurethane seam sealants** - help prevent moisture intrusion that can lead to corrosion
- **BETATECH™ solvent-free sealants** - offer exceptional primerless performance on a variety of substrates
- **BETAPRIME™ and BETASEAL™ primers** - enable exceptional surface preparation while minimising waste

## Global Benefits

As a leading supplier of materials, technology and service support for vehicle bonding and sealing applications, we offer a globally consistent, reliable and secure material supply. Our offering includes adhesives, direct glazing systems, polyurethanes, sealants, emissions control technology, films, fluids, structural enhancement and acoustical management solutions. And on the front end, our advanced engineering team can design, test and validate the right solution for each customer's unique assembly operation.

# Glass Bonding Solutions



*Far left: BETAMATE™ glass bonding systems are developed to provide specific advantages for the entire spectrum of commercial vehicle substrates and coatings.*

*Left: When applied according to manufacturer's specifications, using the complete combination of cleaners, primers, and adhesives, BETAMATE systems enable vehicles to comply with global barrier, rollover and roof crush safety regulations.*

The excellent performance of Dow Automotive Systems direct glazing systems, used worldwide for structural bonding and sealing of stationary glass, helps meet globally mandated safety requirements for barrier and roof crush regulations. Our cleaners, primers and adhesives provide a wide range of mechanical properties to suit all vehicle requirements, and are compatible with all production processes, including cold- and warm-applied systems.



*Above: A variety of innovative BETAMATE glass bonding systems support commercial vehicle manufacturing and after-sales repair, helping customers save costs and reduce installation time.*

Technologies include:

- **Primerless to paint**
- **Non-conductive**
- **High modulus**
- **Quick fix**
- **Fast curing**
- **One- and two-part systems**
- **UV resistant**
- **One-step glass primers**
- **Different primers for various substrates, including cold-rolled galvanised steel, stainless steel, aluminium, thermoplastics, fibre-reinforced plastics and plywood**

# Seam Sealants/Adhesives



*Advanced materials technologies enable Dow Automotive Systems to provide a wide range of seam sealant and adhesive solutions based on specific customer requirements.*

*Sealing vehicle body joints and seams provides added protection against corrosion while also protecting interior compartments from dust, dirt and moisture.*

*Sealants from Dow Automotive Systems also achieve bonding, acoustic and thermal improvements in commercial vehicle applications.*

Customised solutions from Dow Automotive Systems for sealing, filling and bonding lightweight materials provide significant long-term advantages. Available in black, grey and white, these single-component, moisture-curing polyurethanes, like **BETAFILL™** seam sealants and **BETATECH™** solvent-free sealants, provide permanent elasticity and good adhesion to a wide variety of substrates. In some cases, wipes, cleaners and primers are required, but seam sealants/adhesives can be applied primerless on many substrates, including coated sheet steel, glass-reinforced plastics (GRP), PU, polycarbonate and wood.

Typical commercial applications include:

- **Internal seam joints between panels**
- **Seam sealing on GRP roof panels**
- **Sealing aluminium fabrications**
- **Gap filling between panels**
- **Cosmetic finishing of internal/external joints**
- **Sealing of lightweight construction materials**
- **Bedding compounds to absorb shock and vibration**
- **Sealing of wood, metal, plastic door frames and window fittings**
- **Bulkhead sealing and door skin fixing**
- **Wheel arch sealing**

# Structural Bonding Solutions



*Far left: BETAMATE structural adhesives reduce vibration by stiffening overall vehicle structure.*

*Left: Acoustics are also improved by the use of BETAMATE structural adhesives in applications like roof and floor bonding.*

Vehicle durability, structural integrity and noise, vibration and harshness (NVH) performance can be enhanced with structural and semi-structural bonding solutions from Dow Automotive Systems.

Compared to welds and mechanical fasteners, our adhesives improve vehicle stiffness and minimize metal fatigue by providing a continuous bond line between substrates. Acoustics also are improved due to reduced vibration. **BETAMATE™** structural adhesives can bond dissimilar substrates and are used for:

- **Roof and floor bonding**
- **Body panel bonding**
- **Luggage compartment and other component bonding**

**BETAMATE** adhesives are available in one-part (1K) and two-part (2K) systems. 1K formulations require oven cure. For commercial transportation, 2K adhesives are recommended because no oven cure is necessary.

