

Sika AGR Technician Training Manual

Volume 3.10

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Preface

Changes in Volume 3.10:

Two new products have been added to this manual, Sika® Aktivator-307 and SikaTack® ULTIMATE. Sika® Aktivator-307 will be replacing Sika® Aktivator PRO for AGR usage in the months to come. This version of the manual will provide instructions for either product. SikaTack® ULTIMATE is Sika's new primerless-to-glass, 30 minute MDAT adhesive.

Please visit www.sikaindustry.com for more product information.

1.0 Quality Installation Guidelines

Don't ever underestimate the importance of your job in protecting the welfare of your customer and the integrity of their vehicle! Make sure to follow every step as prescribed by this manual as well as training that you will receive from Sika personnel. *You participate in a very important profession in that the quality of your work could seriously affect both the people and the cars they drive.* Demonstrate your pride by delivering a safe and quality proven installation 100% of the time.

TIP 1: MANAGE YOUR INVENTORY

It pays great dividends to have specific locations for storing product. This promotes a good system of opening only what products are needed, helps ensure that products are used prior to expiration and protects the packaging of the products.

TIP 2: ALWAYS START WITH THE GLASS

Never begin work on the vehicle prior to cleaning and inspecting the glass part that is to be installed. Inspect both the quality and the suitability of the selected glass part for installation on the vehicle you are working on. There have been occasions, especially in mobile work, where the glass part may have a small scratch or blemish that went undetected in the shop and was not discovered until after the new glass was installed on the vehicle. There have been other incidences when the technician didn't realize he had the wrong part; he prepared the glass and applied the adhesive, and only when he tried to install it on the vehicle, did he learn of his mistake. Pre-inspection and cleaning of the glass helps to avoid these two time-consuming errors.

TIP 3: VEHICLE PRE-INSPECTION

Before working on any vehicle, conduct a pre-inspection. Look for pre-existing damage such as scratches or dents that exist in the areas you will be working. This step can save thousands of dollars in pre-existing damage claims and is a professional courtesy that the insurance industry respects. Equally important is to inspect for any conditions that may compromise the retention system. Such conditions include, but are not limited to, corrosion, vehicle body damage, paint system failure, missing parts, improper workmanship from previous glass repair or replacement work and use of improper products. It is advisable to check the operability of all mechanical and electrical parts and devices related to the auto glass system. All conditions discovered prior to and during the auto glass replacement process should be recorded and the owner / operator of the vehicle must be notified. Any conditions discovered that would compromise the retention system must be fully remedied prior to the installation of the glass part.

Special Note: This instruction provides compliance to Section 4.1, 6.11 and 6.12 of the AGRSS Standard.

TIP 4: PROTECT VULNERABLE AREAS OF THE VEHICLE

It is advisable to use fender and hood covers as well as some form of seat covering before working on a vehicle. Taping vulnerable paint areas to protect them from becoming scratched is also a good idea. Never leave tools or equipment on painted surfaces, seats or dashboards. Such mistakes result in many needless damage claims. When removing cowls, wipers and other equipment from the vehicle, store in a safe area to eliminate the risk of damage from inadvertent contact.

TIP 5: POST-INSPECT ALL VEHICLES

After the installation is complete, inspect and clean all areas affected by the performance of your work. Glass, carpets, seats, dashes and all painted surfaces around new glass parts must be cleaned and / or vacuumed. Defroster ducts must be blown out and cleared of any possible glass fragments. Check to see that all parts removed are replaced and tested for operability, where applicable. Check operation of wipers and windshield fluid hose dispenser. Test all applicable electrical devices for operability. Conducting a glass-leak-check is advisable. Completing and maintaining a record of all post inspection procedures is advisable. As a courtesy, provide the owner / operator of the vehicle a copy. The technician should also wear appropriate eye protection while clearing the defroster ducts to avoid injury. All airbags and safety belts must be in place and operative.

TIP 6: FOLLOW MINIMUM-DRIVE-AWAY-TIME (MDAT) PROCEDURE AND CURRENT WRITTEN INSTALLATION INSTRUCTIONS PROVIDED WITHIN THIS MANUAL

Federal law requires that the strength of the adhesive system must be adequate to retain the windshield glass in the event of a mishap whenever the vehicle is operated. The two primary components to assure the delivery of a safe auto glass installation is to follow the written instructions provided within this manual, which represent the current comprehensive set of Sika instructions, and to allow adequate time for the adhesive to set up and secure the windshield. The MDAT for each Sika AGR adhesive can be identified through use of either the MDAT chart or the Product Data Sheet, both of which are available for each Sika AGR adhesive on our website at www.sikaindustry.com. The vehicle must remain out of service and NOT operated until the appropriate MDAT has been reached and the owner / operator of the vehicle has been notified of this time restriction. This is your legal obligation to help ensure the vehicle complies with all applicable FMVSS regulations.

Special Note: Following TIP 6 allows for compliance to Sections 5.4 and Sections 6.1, 6.3 and 6.4 of the AGRSS Standard.

TIP 7: FOLLOW ALL SAFETY AND HAZARD WARNING INSTRUCTIONS AND CAUTIONS

The most important part of any job is the need to work safely and carefully. Follow all manufacturer's instructions and warnings. Follow all recommendations for personal safety and hygiene. Always use common sense and decide before acting as to whether a particular action could cause unwanted consequences. To help you follow the 7 Tips provided above, please feel free to use Sika's AGR Authorization Form which can be found on the next page.

AGR Authorization Form

EXTERIOR

Mark all Damages as Followed:

- "S" = Scratched
- "P" = Peeled Paint
- "D" = Dented
- "C" = Chipped
- "M" = Missing Parts
- "R" = Rusted Spots
- "O" = Other: _____

INTERIOR

Mark all Damages as Followed:

	Tears	Stains	Area
Headliner:	_____	_____	_____
Seats:	_____	_____	_____
Dash:	_____	_____	_____
Door Panels:	_____	_____	_____
Floor-Front:	_____	_____	_____
Floor-Rear:	_____	_____	_____

BEFORE RETURNING TO CUSTOMER

Circle the following that has been checked and or completed:

- Vacuumed: _____ yes / no
- Trim Secure: _____ yes / no
- Glass Clean: _____ yes / no
- Wipers ok: _____ yes / no
- Air Condition Run: _____ yes / no
- Radio: _____ yes / no

NOTES: _____

Urethane Label

Batch No. _____
Exp. Date _____

Glass Pre-treatment

Batch No. _____
Exp. Date _____

Primer Label

Batch No. _____
Exp. Date _____

Safe-Drive-Away-Time

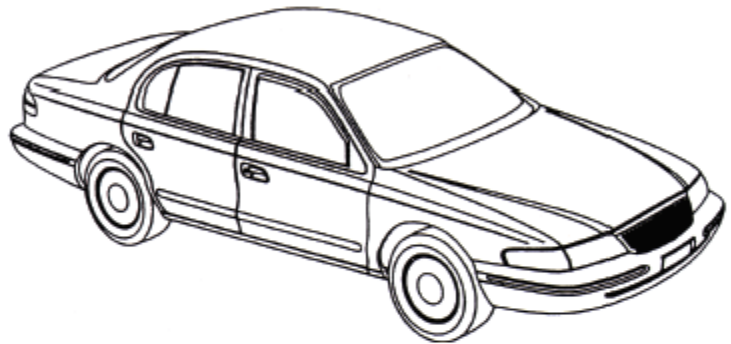
_____ AM
_____ PM

Other Products Used

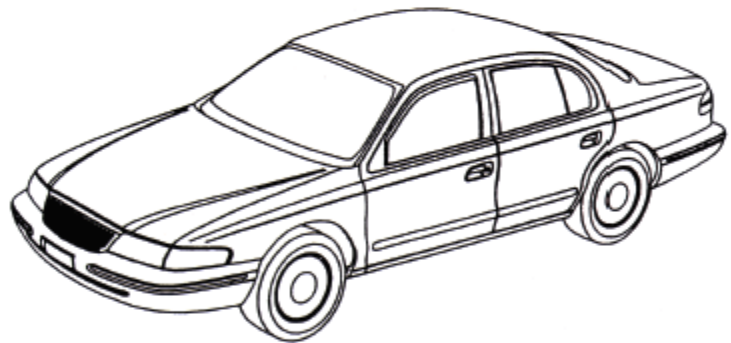
Batch No. _____
Exp. Date _____

Airbags: Single Dual

RIGHT SIDE



LEFT SIDE



Customer Name: _____ Date: _____

Phone: _____ Color Vehicle: _____

Type Vehicle: _____ VIN #: _____

Glass DOT Number: _____ Glass Part Number: _____

Urethane System Used: _____ Car Inspected By: _____



I hereby have read the inspection sheet, authorization and agreement, before affixing my signature below, and warrant that I fully understand the contents thereof.

Customer Signature: _____ Date: _____

2.0 Glass Removal



Sika®-Slick

Sika has found that the removal of glass parts from vehicles is often the most difficult step in the replacement process. In the past, the only lubricant recommended for use during a cut out was water. While water is still an acceptable cut out lubricant, Sika has developed Sika®-Slick, an improved water based cut out lubricant for use in AGR applications. **Tests have shown that some glass cleaners can negatively affect the integrity of the urethane bond, therefore glass cleaner should never be used as a cut-out lubricant.** Sika®-Slick can significantly reduce the forces required to cut out a glass part and extend blade life. The following recommendations must be followed when using this product.

- Sika®-Slick is only designed for use with Sika's AGR adhesives. Alternative AGR urethane adhesive manufacturers will most likely view this product as incompatible with their adhesive systems.
- Sika®-Slick is best suited for use with reciprocating cutting motions, such as the cutting motion of a reciprocating power cut-out tool or a long knife cutting a windshield's bottom bead.
- In some cases, Sika®-Slick is capable of reducing forces associated with the use of a cold knife, specifically when the friction forces between the upper leg of the cold knife blade and the edge of the glass part or trim are high.
- Sika also recommends that the technician test the color-fastness of any interior component that Sika®-Slick may come into contact with during use. This is especially important if the interior components are aged or when contact with water may affect their appearance. To test color-fastness, apply a small drop of Sika®-Slick to an inconspicuous area of the interior component and allow it to dry. If any discoloration occurs, protect these interior components from any Sika®-Slick overspray or dripping.
- After the glass part has been completely removed, immediately clean up excess Sika®-Slick from any areas where it has come in contact with interior components of the vehicle, such as the dash board, to further avoid the possibility of staining. Cutting blades should be wiped clean with a wet towel and then dried to prevent corrosion.
- Prior to trimming the existing urethane bead, the pinchweld must be cleaned and dried to prevent dirt and debris from contaminating the bonding surface.
- If the Sika®-Slick comes in direct contact with the bonding surface (freshly trimmed existing urethane bead), then treat the bonding surface using the following method.
 - Dry wipe the trimmed existing urethane bead with a clean towel until all visible traces of Sika®-Slick have been removed.
 - Apply Sika® Aktivator (PRO or 307) from a 250 ml can to the trimmed existing urethane using a clean towel and the wipe-on wipe-off method.
 - Allow the Sika® Aktivator product 10 minutes to dry / react. Since it is being applied to a freshly trimmed urethane, there are no temperature restrictions on this step and 10 minutes is sufficient down to 0°F.
- If the Sika®-Slick does NOT come in contact with the bonding surface (freshly trimmed urethane), then no extra steps are required and you may proceed to the next step.
- Apply fresh Sika AGR urethane of choice and install the glass part. Please be sure to adhere to all of Sika's AGR guidelines and MDAT recommendations for the specific product being used.

3.0 Pinchweld Preparation

Technicians must make an assessment of the pinchweld area of the vehicle once the windshield has been removed. If the pinchweld is exceptionally dirty and requires clean up, use a brush and or towels to clear away debris prior to trimming existing urethane. If additional cleaning is necessary, use water or oil free compressed air to clean the surface. Make sure the surface is dry prior to priming or urethane application. If after using the above methods, the pinchweld is still not completely clean and dry, then Sika® Aktivator (PRO or 307) can be used as long as it is sufficiently wiped off and allowed to thoroughly dry prior to trimming the existing urethane bead. In this case, the solvent in the Sika® Aktivator product acts as a drying agent. The condition of the old urethane and pinchweld will determine whether the ANSI approved full cut method can be used.

