**BETASEAL™ Advantage** All Application Auto Glass Urethane Adhesive

*Use BETASEAL™ Advantage for any replacement to deliver one-hour, crash-proven safe drive away in temperatures from 0°F (-17.8°C) and above for standard and high-modulus, nonconductive (HMNC) applications.*

BETASEAL Advantage adhesive simplifies the installation process and reduces risk by providing a consistent, easy-to-use product for all auto-glass replacements. Unlike hot-applied urethane adhesives that require heating to chemically activate the product, BETASEAL Advantage is only heated to extrude. It meets all OEM and FMVSS requirements.

**Applications**
- Structurally bonded or direct glazed automotive glass, such as windshields, backlites, quarter glass and other stationary glass
- Other uses such as attaching hardware to glass and backfilling to install reveal moldings or other trim

**Application details**
- See vehicle manufacturer’s recommendations for additional details. Do not use any other manufacturers’ primers, cleaners or other chemicals in conjunction with any BETASEAL adhesive system.

**Product benefits** include:
- Delivers crash-proven, one-hour safe drive away in temperatures from 0°F (-17.8°C) and above
- Short heating time – 15 minutes in a cartridge oven; 30 minutes in a Koolatron®
- Excellent after-set positioning
- Reduces waste – partial tubes can be reheated multiple times
- Prolonged heating time – cartridges can be left in heating device up to 24 hours
- AGRSS-friendly packaging
- Meets all OEM long-term durability requirements
- Provides torsional stiffness to quiet and stabilize the vehicle’s ride
- Preserves radio, cellular phone and global positioning system reception in OEM antenna-encapsulated windshields and backlites

**Physical properties**
- Appearance – black, smooth paste
- Solids Content – 99%
- Flash point - > 230°F (110°C)
- Weight per volume – 11.4 lbs/gal
- Specific gravity – 1.4
- Sag – none
- Odor – minimal
- Working time – 8 to 10 minutes

**Cured physical properties**
- Shore A hardness – ~75
- Percent elongation – 200%
- Tensile strength – > 700 psi
- G-Modulus – > 2.0 MPa at 10% strain
- Specific electrical volume resistivity – > 5 x 10¹⁰ ohm cm
Adhesive system requirements

BETASEAL™ Advantage is an adhesive system. When applied according to the installation instructions, BETASEAL Advantage All Application Warm Applied Auto Glass Urethane Adhesive helps restore windshield structures to their original strength. The complete system includes the following products:

- BETACLEAN™ GC-800 Glass & Surface Cleaner effectively removes contamination from the windshield. It evaporates quickly to ensure a residue-free bonding surface.

- BETAPRIME™ CLEAR 1-Step Glass/Frit Primer is an easy-to-use, single-application primer. It primes windshields in two passes and chemically prepares glass and frit to assure optimal chemical link with the adhesive. When priming glass with BETAPRIME CLEAR in temperatures from 0°F (-17.8°C) to 40°F (4.4°C), the glass should be cleaned at a temperature at or above 40°F (4.4°C) and stored in a manner that will keep it clean and contaminant free.

- BETAPRIME 5404A Pinchweld and Encapsulation Primer promotes adhesion to the vehicle body. It inhibits rust in small nicks and scratches. It also activates PAAS (Pre-Applied Adhesive System), promotes adhesion to PVC and RIM substrates and prepares PVC trim for bonding.

- BETAPRIME 5201TF Bare Metal Etch Primer (if required) primes bare metal areas larger than 1/2” (1.3 cm) square.

- BETACLEAN U-424 Urethane Adhesive Cleaner safely removes excess uncured urethane adhesives. It does not harm most automotive finishes, vinyl roof fabrics or unpainted dashboards.

All applications

BETASEAL Advantage is specially formulated to safely bond all vehicles, including those requiring a HMNC adhesive. Dow Automotive conducted extensive laboratory and long-term testing to ensure a safe bond and lasting performance for all applications. BETASEAL Advantage enables technicians to simplify replacements by using one adhesive all the time.

