

Solutions That Perform—from Dow Automotive

Dow Automotive provides manufacturers of passenger cars, light trucks and commercial vehicles with solutions that perform, for automotive interior, exterior, and under-the-hood applications. Our material science and characterization expertise, combined with design, engineering, processing knowledge and program management, enable us to provide OEM and Tier customers with solutions that meet or exceed vehicle performance targets at lower weight and cost.

In addition to in-house design engineering, testing and validation services, we offer an industry-leading materials portfolio, which includes plastics, glass bonding/direct glazing systems, vehicle body structure enhancements, acoustical management and NVH systems, adhesive and sealant technologies, films and fluids.

Following is a synopsis of the wide range of multifunctional products offered by Dow Automotive, along with each product's benefits and potential applications:

AFFINITY polyolefin plastomers* – exhibit thermoplastic and elastic properties including improved melt strength, flowability, good processability and higher shear sensitivity compared to other products. This product is ideal for coating and lamination applications on exterior components like mold-

ing, claddings and spoilers, or on interior components including floor mats and molding/trim.

*AMPLIFY** functional polymers – used in compounding for impact and viscosity modification of engineered thermoplastics and polyolefins for automotive applications. Benefits include superior pigment retention and easy processing.

BETABRACE reinforcing composites* – designed for use on sheet metal and thermoset surfaces, consist of a woven glass mat, adhesive polymer and covering of release paper. Die-cut shapes, in thicknesses optimized for cost and performance, are applied to areas needing reinforcement within fab plants, body or paint shops. Products improve flexural strength and distortion, and impact and fatigue resistance. In certain applications, BETABRACE has

also been shown to eliminate bass boom. All these benefits can be provided without the added weight and cost of steel supporting structures. BETABRACE is used to reinforce shock towers, fenders, hoods, side mirrors, door handles, deck lids, floorpans, tailgates, roofs, package shelves, sail panels, wheel wells, doors and liftgates.

BETADAMP acoustical damping systems* – a line of multifunctional vibration-damping coatings applied robotically with industry-standard equipment. BETADAMP systems include multiple-chemistry and low- or high-density materials approved for interior or exterior applications in body or paint shops or general assembly. The coating systems are chip- and corrosion-resistant, and are designed to optimize cost, weight and acoustical performance on existing and new vehicle platforms. Proven replacements for

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butyl bitumen vibration-damping pads, BETADAMP products contain near-zero VOCs and are PVC-free. Typical applications include underbody, floorpan, roofs, door panels, strut towers, package shelves, closure panels, trunk areas and exterior wheel wells.

BETAFOAM* NVH systems – acoustical and structural foams designed to manage noise and vibration and also contribute to vehicle structural integrity. Low-density, injectable formulations form high-performance acoustical seals, thus preventing noise from resonating through vehicle cavities. High-density formulations improve body rigidity and crashworthiness. Overall weight reduction is also realized as BETAFOAM may allow for thinner wall construction of vehicle cavities. In addition, our low-MDI formulations can be applied in post paint or in general assembly, as they may relieve ventilation requirements. BETAFOAM is injected into vehicle cavities including cowl bars, pillars, rocker, sail and door panels, wheel wells, body-side joints, frame and lateral rails and engine cradles, to form reliable acoustical seals as well as manage impact forces in frame structures and bumper designs.

BETAFOAM* SFI – structural foam insert gives customers an integrated part option providing acoustical performance advantages and structural characteristics similar to high-density bulk foam materials. Consisting of a pre-cured foam core and heat-activated epoxy, BETAFOAM SFI can be fabricated to fit in any body cavity. The parts can also be produced with an additional molded shell for added strength and stiffness, and can be clipped into place with standard fasteners in body or fab shops. Applications include pillars, rocker panels, wheel wells and frame rails/longitudinal structure.

BETAGUARD* sealants – a line of automotive body, trim and paint shop sealers used to protect the passenger compartment from moisture, dirt, dust and fumes. An effective sealant that also reduces vibration, BETAGUARD helps improve vehicle acoustics. BETAGUARD is used as an anti-flutter sealant between inner and outer body panels; an interior sealer for the floorpan area and engine and trunk compartments; an exterior sealer for underbody seams and hood, deck lid and door hem flanges; and as an underbody and anti-chip coating.

BETAMATE* structural adhesives – replace welds and mechanical fasteners in joining a variety of similar and dissimilar substrates, now without degreasing or priming. BETAMATE reduces fatigue and failure commonly found around spot welds and fasteners and also seals against environmental conditions that cause corrosion. Because BETAMATE reduces vibration by stiffening the overall vehicle structure, NVH performance may also be improved. New formulas expand to eliminate sealer; are ideal for aluminum and steel applications; and include glass bead-containing materials for controlled bond-line thickness. Typical applications include door, hood and deck lid flanges; weld joints in engine compartments, cockpits and roof panels; rails and other load-bearing members. BETAMATE can also be used for glass encapsulation and to bond side glass clips, primerless-to-paint cladding, primed/painted steel or plastic components and structural headliners.

