

Adhesives and Sealants



We protect and
beautify the world™



We protect and beautify the world™

HEADQUARTERED
IN
PITTSBURGH, PA

1,000
R&D EMPLOYEES

GLOBAL
LEADER IN
INNOVATION
COLOR
and
SUSTAINABILITY

OPERATIONS
IN NEARLY **70**
COUNTRIES



156 MANUFACTURING
FACILITIES

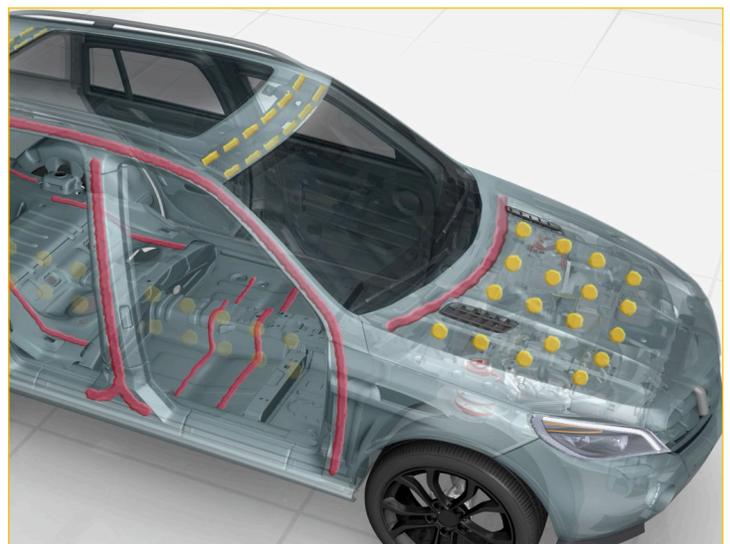
LEADER
IN THE
INDUSTRIAL
TRANSPORTATION
CONSUMER CONSTRUCTION
PRODUCTS MARKETS
& **AFTERMARKETS**



Delivering Your Next Breakthrough



Each new PPG innovation begins with an intense focus on understanding the needs and opportunities identified by our OEM partners. It combines the inspiration of our dedicated team of scientists, the superior properties of our proprietary resins and raw materials, and the unsurpassed expertise of our application specialists. And it sets the stage for continued innovation in each succeeding product generation and vehicle platform. From the use of advanced light weighting strategies to the drive toward ever-increasing sustainability in body and paint shop operations, OEMs are transforming the way vehicles are designed, assembled and protected. And the achievement of each new business goal, whether to increase process efficiency, reduce costs, protect the environment and/or improve vehicle performance and durability, begins with the right solutions from a trusted partner.



WE ARE THAT PARTNER. PPG is a global leader in vehicle adhesives and sealants, combining leading-edge science and innovation dedicated to meeting the needs of our customers, in their production environment, every day.

Our team collaborates with the world's premier OEMs to identify and deliver new process and performance breakthroughs featuring innovative structural adhesives, anti-flutters, acoustic materials, multi-functional sealants, emulsions and other products engineered to drive customer success.



Body Shop Innovations



TRADENAME	PRODUCT	APPLICATION
CORASEAL	Sealers	Pumpable
CORABOND	Anti-flutter	Pumpable
REVOFORM	Sealer/ Anti-flutter	Parts
CORABOND	Semi Structural adhesives	Pumpable
CORABOND	Structural adhesives	Pumpable
AUDIOGUARD	LASD	Pumpable
AUDIOSHIELD	Damper parts	Parts
BPR	Body panel reinforcement	Pumpable
REVOFORCE	Reinforcement parts	Parts

CORABOND® – Anti-Flutter Adhesives

PPG offers highly customized liquid PBD and rubber-based anti-flutter adhesives and sealants for use in a variety of production environments and with multiple substrates.

By eliminating bond-line read-through, CORABOND anti-flutter adhesives enable OEMs to further reduce vehicle weight and cost through the use of thinner gage metals. Each product (high to low expansion) offers exceptional wash-off, sag and corrosion resistance with optimized application energy utilization.