Semi-structural adhesives provide both bonding and sealing properties and can adhere to wood, glass, PU, sheet and coated metal. They are also paintable for a Class A finish. Typical applications include:

- **Aluminium roof sheets**
- **Painted aluminium cant rails**
- **Composite or aluminium side panels**
- **Luggage compartments**
- **Floors/carpets**

In addition, Dow Automotive Systems is introducing a new line of structural adhesives specially formulated for use with lightweight composites. Soon to be sold under the **BETAFORCE™** trademark, these specialty adhesives exhibit high modulus, high elongation, greater shear strength and stable mechanical properties over a wide temperature range.



*Above: Semi-structural adhesives from Dow Automotive Systems can be used on a variety of substrates, including sheet and coated metal, glass, PU and wood.*



# Cleaners, Primers and Activators



*Far left: Used as part of a complete direct glazing system, BETAPRIME is also used as an adhesion promoter on body surfaces in conjunction with BETAMATE™ structural adhesives.*

*Left: BETACLEAN provides advanced surface preparation and is a vital part of the adhesive process for direct glazing, as well as sealing and bonding of body panel repairs.*

To achieve optimum results from adhesives and sealers, proper surface preparation is required so that a chemical bond can form between substrates. Specific grades of **BETACLEAN™** cleaners, **BETAPRIME™** primers and **BETAWIPE™** activators from Dow Automotive Systems are recommended as parts of complete systems for commercial vehicle manufacturing and repair processes.

**BETACLEAN** cleaners are designed to eliminate contaminants such as rust, dirt, grease and oil prior to surface priming for adhesive repair, sealing, filling and bonding. Additionally, **BETACLEAN** can be used to remove excess uncured adhesives from a variety of finished and unfinished surfaces.

**BETAPRIME** primers from Dow Automotive Systems are used to encourage crosslinking between substrates and adhesive compounds. **BETAPRIME** also offers excellent UV stability and inhibits substrate corrosion.

**BETAWIPE** activators are also recommended for specific substrates and applications. Used in the glass bonding process and also with semi-structural adhesive applications, **BETAWIPE** provides surface-cleaning advantages, which help improve crosslinking and bonding.



*Above: Apply BETAWIPE with a continuous movement to clean and activate surfaces as part of a complete adhesive system.*



# BETAPRIME™ and BETASEAL™ Primers and Activators

**BETAPRIME™** primers are available in multiple formulations to meet your specific adhesion and substrate requirements. All **BETAPRIME** primers offer:

- **Excellent UV stability**
- **Ease of use**
- **Simplified surface activation**
- **Faster primer/adhesive link-up**

Your Dow Automotive Systems representative can help you select the best **BETAPRIME** primer for your application, or visit [www.dowautomotive.com](http://www.dowautomotive.com) for more information on the features and benefits of our complete line of primers.



# Product Matrix

Dow Automotive Systems provides the industry's broadest range of adhesives, sealants and acoustical, structural and thermal management solutions. Our goal is to utilise our extensive experience to exceed your requirements, meet

appropriate regulations, reduce costs and accelerate time to market. Detailed product information is also available in our materials finder located at [www.dowautomotive.com](http://www.dowautomotive.com).

## Products

### BETAFILL™ polyurethane seam sealants and

### BETATECH™ solvent-free sealants

Seal lightweight construction materials

## Applications

- Used as bedding compounds to absorb shocks and vibrations
- Seal wood, metal, plastic door frame and window sill fittings
- Used for bulkhead sealing, door-skin fixing
- Seal mud guards and wheel arches

## Benefits

- Permanent elasticity
- Paintable
- Good coefficient of movement and adhesion between different substrates
- Water and weather resistant
- Non-corrosive
- Brushable
- Vibration and shock absorbent
- Silicone free

### BETALINK™ adhesive

Semi-structural adhesives

- Aluminium roof sheets
- Painted aluminium cant rails
- Composite or aluminium side panels
- Luggage compartments
- Floors/carpets

- Acoustical and thermal management
- Road/engine noise sound absorption
- Protects the vehicle against dirt, dust, moisture and fumes
- Weight reduction when compared to similar materials
- Paintable for Class A finish
- Can be applied to a wide range of substrates

### BETAMATE™ glass bonding systems

Used worldwide for structural bonding and sealing of stationary glass

- Windscreens, taillights and quarter light glass for all commercial vehicles
- Aftermarket

- Help vehicles meet globally mandated requirements for barrier, rollover and roof crush regulations
- Improve crashworthiness
- Enhance structural integrity
- Reduce contact corrosion