BETASEAL* glass bonding systems – are used worldwide for structural bonding and sealing of stationary glass to help vehicles meet globally mandated safety requirements for barrier, rollover and roof crush regulations. New technologies include primerless-to-paint, non-conductive, high-modulus and QUICK FIX (fixture-free) adhesives. Applications include windshields, backlites and quarter glass for passenger vehicles, trucks, buses, rail coaches and off-road vehicles.

BETASEAL* Uni-wipe systems – offer the same advantages for the same applications, while providing the convenience of a single clear wipe around the glass—with quick open time—before application of a specially formulated adhesive. The need for black-out primer is eliminated because the clear wipe is UV-resistant.

CALIBRE* polycarbonate resins – are engineering resins offering an exceptional combination of clarity, heat and impact resistance. They are ideal for parts requiring load-bearing capability or energy management and can be modified to enhance special performance requirements including color, ignition resistance, UV stability and improved mold release. Applications include interior lighting covers, instrument panel (IP) retainers and trim, defroster grilles and exterior lenses.

CBT™ resins – (Cyclic Butylene Terephthalate) resins are the basis for a new family of thermoplastic materials with unique thermoset-type benefits including low processing viscosity, excellent filler wet-out and high filler loading capabilities. This family of materials will enable cost and weight reduction with improved styling, durability, high-heat performance and dimensional stability in a wide range of applications including exterior body panels and structural components.

D.E.R* epoxy resins – consist of a family of custom-formulated epoxy resins that can be blended to include flexibility, impact strength and flame-retardant capabilities. Applications include components and/or delivery systems for fuel, sealing and steering/suspension systems.

DERAKANE epoxy vinyl ester resins* – are known for their chemical resistance, excellent wetting, toughness and high-temperature properties for composite parts. Typical applications include truck beds, bumper beams, side impact supports, power steering reservoirs, engine mounts, sensors, valve covers, timing chain covers and oil pans.

*Dow Polyethylene RESiNS** – provide outstanding melt strength and flow to produce parts with good impact-stiffness balance. Interior and exterior applications include floor mats, blow-molded components and bumper fascia.

DOW PolyPropylene RESiNS and Long Glass Fiber (LGF) polypropylene* – fit the needs of a broad range of applications whether processed by injection molding, extrusion, blow molding, blown or cast film. Due to the low density of this crystalline polymer, finished parts require less raw material than other competitive resins. This makes polypropylene one of the most cost-effective plastics available. Applications include interior trim, pillar trim, door panels, IP components, exterior trim, fascia and under-the hood components. Dow's LGF series offers glass concentrates and formulated homo and copolymer polypropylene/glass pellets and master batches for direct processes suitable for both injection and compression molding. Applications include covered structural IP parts, door modules, front-end carriers, step assists and underbody protection.

Injection-molded dash insulators – designed for use as double-wall barriers on the front of the dash, between sheet metal and carpet, injection-molded dash insulators help prevent engine and drivetrain noise from entering passenger compartments. By effec-

tively distributing mass to areas that have additional acoustical requirements, insulators can provide optimal performance at the lowest possible weight. Precise pass-through areas and tight barrier tolerances minimize sound leaks. Molded-in options including footrests, electrical wiring channels, fasteners, cowl sides and tops, and sealing features reduce system cost by eliminating the need for separate components. And, a wide variety of TPO formulations enable Dow Automotive to optimize part stiffness for specific needs. Insulators are easily installed in vehicle interiors between engines and passenger compartments with integrated hinges and assembly-assist features.

INTEGRAL adhesive films* – are heat- and pressure-activated adhesives that are available in a clean, dry (solvent-free), non-tacky form. Manufactured in a continuous roll, each is designed to provide the precise one- or two-sided adhesion required for specific substrate applications. Ideal for mono-layer, two-layer and multi-layer adhesion for interior trim, headliner and carpet applications.

ISONATE MDI products* – are modified MDI compounds based on high-purity diphenylmethane diisocyanate that are used to produce semi-flexible foams suitable for automotive use. Applications include seamless PSIR door IP, PSIR doors, steering wheels and dunnage parts.

ISOPLAST engineering thermoplastic polyurethane resins* – combine the toughness and dimensional stability of amorphous resins with the superior performance and chemical resistance normally associated with semi-crystalline resins. These resins are available in three series: clear, impact-modified and long glass-filled. Typical applications include fuel filters, engine compartment fasteners, latches, fluid level windows and structural components.