Recent PPG innovations include sulfur-free and ADCA-free anti-flutter chemistries as well as a high-expansion acoustical anti-flutter.

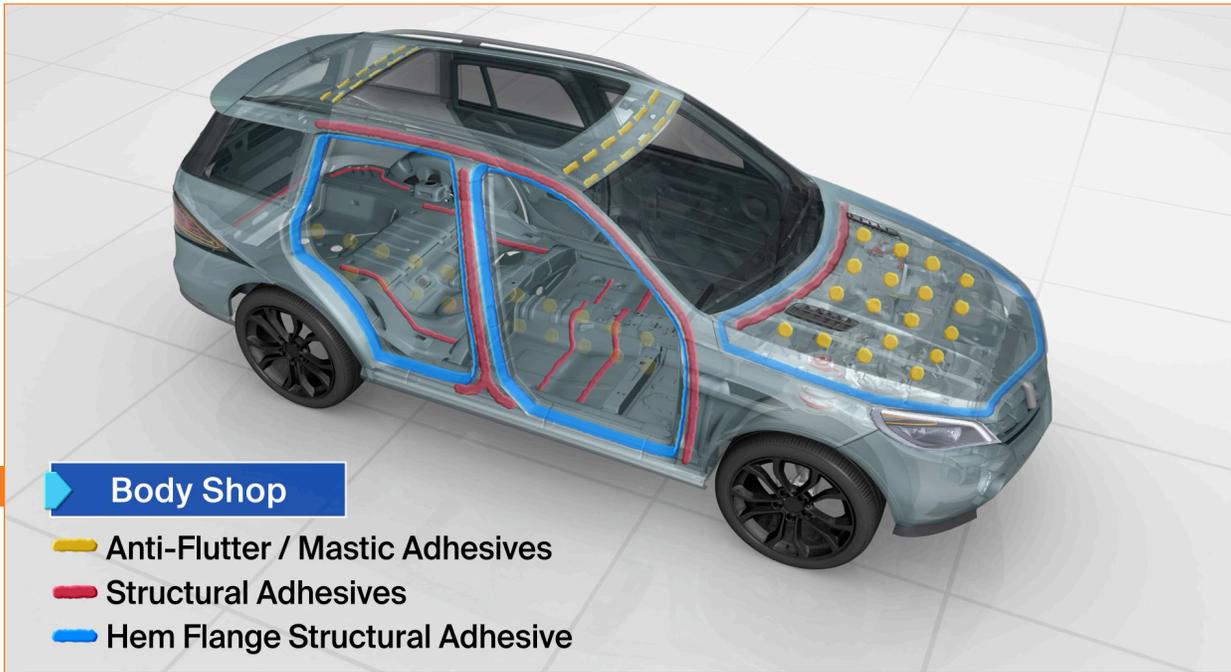
TECHNOLOGY	LAP SHEAR STRENGTH (MPA)	EXPANSION RATE (%)
High LSS	1 - 2.5	0 - 15%
High Expansion	0.2 - 1.5	40 - 200%+

REVOFORM® – Anti-flutter/Sealer Tapes

Complimentary to PPG CORABOND® pumpable anti-flutter technologies, PPG also offers reactive and non-reactive butyl based part technology. These preformed parts offer good adhesion on oily substrates, provide good wash-off resistance and are compatible with current pretreatment and e-coat systems.

KEY BENEFITS OF PPG CORABOND ANTI-FLUTTER PRODUCTS INCLUDE:

- Broad expansion % portfolio results in optimized read-through capabilities
- Excellent corrosion resistance
- Excellent sag and wash-off resistance
- Adhesion to multiple automotive substrates and coatings
- Solvent and solvent free technologies



Body Shop

- Anti-Flutter / Mastic Adhesives
- Structural Adhesives
- Hem Flange Structural Adhesive

CORABOND® – Structural Adhesives

PPG is a global supplier of structural adhesives technology, enabling OEMs to achieve significant cost and weight savings while addressing a wide range of vehicle design consideration:

- Stiffness and dynamic characteristics
- Sealing performance
- Corrosion resistance
- Wash-off resistance
- Wet adhesion to oily substrates
- Weld bonding; reduction in overall welds
- Low and broad bake capabilities
- Long shelf life

Our latest innovations include a new generation of Corabond fracture-toughened/crash resistant single-component epoxy adhesives which deform rather than break upon severe impact to enhance energy absorption and improve vehicle safety. These new products can be used for joining multiple materials in body-in-white.