### BETAMATE structural adhesives

Replace welds and mechanical fasteners in joining a variety of similar and dissimilar substrates

- Roof, panel and floor bonding
- Hem flanges
- Replace or reinforce weld joints in engine compartments, cockpits, roof panels
- Reinforce rails and other load-bearing members
- Bond structural headliners directly to roof
- Aftermarket

- Reduce fatigue and failure commonly found around spot welds and fasteners
- Seal against environmental conditions that cause corrosion
- Reduce vibration by stiffening overall vehicle structure, so acoustics are also improved
- Bond dissimilar substrates

### BETAPRIME™ primers

Glass and body primers

- Primer for glass and paint in OE and aftermarket applications
- Aftermarket

- Excellent UV stability
- Ease of use
- Packaging designed to reduce waste and improve efficiency
- System simplifies activation of the bonding surface
- Faster primer/adhesive link-up
- Conform to OEM specifications

## Products

### BETAWIPE™ activators

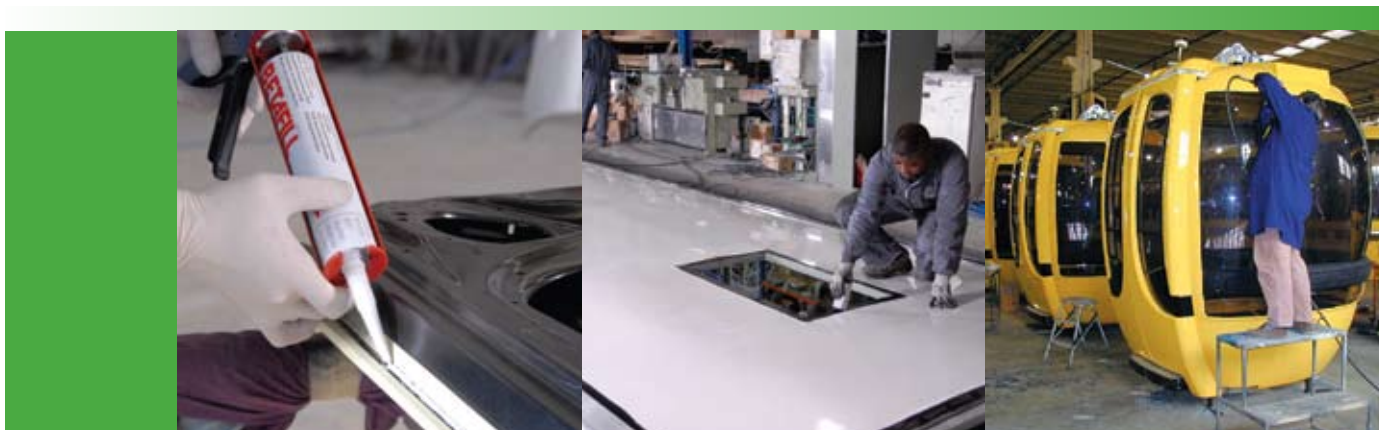
Adhesion promoters for plastics

## Applications

- Reactivate remaining “cut-back” PUR, PAAS, PUR and PVC RIM encapsulations
- Aftermarket

## Benefits

- Flash-off time: 10 minutes



*BETAFILL™ seam sealants are used for seam and panel sealing, gap filling and panel bonding.*

*BETAPRIME™ primer is applied to the roof surface prior to the application of BETAMATE™ structural adhesive.*

*Dow Automotive Systems BETAMATE glass bonding systems help seal stationary glass, adding to the vehicle's structural strength and protecting the interior cabin from dirt and other environmental elements.*