3.1 Full Cut Method:

A full cut method is trimming the existing bead of urethane down to a height of approximately 1 to 2mm (0.04"-0.08") on the pinchweld when the residual bead and pinchweld are structurally sound. Use the full cut method when:

- The existing adhesive is urethane (i.e. – not butyl, silicone, etc.)
- The existing bead of urethane is well bonded to the pinchweld and is in excellent shape.
- The pinchweld is not corroded.
- Previous glass replacement procedures and products were correct and have the appropriate integrity to support the bond of new urethane, under the full cut method.
- The pinchweld is undamaged and has not been repainted (For scratches and nicks treatment see Section 3.2).

Special Note: This instruction provides compliance to Section 6.14 of the AGRSS Standard.

NOTICE: Short cuts (lightly trimming existing urethane beads and using little new urethane) are wrong and potentially very DANGEROUS. Short cutting a windshield will void all MDAT guidelines and can cause possible loss of glass adhesion and potential serious personal injury. Since too little space has been created to allow enough urethane to be applied between the new windshield and old bead of urethane, the application will not pass all applicable FMVSS regulations, and may fail during vehicle operation.

3.2 Sika® Primer-207 AGR on Pinchwelds

Sika® Primer-207 AGR (black cap)



Sika® Primer-207 AGR Stix Single Use Applicators



Use Sika® Primer-207 AGR to cover bright metal scratches on the pinchweld in order to reduce corrosion. Fresh, bright, metal rubs and scrapes, up to 1 inch², may be covered with one coat of Sika® Primer-207 AGR. Instructions for use are as follows:

- If using the primer from a can, shake the bottle vigorously until you hear the mixing ball rattle and then continue shaking for an additional 10 seconds.
- Apply Sika® Primer-207 AGR from a can using a brush, dauber, or a cotton swab to cover any bare metal areas, that are within the limits defined above, trying not to get any primer on remaining bead of urethane (after a FULL-cut has been performed).
- If using the Single Use Applicator Stix, shake the applicator for a minimum of 30 seconds prior to use. To begin priming with the Single Use Applicator Stix, point the tip toward the ground and pinch tube just above the tip with the thumb and forefinger to break the internal vial and release the primer into the tip. With the tip down, gently squeeze the Stix applicator to wet out the tip, being careful not to squeeze too hard creating a drip. When the tip is fully saturated, begin priming the pinchweld immediately. Allow gravity to feed the tip, but you may gently squeeze the Stix applicator if more primer is needed.
- To prevent the Stix applicator tip from drying out in hot conditions, dab the tip on the back of a gloved hand or on a paper towel in between areas of application.
- After application, allow primer to dry for a minimum of 3 minutes before applying adhesive. The primer must be completely dry prior to adhesive application. There are no special low temperature requirements for Sika® Primer-207 AGR.
- Always use chemical resistant gloves and safety glasses when applying Sika® Primer-207 AGR. DO NOT SMOKE during use. Follow all warnings and instructions on product container.
- Sika adhesives are designed to bond aggressively to the existing freshly trimmed urethane bead. For this reason, do **NOT** apply Sika® Primer-207 AGR to the existing trimmed urethane bead when performing a full cut.
- **IMPORTANT NOTE: Currently, there is no after-market coating available that can restore the automotive OEM corrosion protection system to the level that modern vehicles are manufactured with. Therefore, care must be taken when removing glass parts so that little or no damage is incurred to the paint.**
- All pre-existing corrosion conditions on the pinchweld must be removed and prepared according to the guidelines provided in Sections 3.3-3.4 of this manual. Severe rust conditions, as defined in the section of this manual on *Corrosion Removal*, must be brought to the customer's attention and possibly remedied by a body shop. Please review Sections 3.3-3.4 of this manual for a detailed explanation of how this issue should be addressed. NEVER apply any Sika product over rust.
- When performing a full cut using SikaTack® ELITE PowerCure, Sika® Aktivator-309 P should be applied to the trimmed urethane and pinchweld area prior to the use of Sika® Primer-207 AGR for touching up scratches. See section 6.11 for more details.

3.3 Corrosion Removal:

Corrosion of the pinchweld is a very serious issue and must be corrected properly. Automotive OEMs have issued guidelines for addressing this issue and these guidelines have been incorporated into the recommendations that follow. To properly treat a corroded pinchweld it is important to first identify the type and the amount of corrosion that is present. The following define these characteristics.

Type:

There are four levels of corrosion that have now been recognized by automotive OEMs.

1 = Light = Light metal discoloration; typically orange.

2 = Moderate = Moderate corrosion typically has some red spots.

3 = Severe = this can be identified by deep “pitting”, dark red spots and raised edges.

4 = Perforation = this level can vary from microscopic holes to loss of metal.

Amount:

In this manual, the amount of corrosion will be referred to in cumulative total area of corrosion (inch²).

NOTE: Sika recommends that treatment of level 4 corrosion, or perforation, only be performed by a body shop that is trained in metal restoration. Also, for any amount of corrosion greater than a cumulative total of 24 inch² of the pinchweld, Sika recommends that this treatment only be performed by a body shop that is trained in metal restoration. Sika Corporation’s opinion is that any corrosion amount greater than 24 inch² constitutes a very severe and potentially dangerous corrosion condition and should be addressed by a reputable body shop.

Example of Level 4 or Perforating Corrosion

After identifying the type and amount of corrosion, a technician should follow the recommendations outlined below for removal of the corrosion and treatment.

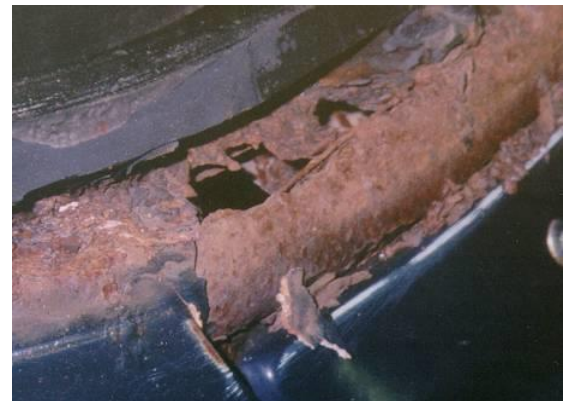


Photo courtesy of Visions autoglass,
Bvron Center. MI

NOTE: Many of the following procedures involve actions that will require a technician to wear appropriate personal protective equipment (PPE) to avoid personal injury. Technicians performing these procedures should be sure to wear safety glasses or goggles, gloves (to protect hands from chemicals and other types of physical injury) and in some cases hearing protection, such as earplugs or ear muffs.

The first step in corrosion treatment will always be to remove the corrosion to obtain a bright, corrosion free, metal surface. Ideally, this should be done prior to trimming the remaining intact and well bonded adhesive bead. However, if this is not possible, then be sure to clean the freshly cut original urethane bead, using Sika® Aktivator (PRO or 307) to ensure that the fresh urethane will be able to sufficiently bond to the original bead.

The method used to remove the corrosion will depend on the type of corrosion that is present. The guidelines provided on the next page are consistent with automotive OEM recommendations and should be followed for removing corrosion.

- 1 = Light = Remove corrosion with 80 grit sand paper or wire wheel.
- 2 = Moderate = Remove corrosion with wire wheel, media blast or chemical rust remover.
- 3 = Severe = Remove corrosion with media blast or chemical rust remover.
- 4 = Perforation = The panel must be replaced and treated by a body shop.

In addition to a wire wheel, corrosion of levels 1 and 2 can also be removed with a Dremel® and a grinding stone. The Dremel® Flex-Shaft attachment is also recommended because it makes precise corrosion removal easier. Care must be taken when using a Dremel or wire wheel so that the thickness of the metal is not significantly reduced. A spot sand blaster would be considered a media blast. Products that contain phosphoric acid, such as Dupont's Metal Conditioner #5717 or PPG's DX 579, would be considered chemical rust removers.

Prior to treating the areas where corrosion has been removed, make sure that these areas are smooth, uniform, and completely rust free. The remaining recommendations for corrosion treatment are shown below.

3.4 Corrosion Treatment:

For treatment of **fresh scratches or bright metal rubs and scrapes** that are **1 inch²** in area or less, Sika recommends that the technician cover these areas with Sika® Primer-207 AGR, from a can, or from the Single Use Applicator Stix, as directed in the procedures outlined in this manual under Section 3.2.

Corroded areas of the pinchweld that are **less than 1 inch²** can be treated by using the following procedure:

1. Remove the corrosion as outlined above.
2. Abrade the paint edges around the corroded area. This will ensure that the surrounding paint provides a sound bonding surface and will also improve the adhesion durability of the treatment system, helping to keep moisture from reaching the bare metal areas.
3. Wipe the debris away with a clean dry towel. Odorless mineral spirits or Sika® Aktivator (PRO or 307) may also be used to clean the area, although the installer must be sure to follow all Sika® Aktivator procedures given in Section 4.2 of this manual.
4. Apply a single coat of Sika® Primer-207 AGR as directed in the procedures outlined in this manual under Section 3.2.

The technician should use the procedure outlined below for treatment of the following scenarios.

- For **fresh rubs and scrapes** that are **greater than 1 inch²** in area.
 - For covering bright metal of the pinchweld that has been exposed following the corrosion removal recommendations that were previously outlined, as long as there is not significant metal loss or perforation of the metal and this area is **greater than 1 inch²** but less than a cumulative total of **24 inch²** of the pinchweld.
1. Remove the corrosion as outlined on the previous page.
 2. Abrade (using Scotch-brite™ or Norton Bear-Tex® abrasive pads) the intact paint 1/8" from the paint edges surrounding the fresh bright metal area(s) where the corrosion was removed around the corroded area.
 3. Wipe the bright metal with odorless mineral spirits or Sika® Aktivator (PRO or 307). Repeat this step as necessary until all contaminants (both chemical and particle) have been removed. Be sure to follow all Sika® Aktivator procedures given in Section 4.2.
 4. If the adhesive bead was trimmed prior to removal of the corrosion, clean the contaminated areas of the trimmed original urethane bead by wiping with Sika® Aktivator (PRO or 307) and wiping off to remove any debris. Depending upon the amount of contamination, it may be required to wipe the urethane several times to remove loose particles. NOTE: The Sika® Aktivator product used must be allowed to flash-off for 10 minutes, regardless of temperature, whenever it is applied over trimmed urethane.
 5. Apply Sika® Primer-207 AGR, using a brush or a dauber, making sure that the primer overlaps onto the surrounding intact and paint by a minimum of 1/8". Allow a minimum of 3 minutes for the primer to dry before proceeding to the next step. A Single Use Applicator may be used for this application; but due to its limited coverage and the need for a second coat of primer in the following step, the Single Use Applicator stick may be impractical for this application.
 6. Apply a second coat of Sika® Primer-207 AGR over the first coat, using a brush or a dauber. Allow a minimum of 3 minutes for the primer to dry before proceeding to the next step.
 7. Proceed with the remainder of the full cut method by trimming the original urethane bead and apply Sika AGR urethane adhesive as required.



(Level 2 – 3 corrosion of pinchweld)



(Same area treated using treatment process)

3.5 Complete Adhesive Removal:

If the technician discovers that either improper procedures or products (such as butyl or silicone) were used on previous glass replacements or that the existing pinchweld and urethane conditions would compromise the retention system, they are NOT to use the full cut method. Instead, it is recommended to fully correct any adverse glass installation related condition(s), providing a clean and sound substrate for bonding.

A complete adhesive removal requires the total removal of existing material down to the pinchweld. During a complete removal, the pinchweld must be cleaned of all products and materials other than the clean weld and the original paint. This method must be used when:

- The pinchweld has been repainted for any reason (i.e. body shop corrosion treatment)
- The pinchweld is damaged
- The existing urethane adhesive is loose or deteriorated.
- An improper product was previously used (i.e. – butyl, silicone, etc.)

After exposing the original paint, carefully scuff the paint on the pinchweld to remove the clear coat and or topcoat, exposing the OEM primer. Care must be taken so that the e-coat and phosphate coatings, which lie beneath the OEM primer, are not removed. The e-coat and phosphate coatings are an essential part of the OEM corrosion inhibiting system and it is not possible to replace these in the aftermarket. Clean the abrasion residue using odorless mineral spirits or Sika® Aktivator (PRO or 307) according to the instructions given in Section 4.2 of this manual. Paint a thin coat of Sika® Primer-207 AGR and allow it to dry for at least an additional 3 minutes. Then set the windshield using the appropriate Sika adhesive for the vehicle type and required drive away time. In most instances, Sika® Primer-207 AGR from a can will be the best option for this type of application, but a Single Use Applicator Stix may also be used. However, please keep in mind that, due to the limited coverage of the primer Stix, material from a can will most likely be the more convenient option.