TECHNOLOGY	IMPACT PEEL	LAP SHEAR STRENGTH (MPa)	PEEL STRENGTH
Hem Flange	–	≥ 20MPa	≥ 3 N/mm
Semi Crash	≥10 N/mm	≥ 20MPa	≥ 4 N/mm
Crash	≥20 N/mm	≥ 25MPa	≥ 8 N/mm
High Crash	≥30 N/mm	≥ 25MPa	≥ 10 N/mm

Body Shop Innovations



AUDIOGUARD® – Body Shop Technology

Cold-pumpable, reactive rubber-based technologies that can be applied to oily substrates, where localized, high vibration damping is required, such as door, roof and/or side panel applications.

AUDIOSHIELD™ – Constrained Layer Dampener Pads

Complimentary to PPG AUDIOGUARD® liquid applied sound dampeners, PPG also offers constrained layer damping pads that offer a cost and weight competitive technology to reduce road noise and vibrations within the vehicle body. These self adhesive parts offer easy install customized shapes for varying application needs. These non-reactive product can withstand high processing temperatures, enabling flexibility of use in either the body shop, paint shop, trim/assembly or tier application.

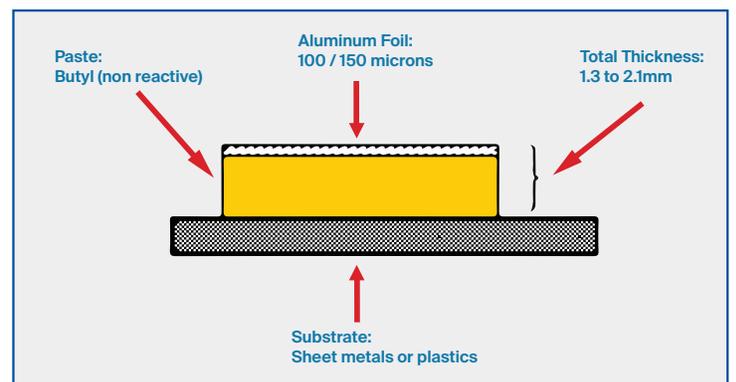
Applications:

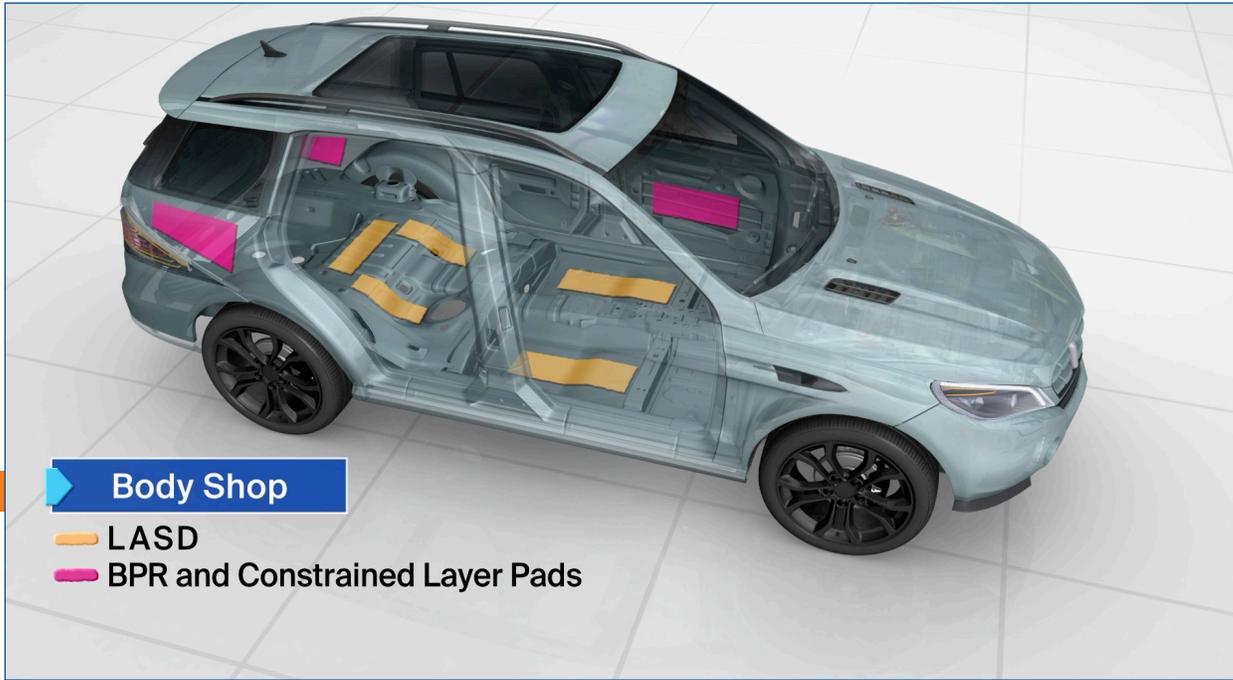
- Doors
- Quarter panels
- Hoods
- Trunk lids