Technical description

BETASEAL™ Advantage is an Advanced Cure, one-component adhesive with enhanced chemical crosslinking to speed bonding for safe drive away. Advanced Cure Reinforced Isotropic Network Adhesive (RINA) technology from Dow Automotive reduces dependence on moisture. RINA creates uniform and reinforced properties throughout the bead for high initial green strength, resulting in faster, safe drive-away times.

Safe drive-away time:

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>0°F (-17.8°C) and above</td>
<td>1 hour</td>
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Note: if vehicle manufacturers have not published specific make and model drive-away times, use this chart as a guideline.

Vehicle clean up

- If required, use BETACLEAN U-424 Urethane Adhesive Cleaner following all directions and precautions.
- Test BETACLEAN U-424 on an inconspicuous area prior to using.
- BETACLEAN U-424 is not recommended for newly painted, hard plastic or bonding surfaces.
- Dispose of empty containers properly.

Packaging

BETASEAL Advantage EZ Kit contents:

- 20 cartridges BETASEAL Advantage
- 16 applicators BETAPRIME™ CLEAR SA 1-Step Glass/Frit Primer
- 40 ml can BETAPRIME 5404A Pinchweld and Encapsulation Primer (PVC, RIM, PAAS)
- 20 uncut and 7 precut nozzles
- 20 14 mm daubers
- 28 AGRSS-compliant proof-of-use stickers – enough for all technicians and customer paperwork
- 15 mirror hang tags
- EZ Kit instruction sheet
Installation instructions

1. Wear appropriate safety equipment
   - Protect yourself
   - Wear safety equipment, such as work gloves, nitrile chemical-resistant gloves, safety glasses, work apron or other protection required by your company

2. Clean and inspect replacement glass
   - Use BETACLEAN™ GC-800 Glass & Surface Cleaner and a clean, lint-free paper towel to clean the bonding surface of the glass
   - Inspect replacement glass for defects
   - Verify all primers and adhesives are within use-by dates

3. Warm material
   - If using a cartridge oven, place cartridge(s) in heating device for a minimum of 15 minutes
   - If using a Koolatron®, place cartridges in unit for a minimum of 30 minutes
   - Use a heat-resistant glove to remove cartridges
   - Partial cartridges may be reheated
   - Total heating time not to exceed 24 hours

4. Cut out the glass
   - Protect the customer’s vehicle
   - Remove all hardware and reveal moldings
   - Cut out the windshield or body glass using your preferred method
   - Clean any dirt and debris from around the existing urethane
   - Partial cartridges may be reheated
   - Total heating time not to exceed 24 hours

5. Dry fit the glass
   - Fit new glass into the opening
   - Determine how to best position the glass
   - Mark this position with “paint safe” tape as guides

6. Prepare the glass
   - Use BETACLEAN GC-800 and a clean, lint-free paper towel to clean the bonding surface of the glass
   - If contamination is present, “wet scrub” the bonding surface with an abrasive pad and BETACLEAN GC-800. Apply a second application of BETACLEAN GC-800 and remove with a lint-free paper towel

6a. Prime the glass
   - Point pad of BETAPRIME™ CLEAR 1-Step Glass/Frit Primer toward the surface to be primed and pinch tube between thumb and forefinger to break internal vial, releasing the primer
   - Allow the pad to saturate. It is not necessary to squeeze the tube
   - Slowly draw the applicator twice around the surface to be primed to get an even glossy primer film
   - Wait six (6) minutes for the primer to dry before installing
   - If glass is not installed within 24 hours of original priming, reprime the glass with BETAPRIME CLEAR. Do not reprime more than one (1) time
   - When priming glass with BETAPRIME CLEAR in temperatures from 0°F (-18°C) to 40°F (4.4°C), the glass should be cleaned at a temperature at or above 40°F (4.4°C) and stored in a manner that will keep it clean and contaminant free

6b. Encapsulation and PAAS preparation
   - Clean encapsulation or PAAS bead with BETACLEAN™ GC-800 and a clean, lint-free paper towel
   - “Wet scrub” the encapsulation or PAAS bead with BETACLEAN™ GC-800. Allow to dry completely
   - When priming glass with BETAPRIME CLEAR in temperatures from 0°F (-17.8°C) to 40°F (4.4°C), the glass should be cleaned at a temperature at or above 40°F (4.4°C) and stored in a manner that will keep it clean and contaminant free