# Product Selector Guide

| Application Characteristics | Product Grade           | Description   |
|-----------------------------|-------------------------|---|
| <b>Surface Cleaning</b>     | BETACLEAN™ 3300         | Glass cleaner   |
|                             | BETACLEAN 3350          | Glass, paint, metal cleaner   |
|                             | BETACLEAN 3500          | Uncured adhesive cleaner  |
|                             | BETACLEAN 3900          | General purpose cleaner   |
|                             | BETABRADE™ F1           | Contamination & silicone cleaner  |
| <b>Surface Treatment</b>    | BETAWIPE™ VP 4604       | Glass activator for two-step primers  |
|                             | BETAWIPE 6600T          | Solvent-borne glass activator for BETASEAL™ Uni-wipe direct glazing systems   |
|                             | BETAWIPE Hydro          | Water-borne glass activator for BETASEAL Uni-wipe direct glazing systems  |
|                             | BETAPRIME™ 5061         | Multipurpose primer (glass, metal, various substrates)  |
|                             | BETAPRIME UV            | UV stability-enhanced two-step glass primer   |
|                             | BETAPRIME 1707 A+B      | Two-component metal etch primer   |
| <b>Sealants</b>             | BETAFILL™ 10210/211/215 | PU-based sealants (white, gray, black)  |
|                             | BETATECH™ PLUS          | Solvent-free PU-based sealants (white, gray, black)   |
|                             | BETAMATE™ 31            | Polyoxypropylene (POP)-based adhesive/sealant, primerless on various substrates, excellent UV stability   |
|                             | BETAMATE 32             | MS polymer-based sealant, primerless on various substrates with excellent UV stability  |
| <b>Adhesives</b>            | BETAMATE 1100N          | Low-cost PU-based adhesive system, can be used for back or gap filling  |
|                             | BETAMATE 7120           | PU-based high-viscosity adhesive system, can be used for back or gap filling  |
|                             | BETAMATE™ 7150          | PU-based non-conductive BETASEAL Uni-wipe-compatible adhesive system, can be used for back or gap filling   |
|                             | BETAMATE 7170           | PU-based low-conductive, quick fix (warm applied) BETASEAL Uni-wipe-compatible adhesive system, can be accelerated for curing with BETAMATE ACCEL |
|                             | BETAMATE 7185           | PU-based, high-viscosity, quick fix (warm applied) adhesive system  |
|                             | BETAMATE 7425           | PU-based, high-viscosity, quick fix (warm applied) BETASEAL™ Uni-wipe-compatible adhesive system  |
|                             | BETAMATE™ ACCEL         | Water paste for accelerating BETAMATE 7170  |
| <b>Structural Bonding</b>   | BETAMATE 7385           | Two-component low-viscosity epoxy adhesive  |
|                             | BETAMATE 2098           | Two-component structural bonding/repair epoxy adhesive  |
| <b>Plastic Bonding</b>      | BETALINK K2             | Two-component, PU-based, low-strength, low-modulus plastic adhesive   |
|                             | BETAMATE 2810           | Two-component, PU-based, medium-strength, medium-modulus adhesive   |
|                             | BETAMATE™ 7020/7080     | Two-component, PU-based high-strength, high-modulus adhesive  |
| <b>Special Adhesives</b>    | BETALINK 1102           | PU-based, white-colored, non-conductive, low-modulus primerless adhesive system mainly used for panel bonding                                     |
|                             | BETAMATE 7140           | POP-based, black-colored, low-conductive, primerless adhesive system with excellent UV stability  |

# Surface Preparation Guide

| Applications            | BETACLEAN™<br>3300 | BETACLEAN<br>3350 | BETACLEAN<br>3900 | BETAPRIME™<br>UV | BETAPRIME<br>5061 | BETAPRIME<br>5700 | BETAPRIME<br>1707 |
|-------------------------|--------------------|-------------------|-------------------|------------------|-------------------|-------------------|-------------------|
| Bare Metals and Alloys  |                    | ●                 |                   |                  |                   |                   | ●                 |
| Glass Ceramic           | ●                  |                   | ●                 | ●                | ●                 | ●                 |                   |
| Glass without Ceramic   | ●                  |                   | ●                 | ●                | ●                 | ●                 |                   |
| E-Coat/Painted          | ●                  |                   | ●                 |                  | ●                 | ●                 |                   |
| Phenolics               |                    | ●                 |                   |                  | ●                 |                   |                   |
| Composites              |                    | ●                 | ●                 |                  | ●                 |                   |                   |
| Timber                  |                    | ●                 |                   |                  | ●                 |                   |                   |
| Glass Fibre             |                    | ●                 | ●                 |                  | ●                 |                   |                   |
| Sheet Moulding Compound |                    | ●                 | ●                 |                  | ●                 | ●                 |                   |
| Polycarbonate           | ●                  |                   |                   |                  | ●                 |                   |                   |
| ABS                     |                    | ●                 |                   |                  | ●                 | ●                 |                   |



# About Us



Dow Automotive Systems, a business unit of The Dow Chemical Company, provides technology- and materials-enabled solutions for interior, exterior, powertrain, vehicle structural enhancement, acoustical management, emissions control and aftermarket applications in the automotive and commercial transportation industries.

[www.dowautomotive.com](http://www.dowautomotive.com)

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**Automotive Systems**

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Form No. 299-50574-912 HMC