KEY BENEFITS OF PPG AUDIOGUARD LASD PRODUCTS INCLUDE:

- One component
- High vibration damping on wide temperature range
- Good corrosion resistance
- Compatible with automotive oils and coatings



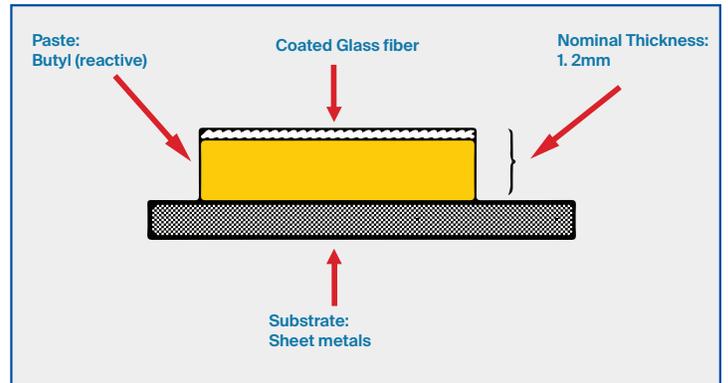


BPR® – Body Panel Reinforcement (Pumpable) REVOFORCE® – Reinforcement Parts

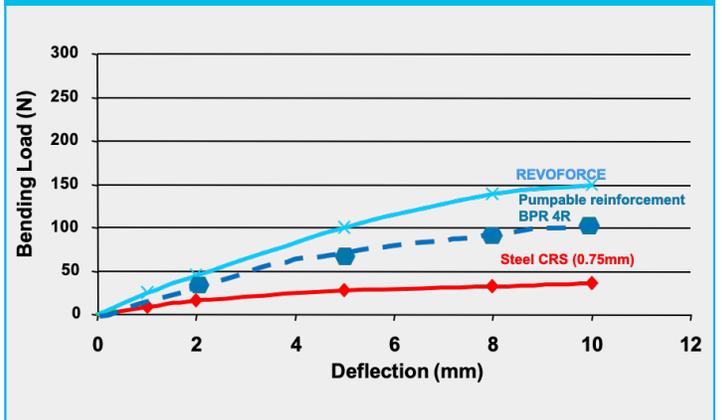
Panel stiffening technology developed to locally reinforce vehicle body panels enabling lightweight though localized panel thickness reductions.