7. Trim back the urethane
   - Trim the urethane with an appropriate tool leaving a 1 mm to 2 mm base of original equipment urethane on the pinchweld
   - Take care not to damage the vehicle paint or pinchweld

8. Prepare the pinchweld
   - Note: exposed bare metal areas over 1/2” x 1/2” (1.3 cm x 1.3 cm) require an etching primer to restore bond strength and durability
   - Shake BETAPRIME 5404A for at least one (1) minute before application
   - Inspect the pinchweld for any bare metal or scratches
   - If found, prime these with BETAPRIME 5404A
   - Open the bottle carefully. Insert a clean, unused dauber.
   - To avoid spilling, never pour liquid on dauber
   - Apply BETAPRIME 5404A to scratches along the bond line.
   - Avoid priming existing urethane bead
   - Replace inner seal and cap on bottle immediately
   - Allow a minimum of six (6) minutes for the primer to dry

Bare metal priming:
   - Clean metal surface with an abrasive pad making sure to rough up edges of painted areas
   - Wipe area to be primed with a clean, lint-free paper towel dampened with 100% acetone
   - Allow two (2) minutes to flash
   - Shake BETAPRIME™ 5201TF Bare Metal Etch Primer for at least one (1) minute before application
   - Using a clean, unused dauber, apply an even coat of BETAPRIME 5201TF
   - Replace cap on bottle immediately
   - Allow at least 30 minutes for material to dry. Metal and air must be at least 40°F (4.4°C) for material to flash
   - Apply a coat of BETAPRIME 5404A on top of the primed area making sure to completely cover BETAPRIME 5201TF
   - Etch primer
   - Replace inner seal and cap on bottle immediately
   - Allow a minimum of six (6) minutes for the primer to dry

9. Apply BETASEAL™ Urethane Adhesive
   (Choose either glass or pinchweld application.)
   - Glass application:
     - Hold the applicator in a vertical position (90°) and dispense the adhesive with a continuous motion in a uniform “V”-shaped bead
     - Apply adhesive to the glass on top of the bond line
   - Pinchweld application:
     - Hold the applicator in a vertical position (90°) and dispense the adhesive with a continuous motion in a uniform “V”-shaped bead
     - Apply adhesive to the pinchweld parameter directly on top of the freshly cut original equipment urethane film
   - Either application:
     - Make sure bead is uniform and has no gaps. Add material or tool joints, if necessary

10. Install the glass
    - Apply BETAPRIME™ 5404A to any molding or encapsulation bonding surface that contacts new urethane to promote adhesion
    - Place the glass in the body opening
    - Use the tape guides to correctly position the glass. Adjust glass to precise alignment
    - Lightly press it into position within eight (8) to ten (10) minutes of applying urethane
    - Back paddle urethane around edge of glass into gaps
    - Replace the press-in style molding, if required
    - Replace any additional hardware
Safety precautions

- Use only with adequate ventilation
- Avoid breathing vapors
- If swallowed, call physician immediately
- For eye contact, flush with water for 15 minutes and get medical attention
- Wear appropriate safety equipment, such as gloves and eye protection, or as specified by your company
- Avoid skin contact; flush with water, if necessary
- Refer to Material Safety Data Sheet (MSDS) for additional information

Shelf life

- Maximum shelf life, as stated on the product packaging, is achieved when stored at an ambient temperature that does not continuously exceed 110°F (43.3°C).
- All materials manufactured by or for Dow Automotive have a shelf life. Urethane adhesives and primers are marked with expiration dates. Unopened product is considered within shelf life up to and including the date marked on the product. Product is considered expired past the date marked and should not be used.

System compatibility

- Use no other manufacturers' primers, cleaners or other chemicals in conjunction with any BETASEAL™ adhesive system

Dow Automotive’s commitments

- The products when shipped meet the then current sales specifications
- Dow Automotive will notify customer if the sales specifications are changed
- Dow Automotive will supply customer with current MSDS
- Dow Automotive conveys the product with good title, free from any lawful lien or encumbrance

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We listen. We deliver.

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