Special Note: This instruction provides compliance to Section 6.12 of the AGRSS Standard.

3.6 Repaired, newly painted pinchwelds, and when OEM urethane has poor adhesion:

Perforation corrosion located in the windshield mounting area of a vehicle's pinchweld, just like perforation corrosion located in any structural area of a vehicle, requires replacement of the entire section of metal. Filling these types of areas with body filler is not acceptable. Furthermore, I-CAR has made recommendations that state, "do not use body filler on the pinchweld where glass urethane adhesive will be applied." This recommendation was taken from the March - April 2000 I-CAR Advantage and this document also states that, "small irregularities in the flange surface will be filled when the adhesive bead is applied." Keep in mind that the glass bonding area of a pinchweld does not require a "Class A" appearance and, if required, welded areas can be sanded smooth prior to primer application. Again, **do not apply body filler in areas where glass bonding adhesive will be applied.**

In the special case of a newly painted pinchweld, one of the following four options may be selected:

Option 1: Whenever possible, remove the windshield, by cutting the adhesive as close to the glass as possible, and leave the entire remaining urethane adhesive bead in place. Do not trim the adhesive bead until the vehicle has been painted and the new windshield is ready to be installed. In this case, it is not necessary to tape or otherwise protect the existing urethane. After the vehicle is repaired and painted, remove most of the existing urethane leaving 1-2 mm on the pinchweld and install the windshield.

Option 2: If the pinchweld area is to be repaired and painted by a body shop, remove the section of metal to be repaired, repair pinchweld and apply an epoxy or etch primer coat. Allow the primer to cure for at least as long as would be required prior to applying topcoat over the primer, following the paint manufacturer's recommendations. If topcoat is to be applied to remainder of the vehicle, mask off the bond area of the pinchweld with masking tape. The March / April 2000 I-Car Advantage periodical recommends this procedure whenever a pinchweld has been subject to major reconstruction. Continue painting the vehicle as required. Remove the masking tape. If a forced drying process is to be used, remove the tape prior to baking the topcoat. Next, lightly abrade the primer with a Scotch-brite™ or similar abrasive pad. Clean the abrasion residue using odorless mineral spirits or Sika® Aktivator (PRO or 307) according to the instructions in this guide and allow it to cure according to the instructions given in Section 4.2 of this manual. Paint a thin coat of Sika® Primer-207 AGR and then allow at least 3 minutes for the primer to dry. Then set the windshield using the appropriate Sika adhesive for the vehicle type and required drive away time.

Option 3: If a freshly primed pinchweld has already been color coated and Option 1 is not possible, then the topcoat, basecoat, and clear coat if used, must be removed to expose the primer coat. Once completed, follow instructions posted under Option 2. If the primer coat is removed during this procedure, exposing bare metal, then the body shop must re-apply the primer coat and allow this newly applied primer coating to fully cure, according to the paint manufacturer's recommendations, prior to application of any Sika product.

Option 4: If the vehicle's OEM urethane bead has poor adhesion and easily peels away from pinchweld to reveal unblemished original paint, begin by removing the clearcoat and or basecoat from the bond area with a Scotch-brite™ or similar abrasive pad. If the clearcoat and basecoat pulled away from the vehicle with the original urethane bead then lightly abrade the exposed primer using a Scotch-brite™ or similar abrasive pad. Clean the abrasion residue using odorless mineral spirits or Sika® Aktivator (PRO or 307) according to the instructions in this guide. Paint on a thin coat of Sika® Primer-207 AGR and then allow at least 3 minutes for this product to dry. Set the windshield using the appropriate Sika adhesive for the vehicle type and required drive away time. If the poor adhesion exhibited by the OEM urethane bead is part of a specific vehicle recall, always follow the instructions provided in the Recall Bulletin.

3.7 Aluminum Pinchwelds and FRP Bonding Flanges:

On occasion an auto glass technician will come across vehicles that have aluminum pinchwelds or FRP (Fiber Reinforced Plastic) bonding flanges where a glass part is bonded with a urethane adhesive. Fiberglass is an example of an FRP. In these cases, if the technician finds that some of the original urethane bead is not properly adhered to the substrate, the following process should be followed to prepare the substrate for bonding.

1. Lightly abrade the area of the aluminum or FRP with a Scotch-brite™ (or similar) abrasive pad.
2. Clean the abrasion residue using odorless mineral spirits or Sika® Aktivator (PRO or 307) according to the instructions provided in Section 4.2 of this manual.
3. Apply a thin coat of Sika® Primer-207 AGR, using a brush or dauber, and then allow at least three minutes for this product to dry. Please note that Single Use Applicator Stix may be used for this application, however, due to its limited coverage, applying primer from a can will most likely be the more convenient option.
4. Set the glass part using the appropriate Sika adhesive for the vehicle type and needed drive away time. Generally, on aluminum pinchwelds a non-conductive urethane will be required. For additional information on non-conductive urethanes, please review Section 6.9.

NOTE: At this time, Sika has identified one exception to this recommendation and this is the Freightliner Century Class with an aluminum pinchweld. The recommendation for treating any exposed aluminum on the pinchweld of this vehicle is to prepare it with an appropriate aftermarket epoxy or etch primer. Allow the primer to cure for at least as long as would be required prior to applying topcoat over the primer, following the paint manufacturer's recommendations. Then lightly abrade the bond area surfaces of the primer and follow steps 2 through 4 above.

4.0 Glass Preparation

Each time you perform a windshield installation you are providing a vital component of the vehicle's retention system. An essential part of the retention system is the bond between the adhesive and the glass. This critical area can experience leaks and problems if there are contaminants between the adhesive and the glass. Cleaning the glass with Sika's recommended products is the most important step to safe and leak-free installations.

Most new cars have a frit band near or along the edge of the glass, which also needs to be cleaned. As you might expect, through the course of the manufacturing process and distribution of the windshield to your location, many people and items have come into contact with the edge of the glass, leaving behind solvents, grease, oily fingerprints, and other materials which can reduce the performance of the adhesives you will apply; possibly with serious consequences.

Sika® Aktivator PRO, Sika® Aktivator-307 and Sika® Primer-207 AGR have been designed to ensure a strong, durable bond between the adhesive and the windshield. One of these products must be used on every windshield before applying any adhesive which is not indicated to be primerless-to-glass. SikaTack® ULTIMATE, Sikaflex® P2G and Sikaflex® P2G PLUS have been designed to be primerless-to-glass and the use of these products is optional when bonding to glass or ceramic frit. Unless using a primerless-to-glass product, windshields installed without the use of Sika® Aktivator (PRO or 307) or Sika® Primer-207 AGR may be subject to retention problems, which may lead to serious injury. Therefore, the use of these products cannot be over emphasized. Please review the following sections, Sections 4.2-4.3, for more detailed instructions and precautions.

The bond between the polyurethane adhesive and the glass must be protected from Ultraviolet radiation. This is typically achieved using a ceramic frit band (either exposed or inner layer frit). When bonding clear glass with no frit band, an external trim piece must be used to shield the bond from UV rays. Please note, Sika® Primer-207 AGR is NOT intended to be used as the primary protector against UV rays for automotive glass replacements.

In some instances, windshields are supplied to the automotive aftermarket with a factory pre-applied black primer. Over a period of many years, Sika has thoroughly investigated many of these situations by performing adhesion tests in our laboratory using our adhesive systems. The results of these investigations have indicated that these windshields should be prepared using Sika's standard surface preparation recommendation of glass cleaner plus Sika® Aktivator (PRO or 307) or Sika® Primer-207 AGR, just as if the black primer was not present. Please keep in mind that all application recommendations for these products are still necessary and must be followed in accordance to instructions given Sections 4.2-4.3 of this manual.

Additionally it should be noted that this recommendation is being made only after extensive investigations that included laboratory adhesion testing and with consideration that the primer has been applied to the windshield in a controlled factory setting, ensuring both sufficient adhesion of the factory applied black primer to the glass part's bond area and consistent application from part to part. It is due to these factors that Sika can endorse the use of Sika® Aktivator (PRO or 307) or Sika® Primer-207 AGR and Sika adhesives with the factory pre-applied primer that is found on these particular windshields. **In no other instance should a customer interchange primers, glass activators and/or adhesives from different adhesive suppliers.** If the installation technician is unable to determine if the primer has been applied by an automotive OEM, then Sika recommends that the part is not installed and is returned to the distributor.

4.1 Traditional and Non-Traditional Contamination:

Sika approved glass cleaners work very well to remove traditional forms of contaminants that may be found on an auto glass part prior to the application of Sika® Aktivator (PRO or 307) or Sika® Primer-207 AGR, or prior to applying a primerless-to-glass adhesive. Sika supports the use of any glass cleaner, as long as it has been confirmed to NOT contain anti-static ingredients. The following is a list of what Sika considers to be the most common examples of traditional types of contaminants:

- Dirt
- Dust
- Skin Oils

However, with the introduction of many new glass suppliers, installation technicians have witnessed increased occurrences of non-traditional contaminants (NTC) on windscreen frits that can greatly affect adhesion. It has been Sika's experience that the type and severity of non-traditional contamination can vary significantly. Generally, the source of non-traditional contamination is the manufacturing process, specifically from one of two processes, which Sika now uses to categorize NTCs:

1. Mold release agents (most common in the U.S. market)
 - Associated with encapsulated parts (where trim is bonded to part)
2. Silicone residue from a vacuum tube laminating process
 - Results from the use of silicone based vacuum tubes that remove air from between the inorganic glass lites and the inner PVB layer during the lamination process
 - Not applicable to tempered (non-laminated) auto glass parts

While many incidents of contamination are clearly visible to the naked eye, some NTCs are not as easy to observe without instituting additional procedures. To verify the existence of NTCs, Sika recommends that the auto glass Technician be trained to inspect the bond areas of each part for inconsistent areas of surface tension after glass cleaner has been applied to the frit and before the glass cleaner has been wiped off the part. The Technician should observe whether the glass cleaner migrates or changes appearance along the contaminated areas.

Recommended Treatment for all Types of Contamination:

Once it has been determined that the bond area of a glass part is contaminated, Sika offers a UNIVERSAL treatment with the use of Sika® PowerClean Aid, a revolutionary new product that eliminates the need for cumbersome gels and pastes.

- Recommended usage is one pad per treated glass part
- Designed to be used with foaming or liquid glass cleaner

Step 1 – Apply glass cleaner around glass perimeter. Examine area for contamination.

Step 2 – If contamination is observed it is recommended to leave the glass cleaner on the part and treat the bonding surface with Sika® PowerClean Aid or other abrasive pad. Using even pressure, scrub the pad across the entire bond area in a back-and-forth or circular motion. Rough frits may degrade pad if excessive force is used.

Step 3 – Wipe remaining glass cleaner from the bond area using a clean paper towel.

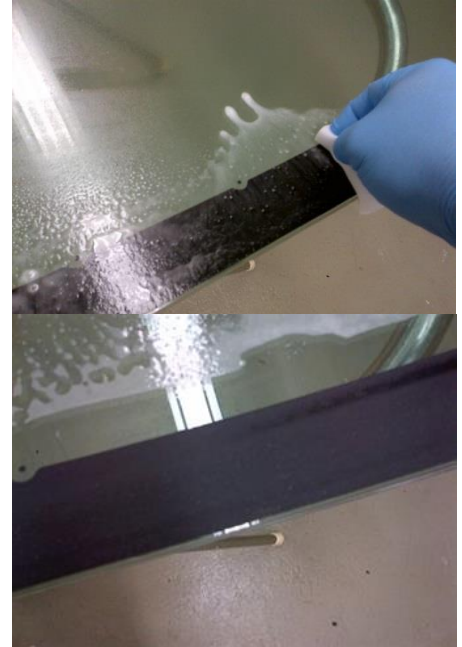
Step 4 – Spray the glass part again to see if the contamination has been removed.

Step 5 – If contamination is still observed, wipe the glass cleaner away using clean paper towel and treat the DRY bonding surface with Sika® PowerClean Aid or other abrasive pad, using the scrubbing method provided in **Step 2**.