Benefits of PPG BPR and REVOFORCE Products Include:

- Automated and part portfolio
- Targeted reinforcement enabling light-weighting
- Optimized cost / performance solution



EXAMPLE OF STRENGTH VS. DISPLACEMENT CURVE WITH/ WITHOUT REINFORCEMENT MATERIAL



Paint Shop Innovations



TRADENAME	PRODUCT	APPLICATION
AUDIOGUARD	<ul style="list-style-type: none"> • LASD • LASD multifunction 	Pumpable
CORASEAL	<ul style="list-style-type: none"> • Sealer • Cosmetic sealers 	Pumpable
CORASHIELD	<ul style="list-style-type: none"> • Underbody Coating (UBC) • Multifunction UBC & Sealer 	Pumpable
CORASHIELD	<ul style="list-style-type: none"> • Stoneguard 	Pumpable



KEY BENEFITS OF PPG CORASEAL SEALANTS INCLUDE:

- Low VOC
- Low condensate
- Low opacity
- Multi-purpose (seam, interior, exterior, underbody)

CORASEAL® – Sealants

PPG sealants are used in an ever-growing range of automotive and commercial vehicle applications, closures and body. Technologies are developed for high and nominal bake conditions and varying density tailored to meet vehicle design and customer performance targets.

CORASEAL Product offerings include:

- Interior Sealers
- Exterior Sealers
- Universal Sealers
- Roof Ditch Sealers
- Thumbgrade sealers
- Oil sealers

PPG recently developed innovations:

Ultra low-density, multi-purpose sealant that reduces required film thickness by 33% and overall material consumption by 50%.

4 Wet Sealer Technology is a breakthrough innovation for the OEM paint-shops. It enables the removal (or switch-off) of one oven. Allowing all layers to be applied wet on wet (sealers + paint layers + clearcoat) and then cured in only one oven. This breakthrough is based on adapted PVC formulation with specific adhesion promoter and fast fusing system.



Paint Shop

- Sealers
- LASD
- Under Body Coating

CORASHIELD® – Sealants

PPG has a broad range of Corashield underbody and anti-chip coatings—each formulated specifically for the corresponding OEM's production environment—provide exceptional protection from stones, road debris, and other elements. These solutions provide the vehicle underbody protection from corrosion and rust.

AUDIOGUARD® – Liquid Applied Sound Deadener (LASD)

Winner of the prestigious Automotive News PACE Award, PPG's AudioGuard products are helping OEMs minimize the transmission of road-induced noise, vibration and harshness (NVH) into the passenger compartment while eliminating the added cost, complexity, weight and waste associated with conventional products, including pre-formed pads.

These “green” solutions are becoming even greener through the introduction of next generation, low-VOC, mid and low-density waterborne products. PVC based products offer a multifunctional solution with excellent vibration-damping performance and good resistance against abrasion and stone chipping, since it is applied in classical underbody application areas.

PPG's award-winning AudioGuard LASD portfolio includes waterborne acrylic latex formulas ideally suited to paint shop operations. These versatile vibration damping products, which are quickly replacing pre-formed pads, can be applied to horizontal, vertical and inverted surfaces without sagging or sliding.

Assembly / Trim Shop



TRADENAME	PRODUCT	APPLICATION
TOTALSEAL	<ul style="list-style-type: none"> • Structural bonding • Flexible bonding 	Pumpable
DURABED	Bedliner	Pumpable
TOTALSEAL	Mastic sealers	Pumpable
TOTALSEAL	Interior trim adhesives	Pumpable

TOTALSEAL® PU – Structural Adhesives

PPG offers high performance polyurethane structural adhesives for metal, plastic and composite bonding. Our PU adhesives offer:

- Easy to dispense mix ratios
- Improved NVH performance
- Light-weighting enabler
- Improved process ability
- Tailorable reactivity to meet customer requirements and curing conditions
- Primerless systems available

	STRUCTURAL PU 2K	SEMI-STRUCTURAL PU 2K
Tensile Modulus	700-1300 MPa	1,7- 2,5 MPa (100% Secant modulus)
Elongation at Break	5-100%	200-350%
Shore Hardness	60-90 D	50-70 A
Lap Shear Strength (23°C)	8-15 MPa	2-3 MPa
Lap Shear Strength (80°C)	2-5 MPa	1-1,5MPa
Typical bonded material	e-coat, SMC, BMC, some plastic grades (ABS)	SMC, Polyolefins (filled PP), Glass fiber filled PP, ABS, PC alloy (with primer)



DURABED™ – Sprayable Bedliner

OEMs are increasing take rates of factory-installed bedliners by offering PPG's innovative, extremely robust Durabed coating, which provides exceptional corrosion and wear resistance at very low film thickness and reduced weight.