MAGNUM ABS (acrylonitrile butadiene styrene) resins* – are among the most versatile polymers in the styrenics family. Acrylonitrile offers heat stability and chemical resistance; butadiene provides toughness and impact resistance; and styrene supplies rigidity and processability. MAGNUM is ideal for components needing molded-in color. Applications include interior and exterior trim, consoles, door and instrument panels, wheel covers and mirror housings.

PAPI polymeric MDI* – are highly versatile products for semi-flexible foam applications. Providing characteristics such as delayed gel times and fast-rise profiles, these products are ideal for IP and interior trim applications.

PELLETHANE thermoplastic polyurethane elastomers* – provide excellent clarity, chemical resistance and flexibility. Applications include exterior components like grilles, molding, cladding and spoilers, plus IP skins, air induction systems and single-sided window encapsulation.

Powertrain NVH solutions – consist of barrier and/or absorbing material options for powertrain and under-the-hood applications. Barrier materials include heat-stabilized thermoplastic olefins or vulcanizates, which can be specified at various densities. Absorbing material options include molded or extruded polyurethane foam, melt-blown acoustic fibers or unique closed-cell olefin foam produced by Dow Automotive. These solutions effectively treat high-ranking noise sources, or problems in engine compartments, to minimize powertrain noise and improve interior sound quality. Applications include air intake manifold, engine, cam, transmission, fuel rail and throttle body covers, engine valley NVH absorbers and dampers, engine-side cowl top insulators, interior dash insulators and engine closeout panel sound deadeners.

PULSE engineering resins* – are designed to provide top performance in tough applications, from single-piece items to intricate components. PULSE engineering resins are ideal for energy management solutions and can withstand high and low temperature extremes and rapid, repeated temperature fluctuations. Applications include body panels, exterior trim, bumper beams, wheel covers, interior trim, IPs, retainers and knee bolsters.

SPECFLEX semi-flexible polyurethane foam systems* – are available for a broad range of applications requiring a plush, padded look and feel. All SPECFLEX systems are water blown, containing no CFCs or other known ozone-depleting substances. Applications include wide use in automotive interiors for pillars, acoustical insulation/foam, armrests, consoles, energy management foam, headrests/seat cushioning, steering wheels; and a variety of IP components such as air bag doors and knee bolsters.

SPECTRIM reaction moldable polymers* – are available in different formulations for RIM, SRIM and low-density RRIM operations. Depending on the formulation and customer requirements, SPECTRIM exhibits impact strength, design flexibility, toughness/gravel resistance and excellent painted DOI. Applications include fascia, body panels, window encapsulation, bumper beams, door panels, exterior and interior trim components.

STRANDFOAM polypropylene foam* – is strong, low-density, high energy-efficient foam used in energy absorbing automotive applications. Its unique honeycomb structure and strand orientation offers superior energy absorption with minimal displacement, as well as excellent acoustical performance. It is bondable, solvent-resistant, recyclable and available in a variety of designs and sizes to meet design or packaging requirements.

VERSIFY plastomers and elastomers* – propylene-ethylene copolymers, with elastomeric properties, that combine high clarity with elasticity to produce soft-touch properties. Since they adhere very well to polypropylene, the resins are ideal for soft-touch and other over-molding applications.

VORANATE specialty isocyanates* – contain MDI and are compatible with rigid polyether and polyester polyols making them suitable for full range of low- to high-density semi-rigid and rigid foams, as well as structural RIM processing. The flexible interior or structural foams are used for a variety of molded foam applications.

VORANOL polyether polyols* – are provided with a wide range of properties needed to produce low- to high-density foams for seating applications.

For more information about all Dow Automotive solutions supported by this wide range of multifunctional products, contact one of the following offices or visit www.dowautomotive.com.

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We listen. We deliver.



Dow Automotive

World Headquarters
Dow Automotive
1250 Harmon Road
Auburn Hills, Michigan 48326
USA
Phone: + 1-248-391-6300
Toll free: + 1-800-441-4369
Fax: + 1-248-391-6417
E-mail: dowautomotive@dow.com
www.dowautomotive.com

Dow Automotive
Dow Deutschland GmbH & Co.
OHG
Am Kronberger Hang 4
D-65824
Schwalbach, Germany
Phone: + 49 (0)6196-566-0
Toll free: 00800 3 694 6367**
Fax: + 49 (0)6196-566-444

**Toll free from Austria, Belgium, Denmark, Finland (990 3 694 6367), France, Germany, Hungary, Ireland, Italy (800 783 825), The Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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