Step 6 – Continue Steps 4-5 as necessary until all signs of contamination have been removed. If all visible signs of contamination cannot be removed, Sika does not recommend that the part be installed.

Step 7 – Apply Sika® Aktivator (PRO or 307) or Sika® Primer-207 AGR (Note: this step is optional if using a primerless-to-glass adhesive).

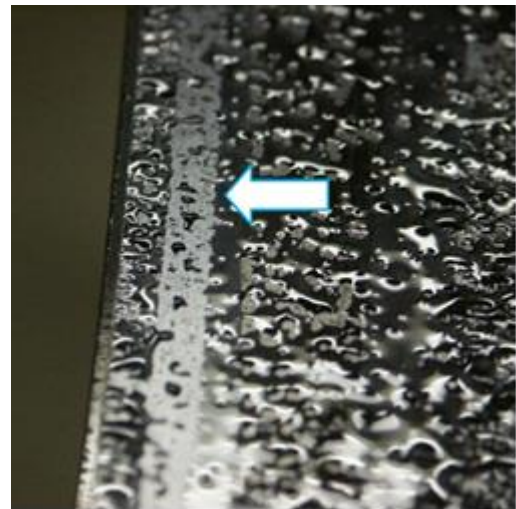
Step 8 – Complete the installation using any of our Sika AGR polyurethane adhesives.



Alternative Method for Removing VACUUM TUBE SILICONE Contamination ONLY:

Sika also offers a procedure specifically designed for treating silicone oil residue derived from a vacuum tube lamination process. NTC's can be categorized as silicone residue if the glass cleaner reveals an area of low surface tension in a relatively straight line that runs parallel to the edge of the glass (see photo below). If the glass cleaner migrates or changes appearance and the installation technician suspects silicone contamination, then the area can be treated using the glass cleaner "wet scrub" methods given below. If the technician observes contamination but is unsure if it is silicone then the recommendation is to follow the Sika® PowerClean Aid method above.

This photo is an example of an auto glass part contaminated with silicone residue resulting from the glass manufacturer's lamination process and after the application of a non-foaming glass cleaner. The area of contamination has a significantly lower surface energy than the surrounding non-contaminated areas and this affects the "wet out" of the glass cleaner in a way that allows one to observe a distinct lineal pattern of contamination. If this form of silicone contamination is not properly removed from the part, it can have a deleterious effect on adhesion.



Glass Cleaner Wet-Scrub method

- Apply glass cleaner to the frit and lightly "wet-scrub" the affected area with a fine weave abrasive pad (i.e.; 3M Scotch-brite™ or Norton Bear-Tex®) using small circular motions
- Care should be taken not to scratch the glass or frit
- After the "wet-scrub" has been completed, clean the frit area with glass cleaner and a clean paper towel
- Allow the surface to completely dry before applying Sika® Aktivator (PRO or 307) or Sika® Primer-207 AGR, or one of our primerless-to-glass polyurethane adhesives
- **IMPORTANT NOTE:** This method is only recommended for removing silicone residue resulting from the glass manufacturer's laminating process and is NOT to be used to remove silicone contamination that originated from a glass manufacturer's encapsulation process

4.2 Sika® Aktivator PRO / Sika® Aktivator-307 on Glass:



First, thoroughly clean the glass. Any glass cleaner can be used, as long as it has been confirmed to NOT contain anti-static ingredients. When cleaning the glass, make sure glass is fully cleaned and no moisture is left on the bonding surface.



Next apply Sika® Aktivator (PRO or 307). These products are available in 250 ml cans and easy to use single-use applicator pads. With either product, ALWAYS use chemical resistant gloves and safety glasses. DO NOT SMOKE while applying Sika® Aktivator products. Read and follow all precautionary instructions and warnings on the product.

- **For cans,** use a clean, paper towel. With Sika® Aktivator (PRO or 307) wetting the towel, but not soaking it, drag the towel in one direction around the perimeter of the glass (on bonding area only).
- The towel should be continually turned to expose a clean surface to the can. When re-wetting the towel, turn a clean surface to the can to avoid dirt and other contaminants on the towel from mixing with the pure Sika® Aktivator in the can.
- **For the single-use applicator pads,** take one (1) Sika® Aktivator (PRO or 307) Pad from box, hold the pad directly against the bond area of the glass part, and with pad handle between thumb and forefinger, pinch to break the internal glass ampoule to release contents to the fabric pad. Holding the pad flat against the glass part, draw the pad around the perimeter (bond area) of the glass part in one direction. Dispose the Pad after each use.
- When applying at, or above 15°F, allow Sika® Aktivator PRO to cure a minimum of three (3) minutes (but not more than eight hours) before applying adhesive. If ambient temperatures are below 15°F, but above 0°F, then the flash-off / cure time needs to be increased to a minimum of ten (10) minutes.
- The flash-off / cure time for Sika® Aktivator-307 is three (3) minutes from 20°F – 120°F and ten (10) minutes if the ambient temperature is below 20°F.
- Nothing can be allowed to touch the bonding surface of a glass part once it has been prepared with Sika® Aktivator. After this point, any contact with this surface would constitute a contamination concern and the part would again need to be prepared with the same product.
- If the “Aktivated” surface becomes contaminated or the open time is missed, then Sika® Aktivator PRO can be re-applied to the glass part up to three additional times, or a total of four applications. Sika® Aktivator-307 can be re-applied one additional time for a total of two applications. After Sika® Aktivator has exceeded the maximum number of applications, the adhesion characteristics may be compromised and the glass part should be discarded.
- These instructions are valid for all applications of Sika® Aktivator PRO or Sika® Aktivator-307; for example, in cases where the pinchweld has been painted or repaired.
- Sika® Aktivator PRO should not be used to prepare the glass part when using any of Sika’s PowerCure adhesives, such as SikaTack® ELITE or Sikaflex®-268 PowerCure. Sika® Aktivator-307 or Sika® Primer-207 AGR must be used to prepare the glass part when using these adhesives. See section 6.11 for more details.

4.3 Sika® Primer-207 AGR on Glass:



First, thoroughly clean the glass. Any glass cleaner can be used, as long as it has been confirmed to NOT contain anti-static ingredients. When cleaning the glass, make sure glass is fully cleaned and no moisture is left on the bonding surface.

Next apply Sika® Primer-207 AGR. Sika® Primer-207 AGR is available in 100 ml or 250 ml cans. ALWAYS use chemical resistant gloves and safety glasses. DO NOT SMOKE while applying Sika® Primer-207 AGR. Read and follow all precautionary instructions and warnings on the product.

- Shake the primer can vigorously until you hear the mixing ball rattle and then continue shaking for an additional 10 seconds.
- When used to prepare glass, Sika® Primer-207 AGR can be applied using a wool dauber or a Sika® PowerClean Aid pad.
- Never re-dip a used dauber or Sika® PowerClean Aid pad back into the can, to avoid dirt and other contaminants from mixing with the pure Sika® Primer-207 AGR in the can.
- Sika® Primer-207 AGR can be applied across the same application temperature range as your Sika polyurethane adhesive. This product requires a flash off time of three (3) minutes (but not more than eight hours) before applying adhesive. There are no special low temperature requirements for Sika® Primer-207 AGR.
- Nothing can be allowed to touch the bonding surface of a glass part once it has been prepared with Sika® Primer-207 AGR.
- If the maximum 8 hour open time is missed, the primer can be given a dry wipe with a lint free paper towel to remove any dust, and Sika® Primer-207 AGR can be re-applied to the bonding area. Sika® Primer-207 AGR can be re-applied to the glass part only 1 additional time, for a total of 2 applications. After Sika® Primer-207 AGR has been applied more than 2 times to the same glass part, the adhesion characteristics may be compromised and the glass part should be discarded.
- Nothing should be bonded to Sika® Primer-207 AGR, including urethanes and moldings, until the full 3 minute flash off time has elapsed.
- A Single Use Applicator may be used for applying Sika® Primer-207 AGR to glass parts; but due to its limited coverage, the Single Use Applicator stick may be impractical for this application, and is not recommended.

4.4 Inner Layer Frit:

Some windshields are manufactured with the frit band located on Side 2 or Side 3 of the laminated part. This is also referred to as an inner layer frit. When windshields are manufactured in this way, bonding takes place directly on the clear glass, and not on the ceramic. The following procedure is recommended on all windshield parts with an inner layer frit:

- Remove all traditional and non-traditional contamination using glass cleaner and, if necessary, a Sika® PowerClean Aid sponge.
- Prepare the bonding area of the part using Sika® Aktivator-307 or Sika® Primer-207 AGR. The primer can be applied using either a clean wool dauber, or a Sika® PowerClean Aid sponge. Apply primer in a single, continuous coat and allow a minimum of 3 minutes for the product to flash. Please Note: This step is optional if utilizing one of our primerless-to-glass urethanes. Please note that Sika® Aktivator PRO should not be used to install inner layer frit parts.

4.5 Removal and Replacement (R & R):

Note: This procedure is not recommended for use with glass parts that have been previously installed with a non-urethane adhesive. Under these circumstances, the glass part should be discarded and, in most cases, the new glass part should be installed following the *Complete Adhesive Removal* method described in this manual. If the original urethane on the glass part does not have good adhesion around the entire perimeter of the part or was not originally adhered using urethane, then Sika does NOT recommend installation of the part.

Use the following guidelines in cases where a glass part is removed for later use as a replacement.

Remove the glass part using standard removal tools, taking care to avoid damaging the frit. Try to cut through the middle of the existing urethane bead. Set the glass aside until it is time to replace it.

Following removal of the part that is to be reinstalled, begin by cleaning the glass part with an appropriate glass cleaner. Next, using your preferred urethane-trimming tool, trim the existing bead of cured urethane and examine to confirm that the remaining urethane is sufficiently bonded to the glass. Generally, Sika recommends that the bead of urethane on these parts be trimmed just prior to reinstallation, but if this is not possible, the trimmed bead should be prepared with Sika® Aktivator (PRO or 307), making sure to turn the towel often to remove any contaminants, according to the instructions given in Section 4.2 of this manual. **One of the following two options MUST be followed when performing a removal and replacement:**

1. If the remaining layer of urethane adhesive has good adhesion to the entire perimeter of the glass part, it does not matter which adhesive company manufactured the remaining layer of adhesive, and this part can be installed using the standard procedures described in this manual.
2. If the original urethane on the glass part does not have good adhesion around the entire perimeter of the part then Sika does NOT recommend installation of the part.

4.6 Used Glass:

Sika endorses and follows the interpretation provided by AGRSS concerning the installation of *used* glass. Therefore, the following conditions must be met to allow for the use of 'recycled' or 'used' stationary automotive glass in motor vehicles:

1. The glass is in a condition that will permit a safe installation and must be free of obvious structural or visually objectionable flaws. Unacceptable flaws include delamination, edge chips, cracks/breaks, or distortion in an acute vision area.
2. The glass is installed with a retention system compatible with the original equipment (OE) design.

If these 2 conditions are met and if the remaining layer of urethane adhesive has good adhesion to the entire perimeter of the glass part, this part can be installed using the standard procedures described in this manual. If the original urethane on the glass part does not have good adhesion around the entire perimeter of the part then Sika does NOT recommend installation of the part.

4.7 Sealing Leaks:

Caution should be used when approaching the sealing of an air or water leak from a previous installation. A high level of liability is transferred to the company repairing such conditions in that they are not aware of the products or workmanship of the company that performed the previous installation. It is advisable to conduct an R&R installation, at minimum, in order to assess the entire installation and correct any adverse condition that may exist. It should be noted that the use of compatible sealant systems must be used in all such cases.

Special note: This instruction provides compliance to Section 6.13 of the AGRSS Standard.

5.0 Special Sets

5.1 Gasket Sets:

In most cases, passenger rated vehicles licensed for highway use and weighing less than 10,000 pounds gross weight, (FMVSS 212 regulated vehicles) require the use of polyurethane in conjunction with the gasket retention system. While some vehicles will come from the factory having utilized both a gasket and polyurethane set process, some may have come with only the gasket and some form of sealant compound. Other than for egress rated glass parts, antique or classic vehicles not licensed for highway use or in cases where the introduction of urethane conflicts with current OEM specifications, polyurethane must be utilized. When utilizing polyurethane on gasket set windshields, Sika recommends the following procedure.