- Outstanding appearance characteristics
- Excellent resistance to gouging, tearing and abrasion
- Engineered by the global leader in paint shop technology

**Also acts as a seam sealer in the truck bed.*

TOTALSEAL® – Sealants

PIB sealers ideally designed for dynamic seal applications

- Solvent free- warm temperature application
- Solvent – room temperature application

TOTALSEAL® PU – Interior Trim Adhesives

PPG low-VOC, waterborne trim adhesives help OEMs unlock additional cost savings and increase production efficiency in vacuum forming and compression bonding processes. Unlike other solutions, PPG's patented formula eliminates the need for primer, flame or plasma treatment of polypropylene type substrates.

- Excellent adhesion to ABS and polycarbonate as well as untreated polypropylene and TPO substrates



Key Properties of PPG TOTALSEAL Interior Trim Adhesives:

- Good tack
- Good adhesion to metal, glass, EPDM, PVC and other plastics
- Permanently plastic
- Protects against edge corrosion
- Water resistant
- Aging resistant: 4d - +100°C: no separation, no sag, no cracks or delamination
- Extended shelf life: 12 months

Our Locations



NORTH/SOUTH AMERICA MANUFACTURING/R&D

ADRIAN
961 DIVISION ST.
ADRIAN, MI 49221

FLINT ADC
3601 JAMES P COLE BLVD.
FLINT, MI 48505

ALLISON PARK COATINGS
INNOVATION CENTER
4325 ROSANNA DRIVE
ALLISON PARK, PA 15101

CLEVELAND COATINGS PLANT
3800 WEST 143RD ST
CLEVELAND, OH 44111

EMPRESA AGA
CARRETERA TEPOTZOTLÁN-LAS
CABAÑAS KM. 2.5, BARRIO DE CAPULA,
TEPOTZOTLÁN, ESTADO DE MÉXICO
C.P. 54600
MEXICO

PINHAI
RUA TERRA ROXA, 97
CONDOMINIO PORTAL
DA SERRA 83325-050, PINHAIS
BRAZIL

EUROPE, MIDDLE EAST & AFRICA MANUFACTURING/R&D

BEZONS
84 RUE SALVADOR ALLENDE
95870 BEZONS
FRANCE

BURSA
KAYAPA SANAYI BÖLGESİ
STIKLAL MAHALLESİ 1.SOKAK NO:7
16315 NILÜFER
BURSA

CAMARMA
CAMINO DEL CORRAL 7
POLIGONO ALCAMAR
28816 CAMARMA DE ESTERUELAS
SPAIN

CIESCZYN
CHEMIKÓW 16, 43-400 CIESCZYN
POLAND

KOLOMNA
PRODUCTION SITE, DEREVNYA BAKUNINO
140483 KOLOMNA
RUSSIA

QUATTORDIO
VIA SERRA, N. 1
QUATTORDIO, ALESSANDRIA 15028
ITALY

SAINT-JUST-EN-CHAUSSÉE
ZONE-INDUSTRIEL NORD - 2 RUE
D'ORESMEAUX
60130 SAINT-JUST-EN-CHAUSSÉE
FRANCE

ASIA PACIFIC

MANUFACTURING/R&D

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CADASTRE # 82, RE SURVEY # 26/2,
THIRUBUVANAI,
MANNADIPET COMMUNE
605 107 PONDICHERRY, INDIA

GUJARAT
MORYA PLANT, PLOT
NO.26/27/67/68/69 MAHA
GUJRAT INDUSTRIAL AREA,
SARKHEJ, BAVLA ROAD,
VILLAGE SANAND, INDIA

BUSAN
28-7 YONGDANG-DONG
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