1. Use appropriate personal protective equipment when performing the following tasks.
2. Remove original windshield and gasket.
3. Use a new gasket if the original has been damaged.
4. Clean the glass with an approved glass cleaner as defined in Section 4.2 or 4.3 of this manual.
5. Remove contaminants from the pinchweld and the inside of the gasket, where the pinchweld and glass will sit, using a clean towel and water. An approved glass cleaner may be used to clean these areas if necessary.
6. Allow water and glass cleaner to thoroughly dry before proceeding.
7. Prepare all areas of the glass that will sit in the gasket with Sika® Aktivator (PRO or 307) or Sika® Primer-207 AGR as described in this manual.
8. Apply Sika® Aktivator (PRO or 307) or Sika® Primer-207 AGR to the pinchweld, where the gasket will sit, and, if desired, to the inside of the channels of the gasket. A total flash time of 15 minutes is required for all gasket set installations as the pre-treatment product will react slower due to the porosity and geometry of the rubber gasket.
9. Set the windshield, making sure that the gasket is fully seated on the pinchweld, and be sure to apply the desired Sika AGR adhesive into the channels of the gasket at the appropriate time.
10. Clean up of uncured urethane can be performed using mineral spirits and a towel or Scrubs®.

Note: When sealing air or water leaks within a gasket set windshield, make sure to identify whether or not a polyurethane product is required and then use only a compatible sealant system.

Special Note: This instruction provides compliance to Sections 7.1, 7.2 and 7.3 of the AGRSS Standard.

5.2 PAAS:



(PAAS on Saint Gobain FW02072 for New Beetle)

PAAS stands for Pre-Applied Adhesive System and an example of one of these types of parts is shown above. Modern PAAS glass parts are designed to act as a height-guide when installing fresh adhesive. However, a PAAS system can also get easily contaminated from shipping and handling. To prepare a PAAS windshield, wipe the bond area of the pre-applied adhesive with Sika® Aktivator (PRO or 307) and wipe off to remove any debris. Remember to allow the Sika® Aktivator product to flash off for 10 minutes, regardless of temperature, whenever it is applied directly to trimmed urethane. In some cases, the pre-applied adhesive may need to be trimmed down to allow room for the new urethane adhesive. In these cases, it is not necessary to apply Sika® Aktivator to the freshly cut bonding area exposed by the trimming of the pre-applied urethane adhesive.

5.3 Rear Sliders and Encapsulated Glass Parts:

For painted rear-sliders on pick-up trucks, and encapsulated glass parts, follow the procedure detailed below in order to properly prepare the part for installation.

1. Abrade the bond area of the painted aluminum extrusion or encapsulation with a Scotch-brite™ (or similar) abrasive pad.
2. Remove dust and debris using one of the following methods:
 - a. Apply Sika® Aktivator (PRO or 307) following all procedures given in Section 4.2 of this manual.
 - b. Use odorless mineral spirits to clean the bond area. Allow to dry completely before proceeding to the next step.
 - c. Wet a lint-free paper towel with glass cleaner or distilled water and wipe the bonding area. Allow to dry completely before proceeding to the next step.
3. Apply a thin coat of Sika® Primer-207 AGR, using a brush or a dauber, and then allow at least 3 minutes for this product to dry. Please note that Single Use Stix applicator may be used for this application, however, due to its limited coverage, a can of primer will most likely be the more convenient option.
4. Set the glass part using the appropriate Sika adhesive for the vehicle type and required drive away time.

5.4 Freightliner Cascadia:

In August, 2007 Daimler Truck introduced the Freightliner Cascadia, which comes equipped with a roped-in, bonded EPDM rubber gasket set windshield. In February of 2010, Freightliner introduced a new replacement gasket for this application into the AGR Aftermarket. This new gasket (Part # A18-64181-000) eliminated the need to use the Chemlok 7701 as a pretreatment. The new gasket has the Part # A18-64181-000 molded into the seal at the center “T” sections on the cab facing side. If the gasket that you are using does not have this number molded into the seal, then contact your local Sika AGR Territory Manager for further instruction. When replacing this new gasket, the recommendation is to use Sika® Aktivator-100 (NOT Sika® Aktivator PRO or 307) and a specific adhesive, SikaTack® ASAP+. Currently these are the only Sika products approved for this application. Failure to comply with this recommendation could void the Freightliner warranty. NOTE: This is NOT a direct glazing application, as there is no bonding to the glass part itself, rather the SikaTack® ASAP+ is used to bond the gasket to the pinchweld. IMPORTANT: Please be aware that Sika® Aktivator PRO, Sika® Aktivator-307, and Sika® Primer-207 AGR cannot be used as a substitute for Sika® Aktivator-100 for this application.

Please reference the Freightliner Service Bulletin (60-144) for more information. Repair technicians can find this Service Bulletin, as well as additional technical support, by contacting Daimler Truck’s Technical Support Call Center in Portland, OR at (503) 745-7769. Authorized Dealers, Fleets, and other authorized customers may also be able to log in at www.AccessFreightliner.com for this bulletin.

At this time all necessary products can be ordered through:

Industrial Supply Solutions, Inc.
Salisbury, NC
(800) 849-9116

5.5 Organic Glass:

For organic glass (polycarbonate and acrylic) parts, follow the procedure detailed below in order to properly prepare the part for installation.

1. Abrade the bond area with 80 grit (or similar) sandpaper
2. Wipe the area with a dry, lint-free paper towel to remove dust and debris. Sika® Aktivator (PRO or 307) should NOT be used after abrasion of these parts, as testing has shown it can be detrimental to achieving a durable bond.
3. Apply a thin coat of Sika® Primer-207 AGR, using a brush or a dauber, and then allow at least 3 minutes for this product to dry. Please note that Single Use Stix applicator may be used for this application, however, due to its limited coverage, a can of primer will most likely be the more convenient option.
4. Set the glass part using any Sika AGR polyurethane adhesive.

6.0 Urethane Application & Glass Installation

6.1 The Adhesive System:

Glass shops can select a Sika AGR urethane to suit the specific MDAT needs of their customer. The speed with which a customer needs to return their vehicle to service will dictate the kind of adhesive to use for windshield replacement. Factors affecting drive away time include application temperature, humidity, and product selection. Refer to the Sika MDAT chart, or the applicable Sika Product Data Sheet, to identify the appropriate MDAT for the specific climatic conditions where the installation will be conducted. Sika further recommends that all Sika AGR adhesives systems be applied to only those glass parts compliant with ASNSI Z26.1 specifications, required by FMVSS 205. Such glass parts can be best identified noting the DOT number insignia on the part.

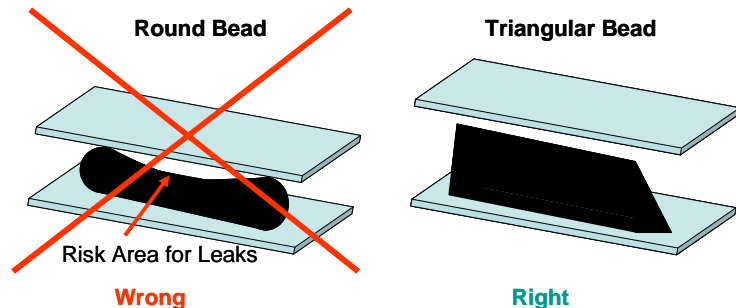
Special Note: These instructions allow for compliance to Sections 5.2 / 6.3 of the AGRSS Standard.

- A. Heated products (see Section 6.4) must be warmed for a minimum of one-hour in a Sika approved oven prior to use. These products can be heated a total of 10 hours (either consecutively or in shorter periods adding up to a total of 10 hours). After total heating time without use, the product must be discarded.
- B. Do not heat cold applied products in Sika approved ovens designed for hot applied adhesives. Instead of speeding adhesion, the product may not properly perform.
- C. It is recommended that urethanes are stored at temperatures under 77°F to maximize shelf life.
- D. Use "V" notched nozzles when applying beads or adhesives for auto glass sets (see Section 6.2).
- F. Sika® Aktivator PRO, Sika® Aktivator-307 and Sika® Primer-207 AGR have been designed to ensure a strong, durable bond between the adhesive and the windshield. One of these products must be used on every windshield before applying any adhesive which is not indicated to be primerless-to-glass.
- G. Certain installations will also require the use of Sika® Primer-207 AGR to prepare the pinchweld for adhesive application. Some installations will require Sika® Primer-207 AGR to prepare encapsulated parts, or organic glass parts that will receive adhesive application. Be sure to also review the sections of this manual relevant to these installations.
- H. Compatibility of systems and OEM specifications must be recognized and followed. Polyurethane adhesive systems must be used on all vehicles utilizing this same product type at the OEM and on older model vehicles, licensed for highway use, that may have originally used non-urethane type retention systems, such as butyl or polysulfide unless this conflicts with CURRENT OEM specifications.

Special Note: This instruction allows for compliance to Section 6.6 of the AGRSS Standard.

6.2 "V" Bead Application:

Most Sika adhesives are supplied with a pre-cut triangular "V" notched nozzle. This is the recommended nozzle tip that must be used in order to apply the proper bead size. A round bead can trap air in all four corners when compressed between the glass and pinchweld. A round bead is also more difficult to uniformly compress during windshield decking which may result in voids and leak points across the entire width of the bead (see figure). However, when a triangular shaped bead is compressed, no air is trapped and the bead squeezes down to a rectangular dimension. Conventional, un-cut nozzles are also provided for backfilling use, sealing gaskets and other custom applications.



Make sure that the depth of the "V" notched nozzle is the same as the height between the pinchweld mounting surface and roof of the car. This can be checked by simply placing the nozzle on the pinchweld near the roofline and viewing to see that the top of the "V" matches the height of the roof. If it is short, simply cut a deeper and wider "V" in the nozzle. This step helps ensure that enough urethane is supplied to the pinchweld to prevent the glass from sagging below the roofline of the vehicle.

When applying Sika AGR urethanes it is imperative for the fresh adhesive to match the location and profile (height and width) of the trimmed OEM bead on the pinchweld. This will ensure that there is a sufficient amount of new adhesive available to meet FMVSS standards for safety. Sika's recommendation is that the fresh adhesive bead may be applied either to the trimmed OEM urethane bead located on the pinchweld of a vehicle or to the glass. Sika's only requirement with regard to the fresh adhesive bead placement location is that the installer ensures that the fresh adhesive bead makes good contact with both the trimmed bead and the glass part that has been properly prepared, whether the adhesive is applied directly to the glass part or to the trimmed adhesive bead. When deciding the most appropriate location to apply the AGR adhesive bead for a specific installation Sika offers the following considerations:

- If the vehicle's OEM bead pattern is non-uniform and proper fresh adhesive bead placement / alignment will be difficult if applying to the glass, the better option may be to apply the adhesive to the vehicle's pinchweld.
- When the OEM bead pattern is uniform and the proper bead location on the glass can be easily identified, the better option may be to apply the fresh adhesive bead to the glass part. One reason is that applying the bead to the glass part is considered to be more ergonomically friendly. Also, this can make it easier for the installer to hold the application gun at the proper 90° angle when applying the adhesive to the entire perimeter of the part, which can result in more consistent and uniform bead dimensions.

Please note that pre-cut "V" notched nozzles come with a stem guide. This stem is to provide a guide for installers choosing to apply the urethane on the glass instead of the pinchweld. If you apply urethane to the pinchweld, simply clip the stem from the end of the nozzle and discard.

Special Note: This instruction provides compliance with Section 6.5 of the AGRSS Standard.

6.3 Date Codes:

All Sika products have a shelf life or period after production within which the product must be used. After the expiration of the product shelf life without use, the product **MUST** be discarded. Expired product performance is not warranted and the product may not properly adhere, causing loss of glass retention and possible personal injury. Humidity, temperature and sunlight can affect the shelf life. It is important to keep the products stored correctly. Make sure you rotate your stock and use it on a "first in-first out" basis. If you ever have problems with the materials, the first thing you should check is the date code to determine if the product shelf life has expired. Date codes are located on the shipping box, re-sealable cans and sticker sheets that accompany the urethane products. **IF THE SHELF LIFE HAS LAPSED, DO NOT USE THE PRODUCT.**

Special Note: This instruction provides compliance to Sections 5.5 and 6.9 of the AGRSS Standard.

- A. All Sika AGR adhesives have a 9 month shelf life except for SikaTack® ULTIMATE which is 6 months.
- B. Sika® Primer-207 AGR in cans have a 12 month shelf life. Sika® Primer-207 AGR packaged in the Single Use Applicator Stix format have a 13 month shelf life.
- C. Sika® Aktivator PRO and Sika® Aktivator-307 in 250 ml cans have a 12 month shelf life. Sika® Aktivator Pads have an 18 month shelf life.
- D. Once Sika® Aktivator and/or a Sika® Primer is opened, the shelf life is reduced, but not destroyed. With proper storage conditions, they will remain usable up to six months after opening, or until the expiration date, whichever comes first. Always tightly replace both the inner liner and outer cap after each use. If the product becomes thick or cloudy, discontinue use immediately. Concerning re-sealable containers, note on the can, with permanent ink, the date in which the product was first opened in order to make sure the product is not used beyond the opened shelf life of 6 months, or the expiration date, whichever comes first.
- E. The published shelf life of all Sika cleaners, primers and urethanes will be realized when the product is stored below 77°F. If properly stored in cool, dry conditions, the unopened adhesive cartridges or unipacks have a shelf life of 9 months. Long-term storage of the product at higher temperatures will affect the handling characteristics and shorten the shelf life. Typically, chemical reactions double for every 18°F increase in ambient temperature. Therefore, product stored continuously at 93°F would be expected to have a shelf life of four-and-a-half months, while product stored at 111°F would have approximately 2 months shelf life. Short-term storage, considered by Sika to be a 30 day period from the purchase date by a glass shop or mobile unit, will have relatively very little effect on the shelf life of the adhesive. If the product is exposed to freezing conditions (<32°F) the product will not be damaged, but it will require additional time to acclimate to the optimal application temperature. For exceptional application characteristics, SikaTack® MACH 30 and SikaTack® MACH 60 should be applied when the adhesive is between 50°F and 120°F and all Sikaflex® adhesives, when the product temperature is between 40°F and 110°F. Heated products (SikaTack® Ultrafast II and SikaTack® ASAP+) will require additional heating time if the product is stored at or below freezing. For additional information on the optimal application temperature of the heated products, please review the section on *Hot Applied Adhesives* located in Section 6.4 of this manual.
- F. For products that have expiration dates, or "Best Before" dates, that are given only in month and year (without a specific day), please remember that these products can be used until the end of the month that is listed.

6.4 Hot Applied Adhesives:

Use of Ovens to Heat Sika Adhesives:

SikaTack® Ultrafast II and SikaTack® ASAP+ must be heated in a Sika approved oven for a minimum of one hour. One hour is necessary to ensure the product reaches a temperature range of 75°C - 90°C (167°F - 194°F) before it is used. These products can be heated a total of 10 hours (either consecutively or cumulatively for a total of 10 hours). After this total heating time without use, the product must be discarded. If not heated properly problems with gunnability, decking, and adhesion may occur. Noting the time with a felt-tip marker on the rim of the cartridge will help in monitoring a one-hour minimum heat time. Products receiving such markings should be used that calendar day to ensure that the time in the oven did not exceed the 10 hour limit.

You should ALWAYS wear protective gloves and safety glasses while handling the heated products. Product is HOT when applied and can cause burns. Exposure to urethanes may have health risks. See warnings on product container

Special Notes about Hot Applied Sika Adhesives:

- Only heat recommended Sika Adhesives. Never heat cold applied adhesives or other brands of products.
- Allow heated products at least one hour in oven to reach application temperature, 30 minutes if PRE-HEATED in a Hydrotherm™ system. (See following page for additional information).
- Use protective gloves when handling heated cartridges.
- Only use approved cartridge and unipack ovens referenced below. **NEVER** use a different heat source to heat Sika products. Over heating product can cause **PERSONAL INJURY**.

PRODUCT NOTE: The one hour heating requirement assumes urethane stored at 32°F or higher. Urethane stored below 32°F (such as overnight in a mobile vehicle) will require additional oven time to reach the 167°F – 194°F range. Fifteen minutes of extra heating time is satisfactory.

EQUIPMENT NOTE: Only PURfect Heater, Intertech, and Pragmatech, Inc.'s Hydrotherm™ adhesive heaters (vehicle coolant system heaters) are recommended by Sika. For PURfect Heater and Pragmatech ovens, please contact these manufacturers directly for heater warranties and usage instructions.

- PURfect Heater by Mycon Industries, 10488 U.S. 12, Brooklyn, MI 49230, Phone (517) 467-6887
- Hydrotherm™ by Pragmatech, Inc., W 4015 876th Ave., Spring Valley, WI 54767, Phone (715) 688 – 6177 or (877) 244-3961, FAX (267) 790 - 4884.

IMPORTANT: Ovens are for use with SikaTack® Ultrafast II and SikaTack® ASAP+ adhesive only. Never place any other adhesive including any other Sika adhesive in an oven for any reason.

PURfect Heater – 4 hole (120 VAC) Oven (Part # COV00PH)



- Accepts 300 ml cartridges and 465 ml unipacks (cartridges work best with pedestals – see below)
- Thermostat is pre-programmed for accuracy and reliability
- Works well with mobile power invertors (310 Watts max. draw)]
- Operates equally well in vertical or horizontal positions
- Turn off heater at the end of every work day and remove urethane
- Keep heating chambers clean and free of debris

Cartridge Pedestals for PURfect Heater



- Pedestals are designed to fit into the PURfect Heater cylinders
- Pedestals properly position Sika cartridges for easy removal
- Sold separately from PURfect Heater oven (4 to a box)

Pragmatech Hydrotherm™ - 4 hole - Oven (Part # COV00P1)



- Follow installation procedures carefully and without deviation.
- Load oven holes with cartridges or unipacks. Additional cartridges or unipacks may be pre-heated by placing them inside the cooler and around the perimeter of the heater.
- The engine is not required to be continually operated at the job site once sufficient product has been heated to the 167 – 194°F range. The insulated container and residual heat will keep the adhesive hot. Engine coolant, which supplies heat to the heater, will remain hot for quite some time.
- Keep cooler lid closed at all times when oven is in operation.
- Since the urethane may only be heated for a total of 10 hours it is recommended to remove all urethane from the oven at the end of the day

APPLICATION TIP: Cartridges or unipacks positioned inside the Hydrotherm™ cooler, but outside of the oven, will be preheated. Urethane that's been preheated for a minimum of one hour will only require 30 minutes within the heater cylinder to reach application temperature. To ensure a ready supply of heated product, remember to pre-heat additional tubes to reduce the required heater time.

6.5 Primerless-to-glass Adhesives:



SikaTack® ULTIMATE, Sikaflex® P2G and Sikaflex® P2G PLUS are formulated to be primerless-to-glass. This means the use of Sika® Aktivator (PRO or 307) or Sika® Primer-207 AGR is not required for these adhesives to achieve an acceptable bond to bare glass or ceramic frit. However, the bonding area of the glass or ceramic frit must be clean, dry and free from all traditional and non-traditional contaminants for these adhesives to achieve adhesion. Additionally, the use of Sika® Aktivator (PRO or 307) and/or Sika® Primer-207 AGR on all other bonding surfaces, as set forth in the instructions given in this manual, is required for proper performance of the adhesive system.

The adhesive bond must be protected from Ultraviolet radiation in the same manner as with standard polyurethane adhesives. This is typically achieved using a ceramic frit band (either exposed or inner layer frit). When bonding clear glass with no frit band, an external trim piece must be used to shield the bond from UV rays. Please note, Sika® Primer-207 AGR is NOT intended to be used as the primary protector against UV rays for automotive windshield replacements.

6.6 Unipacks:

All Sika AGR polyurethane adhesives are all available in unipacks. Because of the dispensing efficiency, this packaging design allows for greater waste savings of adhesive material and will save the installation technician time by reducing the frequency of changing out 300 ml cartridge material.



All Sika urethanes are available in unipacks packaged in 465 ml and / or 600 ml fill volumes. The 465 ml material content in the unipack covers more than 95% of the standard vehicle windshield installs required in the market, eliminating partial unipacks that end up in many cases as waste. The 465 ml package is also lighter allowing for better ergonomics of the applicator gun during urethane application.

NOTE: All Sika AGR unipacks require dispensing guns that have been equipped with unipack conversion kits. Please contact your local Sika Sales Representative for further details.

6.7 "Wet" Adhesive Strength Properties:

When a windshield has been recently installed using Sika products and is later removed, it is not unusual to find the center of the adhesive bead is wet. This situation is normal and does NOT affect the performance characteristics of the adhesive.

Some technicians have asked how a "fast-curing" adhesive can still be wet after several days. This is because all one-part adhesives cure from the outside to the inside, developing a partially cured skin that gradually thickens until the bead has reached full cure. The "doughnut" affect that this creates still represents enough cured material and strength throughout the bead to meet all strength retention requirements mandated by FMVSS regulation.

6.8 Traceability of AGR Super Kit Components:

Since Sika introduced Auto Glass Replacement (AGR) Super Kits, traceability of Sika® Aktivator Pads and Single Use Applicator Stix has been achieved by adhering individual stickers to the insurance documentation. The Lot Number, located on all AGR cartridges and unipacks, on separate sheets of stickers available in all AGR Super Kits, or on the white Corner Label located on the outside of the Super Kit Boxes, is sufficient to track all of the components within a Super Kit. It is a required practice to maintain documentation that allows for the traceability of all Sika adhesives, primers and Sika® Aktivator products. All glass parts require the same element of traceability through entry of DOT number and part number. Even custom cut glass parts require some form of similar marking to indicate compliance to FMVSS 205 and ANSI Z26.1

Important Note: For the traceability system listed above to work effectively, it is imperative that the urethane, Sika® Aktivator Pads and Single Use Applicator Stix contained within the same Super Kit are used on the same installations. Sika® Aktivator Pads or Single Use Applicator Stix leftover from previous Super Kits would need to have their lot numbers manually recorded on all insurance documentation.

Special Note: This instruction allows for compliance to Sections 6.7 and 8.2 of the AGRSS Standard

6.9 Non-Conductive Urethanes:

The subject of "conductivity" is not a new one in the field of polyurethane adhesives. All black polyurethane adhesives will conduct electricity to some degree. Some automotive OEMs (Original Equipment Manufacturers) have a specific requirement regarding the conductivity level of the glass bonding polyurethane adhesives used for their vehicles. In order to be rated as non-conductive, the urethane must meet these levels, as specified by the vehicle manufacturers. Sika makes several adhesives that are rated non-conductive and are acceptable for use in these applications.

Conductivity is a measure of the ability of a material to conduct electrical current. If the conductivity of a material is sufficiently low, it acts as an insulator preventing the flow of electricity, much like the plastic surrounding the exterior of a lamp cord. Due to the physical positioning of a urethane adhesive between two surfaces, in order to seal or bond together, engineers and designers have found the urethane bead to be in an excellent location to prevent several potential electrical related problems.

PROBLEM 1: The prevention of electrical current flow between an exposed electrically charged wire and non-targeted area of the vehicle.

CONCERN: If such wiring is not insulated, the consequences could be electrical shorts, potential fire hazard and inoperative equipment due to disruption of power. Examples of this situation include heating/defrosting elements in front and rear glass. These electrically charged elements need to be isolated / insulated from the rest of the vehicle. The non-conductive urethane adhesive bead serves this need.

PROBLEM 2: To prevent signal loss as a result of induced current, which impairs the performance of aerial receivers located in the windshield glass.

CONCERN: Unblocked channels of electrical conductivity create static interference and weakened reception. A non-conductive adhesive isolates the windshield receiver from the rest of the vehicle.

PROBLEM 3: The prevention of electro-chemical or galvanic corrosion between two different types of metal that comes into contact through seal, bond or mechanical fasteners.

CONCERN: In the presence of moisture and air, galvanic corrosion will occur at the contact point of two different types of metals. The result will be oxidation of the metal and formation of rust. An insulator must be installed between the different metals to block the conductive exchange. Non-conductive polyurethane adhesive is a great insulator for this purpose.

PROBLEM 4: To prevent corrosion of aluminum in contact with the carbon black within the adhesive.

CONCERN: As the conductive component in some black polyurethane adhesives is carbon black, there is a possibility of galvanic corrosion leading to the destruction of the aluminum.

Please see the table on the next page for the current list of Sika AGR adhesives recommended for applications requiring a non-conductive urethane.

6.10 High Modulus Urethanes:

Some automotive OEMs (Original Equipment Manufacturers) use windshield bonding urethane adhesives that have a slightly higher modulus, compared to that of conventional urethane adhesives. The modulus of an adhesive indicates how much joint movement is to be expected when a given amount of force is applied to the bonded joint. If the same amount and type of force is applied to two separate bonded joints, of the same dimensions, one being bonded with a high modulus (HM) urethane and the other with a conventional urethane, the HM bond will have less movement.

This characteristic of high modulus urethane adhesives has allowed some automotive OEMs to increase the overall stiffness of their vehicles simply by bonding the windshield with this type of adhesive. If a windshield that was originally installed with an HM urethane is replaced using a conventional urethane, the vehicle might not retain its original level of stiffness. In this case, it may also be possible for the windshield to move, during operation, beyond the limits of the window opening, causing the windshield to break. Conversely, if an HM urethane is used for a windshield replacement that does not require HM, stress cracking of the windshield may occur.

SikaTack® ULTIMATE, SikaTack® ELITE, SikaTack® Ultrafast II, SikaTack® ASAP+, SikaTack® MACH 30 and SikaTack® MACH 60 are designed to be what Sika refers to as an “All-In-One” modulus adhesive. Each of these urethanes have a shear modulus that is on the high-end of the range for conventional polyurethane adhesives as defined in the requirements outlined in the North American automobile manufacturer’s direct glazing specifications. Extensive field testing performed by Sika in the United States, Europe, Australia, and Canada over an extended period has shown that an adhesive with this level of shear modulus is suitable for replacement of all glass parts, even those that were originally installed in vehicles using a high modulus adhesive. When used for high modulus AGR applications, each of these listed urethanes will be able to maintain the vehicle’s original level of stiffness.

Please remember that high modulus and non-conductive are not distinctly related. While many vehicles require non-conductive adhesives, very few legitimately require high modulus. At the time of this publication, Sika endorses the use of SikaTack® ULTIMATE, SikaTack® ELITE, SikaTack® Ultrafast II, SikaTack® ASAP+, SikaTack® MACH 30 and SikaTack® MACH 60 on 1995 and later Audis, 1996 and later Volkswagen models, 2004 and later Mercedes models, and 2004 and later Porsche models. These “All-In-One” modulus adhesives provide a stiffer cured product but can be used for ALL auto glass replacement applications.

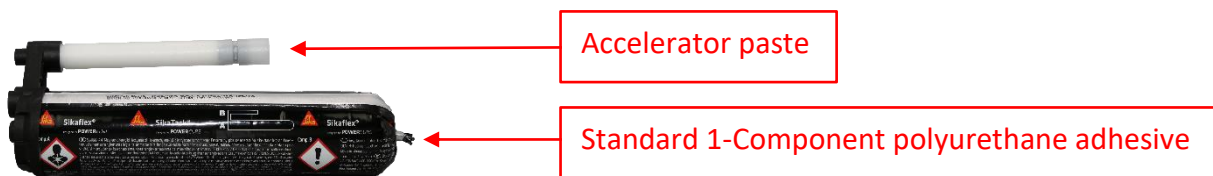
List of Sika AGR adhesives recommended for Non-conductive / High Modulus applications

Non-conductive only	High Modulus Only	Non-conductive and High Modulus
Sikaflex® P2G PLUS	SikaTack® Ultrafast II	SikaTack® Ultrafast II
SikaTack® Ultrafast II	SikaTack® ASAP+	SikaTack® ASAP+
SikaTack® ASAP+	SikaTack® MACH 30	SikaTack® MACH 30
SikaTack® MACH 30	SikaTack® MACH 60	SikaTack® MACH 60
SikaTack® MACH 60	SikaTack® ELITE	SikaTack® ELITE
SikaTack® ELITE	SikaTack® ULTIMATE	SikaTack® ULTIMATE
SikaTack® ULTIMATE		

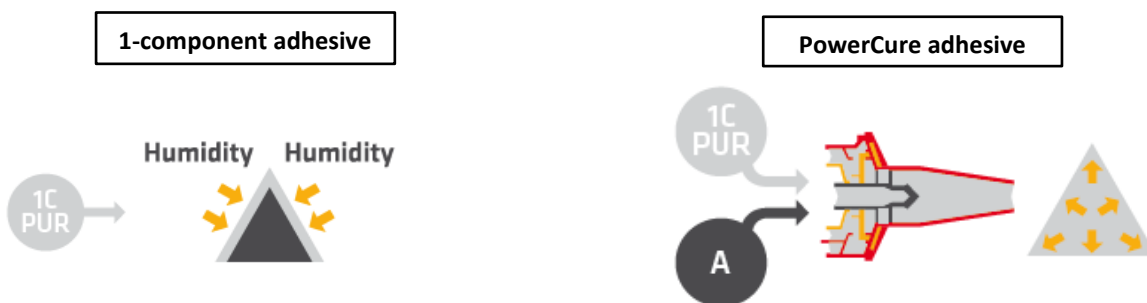
6.11 PowerCure Adhesives:



Sika's line of PowerCure products are accelerated polyurethane adhesives designed to be used in conjunction with the Sika-developed PowerCure dispenser (shown above). Sika's PowerCure adhesives are comprised of a standard 1-component polyurethane adhesive with an attached shoulder containing an accelerator paste.



The adhesive and the accelerator paste are dynamically mixed in the specially designed nozzles causing the adhesive to cure homogeneously throughout the dispensed bead, rather than from the outside in, as with a standard 1-component polyurethane adhesive. The use of the accelerator paste means that the rate of cure is not dependent on the amount of ambient humidity in the atmosphere and is significantly faster than the rate of cure of a 1-component adhesive.

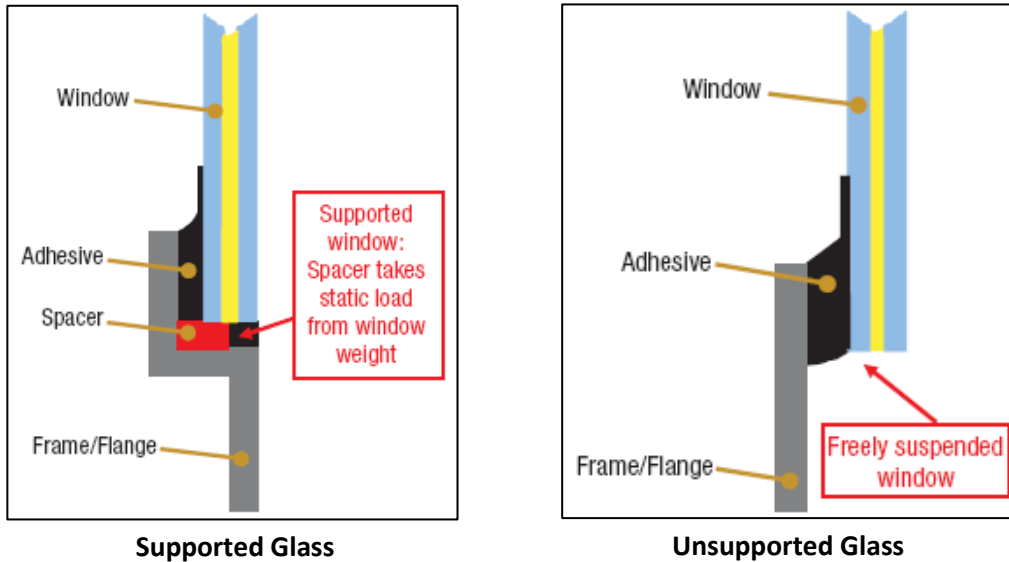


The mixing of the adhesive and the accelerator causes the dispensed bead to reach OEM Level Cure very rapidly. An adhesive has reached OEM Level Cure when:

1. Body stiffness is returned to its original level, and
2. There are no restrictions on operation of the vehicle

SikaTack® ELITE PowerCure

- Available in 400 ml unipacks with accelerator paste in attached shoulder
- All-in-one modulus and non-conductive
- 30 Minimum Drive Away Time in all conditions
- Cured to OEM level in 1 hour
- Return to service time (for vehicles above 10,000 lbs gross weight and not subject to FMVSS 212) is 1 hour for supported glass and 2 hours for unsupported glass



- Glass and ceramic frit must be prepared using Sika® Primer-207 AGR
- The pinchweld (specifically the trimmed polyurethane bed) must be prepared using Sika® Aktivator-309 P. This product is available in 1.25 ml single use applicator Stix (as seen in picture below)
 - To use the Sika® Aktivator-309 P Point felt tip toward the ground and pinch applicator stick just above the felt tip with the thumb and forefinger to break internal vial and release the Sika® Aktivator-309P into the felt tip.
 - With the felt tip down, gently squeeze the stick to wet out the felt tip, being careful not to squeeze too hard creating a drip.
 - When the felt tip is fully saturated, begin pre-treating the pinchweld immediately.
 - Apply Sika® Aktivator-309P around the entire pinchweld perimeter, making sure to cover all areas of trimmed urethane.
 - Allow gravity to feed activator into the felt tip, but you may gently squeeze the stick if more material is needed.
 - Following application of activator, wait a minimum of 30 seconds before applying adhesive.



Sikaflex®-268 PowerCure

- Available in 600 ml unipacks with accelerator paste in attached shoulder
- Ideal for RV's and other vehicles and equipment with larger glass parts requiring longer working time
- Return to service time (for vehicles above 10,000 lbs gross weight and not subject to FMVSS 212) per the following table:

SUPPORTED GLASS		
Temperature (°F)	50 - 60	60 - 95
Return-to-Service Time (Hours)	6	4
UNSUPPORTED GLASS		
Temperature (°F)	50 - 60	60 - 95
Return-to-Service Time (Hours)	8	6

- Glass and ceramic frit must be prepared using Sika® Primer-207 AGR or Sika® Aktivator-307
- No special requirements for preparation of the pinchweld

7.0 Seasonal Concerns

Please refer to each product's specific Product Data Sheet for exact application temperature limits.

High Temperature Instructions:

When performing mobile glass replacements during the summer months, the technician must be concerned with the temperatures of the substrates that are to be bonded. In auto glass replacement (AGR) the substrates are the glass part and the pinchweld. If the temperature of these substrates is too high, the AGR urethane can cure / react too quickly and experience what is called "gassing." "Gassing" results when the urethane adhesive skins over and carbon dioxide is generated faster than it can be released. The carbon dioxide then builds up inside the adhesive bead and gives the adhesive a "Swiss cheese" appearance. If this phenomenon occurs in very small amounts there is little reason for concern. If it occurs significantly, then adhesion and long-term durability of the bonded system may be compromised. If temperatures are extremely high and or proper shade cannot be provided then Sika recommends the following maximum substrate temperatures, by product.

<u>Sika AGR Adhesive</u>	<u>Maximum substrate temperature (°F)</u>
Sikaflex® products	130
SikaTack® products	170

Low Temperature Instructions

Sika® Aktivator:

Above 15°F, Sika® Aktivator PRO has a flash-off time of 3 minutes, however, when the temperature is between 0° and 15°F, the recommendation is to allow the product to flash-off for 10 minutes. Sika® Aktivator-307 has a flash off time of 3 minutes above 20°F and 10 minutes between 0° and 20°F.

SikaTack® Ultrafast II (15° TO 40°F) / SikaTack® ASAP+ (0° TO 40°F):

Due to the unique strength development characteristics of SikaTack® Ultrafast II and SikaTack® ASAP+, these products can be used in low temperature situations, but special care must be used when temperatures are below 40°F. These products develop extremely high green (initial set-up) strength within minutes of application. For optimal results, be sure to set the glass within 5 minutes of beginning application of the adhesive. The glass can be set as long as 10 minutes after applications of adhesive but positioning the glass will be difficult. Consider use of the following points to help ensure a problem free installation:

- Remove original windshield and clean the pinchweld thoroughly with a brush to remove all contaminants.
- Dry set glass and mark alignment points.
- Trim old adhesive to a height of 1 - 2 mm.
- Glass should be cleaned and prepared before applying adhesive to either pinchweld or glass.
- Have enough adhesive heated and prepared to complete the job.
- Have second cartridge or unipack easily accessible. If you have two guns, have one tube in each gun.
- Set the glass immediately after adhesive is applied and seams are paddled.
- Position glass before pressing it into place.
- Refer to Sika's MDAT chart to determine the minimum hold time for the vehicle at the measured environmental conditions. **DO NOT RELEASE VEHICLE UNTIL RECOMMENDED MDAT HAS LAPSED.**
- Use extra care while removing and replacing the cowl cover and trim pieces.

8.0 Additional Information

8.1 FMVSS 111:

Subject: Passenger and Commercial Vehicle Side and Rear View Mirror Replacements


Auto glass replacement technicians, being trained and certified through Sika Corporation and in accordance to the current AGR Technician Training Manual, are required to follow this addendum instruction as it pertains to the proper replacement of side and rear view mirrors in both passenger and commercial vehicles:

- 1) Sika training personnel will refer to the FMVSS 111 specification in order to alert auto glass technicians to the importance of properly installing approved mirror products and how they must be installed. Below you will find the website address for the FMVSS 111 specification. It is critical that each technician fully comply with each section, namely S-1 through S-12 in that each defines all types of vehicles requiring special attention.
- 2) Sika can endorse the use of Sika non-conductive AGR urethanes for the installation of side view mirrors provided the mirrors pass FMVSS 111 and the bonding surface of the mirror has no exposed silvering or paint on the bonding surface. The integrity of such surfaces may be compromised if exposed to urethane systems and related cleaners and primers. The bonding surface of the mirror should be cleaned with an appropriate glass cleaner and then apply Sika® Primer-207 AGR according to the procedures provided in this manual. The bonding surface of the mirror mounting bracket, contained inside the mirror housing, can also be prepared with Sika® Primer-207 AGR, following the guidelines provided in this manual. At this point any of Sika's non-conductive urethanes can be used for bonding in the mirror. Care should be taken that urethane does not contact the motor mount, impeding the ability of the motor to adjust the mirror.

Special Note: Instruction provides compliance to Section 8.3 of the AGRSS Standard.

8.2 Sika Field Quality Correction Form:

In 2009, Sika Corporation introduced the Field Quality Correction Form (FQCF). This form is designed to identify and advise glass technicians and glass shop owners of improper windshield installation procedures that may compromise safety. Sika Corporation Territory Managers will fill out the FQCF if they witness a violation of Sika's windshield replacement installation guidelines. A copy of this form will be provided to the installing technician and to the glass shop manager / owner. The original will be kept on file at Sika in Madison Heights, MI.

SIKA® FIELD QUALITY CORRECTION FORM	
"No Short Cut to Safety"	
Glass Shop Name:	_____ <small>PRINT</small>
Location:	_____ <small>PRINT</small>
Technician Name:	_____ <small>PRINT</small>
Date:	_____ Time: _____
<u>VIOLATION</u>	
<input type="checkbox"/>	Using product with expired shelf life
<input type="checkbox"/>	Inadequate flash time for Sika® Aktivator PRO
<input type="checkbox"/>	Inadequate flash time for Sika®-Primer 206 G+P or Sika®-Primer 215
<input type="checkbox"/>	Not shaking the primer for the recommended period of time
<input type="checkbox"/>	Short-cutting urethane
<input type="checkbox"/>	Inadequate treatment of corrosion
<input type="checkbox"/>	Using a heat gun directly on Sika®-Primer 206 G+P or Sika® Aktivator PRO
<input type="checkbox"/>	Not following proper SDAT
<input type="checkbox"/>	Other: _____
Notes:	_____ _____
Technician Signature:	_____
Shop Manager/Owner Signature:	_____
Sika Territory Manager Signature:	_____
<small>Customer - White Copy TM - Pink Copy MH Administrative - Yellow Copy*</small>	
<small>*Send Yellow Copy to Industry Admin in Madison Heights</small>	
<small>2/09</small>	
<small>Please note that Sika's warranty is subject to full compliance with Sika's instructions for use, handling, storage and warnings applicable to the specific product(s) as set forth on Sika's Product Data Sheet(s), Material Safety Data Sheet(s), label(s) and any written recommendations issued by Sika. Failure to comply will result in no warranty being issued or will render any existing warranty void.</small>	
<small>Failure to comply will result in no warranty being issued or will render any existing warranty void.</small>	
	

8.3 Questions & Answers:

1. Can Sika adhesives be installed onto wet surfaces? *No. No urethane can be applied to a wet surface because the water causes the urethane to ball up and lift from the surface, compromising the adhesion. All surfaces must be dry.*
2. What records are important to keep? *In this day and age, the more the better! As an abbreviated summary, make sure to have all technician and shop certifications current and on file. Sika training certificates should be updated at least every other year in order to maintain proper continuing education requirements. Having pre and post inspection documentation is important as is a record of all the products and work performed on the car. Product traceability is imperative. A record should also be kept indicating the MDAT of the vehicle along with the temperature and humidity on the given date the work was completed. Having customer signatures denoting their acceptance of all information on such records is always a great idea. AGRSS requires the maintenance of any and all records that provide proof of compliance to the AGRSS Standard. One final and very important aspect of record keeping is to record any time that a product fails to perform as promised and making sure to contact the supplier of that product to let them know that there may be a problem.*

Special Note: This instruction provides compliance to Section 8.5 and 8.7 of the AGRSS Standard.

3. What products does Sika offer to contend with contamination and proper cleaning? *The Sika AGR Technician Training Manual specifically identifies what cleaning products and processes MUST be used concerning each step of an auto glass installation. It is important to follow such instructions and never introduce any other processes, steps and, or products that are not approved in writing by Sika. Failure to comply with these written instructions may result in a voided warranty.*

Special Note: This instruction provides compliance to Section 8.6 of the AGRSS Standard.

4. Can I apply your heated products cold? *No, SikaTack® Ultrafast II and SikaTack® ASAP+ must be applied hot or else problems with gunnability, decking, and / or adhesion may occur.*
5. Sometimes my push-in moldings do not stay down. What causes this and what would you recommend to address the problem? *Often there is a small amount of residual processing oil or other contaminant present on the molding surface that cannot be seen with the naked eye. Give the molding a light scuff with a ScotchBrite (or similar) abrasive pad and clean with glass cleaner prior to installation. Also, make sure you do not exceed the open time of the adhesive being used to help hold the molding in place.*
6. How can I best prepare to make sure all my technicians are “AGRSS ready”? *It is important that every technician understand each step of the Standard and know how to apply it 100% of the time in the work they complete. Sika trainers are equipped to assist by conducting mock validations. Be sure to have everyone trained and tested to the current Sika Manual and then book time with your Sika representative. Sika provides the most advanced and thorough method of assisting in this matter.*

7. What risks do I take if I use a high modulus urethane on a vehicle that only requires non-conductive urethane? *The windshield could stress crack during vehicle operation. Please remember that the "All-In-One" products are recommended for high modulus applications and can be used for all applications without concern for stress cracking.*
8. What risks do I take if I don't use a high modulus or an "All-In-One" modulus urethane on a vehicle that does require it? *After the windshield is replaced, the vehicle might not have the original level of stiffness and the windshield could break as a result of moving beyond the limits of the window opening during operation of the vehicle.*
9. I've always used a round bead and never had a problem. Why do you recommend a triangle bead? *When compressed, a triangle is the only dimension that will not trap air. Round beads tend to trap air in all four corners, creating air pockets that vibrate through the bead creating leaks. Triangle beads, when applied correctly, create less squeeze-out and require less clean up as well. Always remember to trowel all wet seams of urethane together, using a windshield stick or blade.*
10. Explain your oven kit program. *Retail glass shops can obtain free ovens by purchasing a kit through Sika distributors. Along with the free oven they purchase a specified number of cases of urethane, primer and cleaner that help offset the cost of the oven. Both Sika Corporation and Sika distributors share in the cost of the oven through reduced margins. While Sika Corporation picks up the largest portion of the oven cost, distributors sell the kits at a predetermined price. Kits are usually special ordered after the retail glass shop makes a commitment to the Sika line of products and determines which type of oven would best serve their business. Shops doing the math can determine that they are only paying for the urethane, primer and cleaner portion of the kit, which is a billable product to their customers.*
11. When uncertain of how to bond glass parts, is it best to always use a Sika adhesive system? *While urethane satisfies most vehicle needs for installing glass parts, there are some exceptions that may be encountered. Most notable is when the OE glass part utilizes a mechanical fastening system, which provides the required retention strength, and calls for a sealant to prevent water and sound penetration. When this is the case, it is always best to follow current OEM specifications for installing a replacement part. Where a model vehicle has been upgraded, it is recommended that only the most current specified retention system should be used. An example would be a vehicle model transitioning from a gasket set to a urethane set glass part.*

Special Note: This instruction provides compliance to Section 6.10, 8.1 and 8.4 of the AGRSS Standard.

12. What should I do if a product used in the glass installation failed and it could jeopardize customer safety? *Report the failure directly to the customer and offer to remedy the situation.*
13. Are there any special considerations when repairing, removing, or replacing motorized windows and/or panels equipped with an anti-pinch mechanism? *Ensure these mechanisms are reset, initialized, and/or confirmed to be in proper operation before the vehicle is released to the owner. Notify the owner both verbally and in writing if the resetting or initializing cannot be completed for any reason.*

The information contained in this document(s), including but not limited to any recommendations regarding the use and application of Sika Corporation ("Sika") product(s), is given in good faith based on Sika's current experience and knowledge of its products when properly stored, handled and applied under normal conditions in accordance with Sika's instructions. The information contained in this document(s) is valid only for the applications and uses of Sika product(s) described herein. Any deviation from any of the instructions, uses, applications and recommendations contained in this document(s) regarding the Sika product(s) will void any Sika warranty. The user of the Sika product(s) must test each product for suitability for the intended application and purpose. The user of Sika product(s) must always read and follow the warnings and instructions for each product on the current Technical Data Sheet, product label and Material Safety Data Sheets prior to product use. All sales of Sika product(s) are subject to its current terms and conditions of sale available at www.sikacorp.com or 201-933-8800. Technical Data Sheet(s) and Material Safety Data Sheet(s) are available at www.sikaindustry.com. Nothing contained in any Sika materials relieves the user of the obligation to read and follow the warnings and instructions for each Sika product as set forth in the current Technical Data Sheet, product label and Material Safety Data Sheet.

Sale of Sika product(s) are subject to the following Limited Material Warranty:

LIMITED MATERIAL WARRANTY

SIKA warrants AGR products for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Technical Data Sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer's sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of labor. **NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKA SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES. SIKA SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS.**

9.0 Sika AGRSS Tool Kit

Sika AGRSS Tool Kit



Sika has assembled this AGRSS Tool Kit to assist in your awareness and compliance to the current AGRSS Standard. To begin, Sika recommends that you log onto www.agsc.org and read the AGRSS Standard. You can then follow the link to "Become an AGSC-Registered Member Company". The documents contained in this Tool Kit are designed to assist you with completion of portions of five of the eight self-assessment deliverable requirements for registration with AGSC¹. These documents (along with the other required deliverables) are stapled to the completed "Attachment B – Declaration of Standard Conformance" form available at the membership link. Within the contents of this tool kit you will find:

- A. AGRSS Declaration of Standard Conformance – Deliverable 5.1 - To be copied and stapled to ATTACHMENT B to cover Deliverable 5.1 of your self-assessment.
- B. AGRSS Declaration of Standard Conformance – Deliverable 5.3 - To be copied and stapled to the ATTACHMENT B to cover Deliverable 5.3 of your self-assessment.
- C. AGRSS Declaration of Standard Conformance – Deliverable 5.4 - To be copied and stapled to the ATTACHMENT B to cover Deliverable 5.4 of your self-assessment.
- D. AGRSS Declaration of Standard Conformance – Deliverable 6.3 - To be copied and stapled to the ATTACHMENT B, along with a copy of Sika's current minimum-drive-away time chart, to cover Deliverable 6.3 of your self-assessment.
- E. AGRSS Declaration of Standard Conformance – Deliverable 9.1 - To be copied and stapled to the ATTACHMENT B, along with a copy of Sika's current certificate of training for at least one of your technicians, to cover Deliverable 9.1 of your self-assessment.

Once your application has been received, you will have to begin preparing for your validation audit. To help you prepare, Sika recommends you download "Attachment C – Preparing for Validation" available at the AGSC membership link. Your local Sika Territory Manager will be able to assist you with all phases of the membership registration process as well as with validation audit preparation.

¹ The language contained in the response section to each of the declaration documents listed above is by way of example only and should not be used if it does not accurately depict the prospective registrant's conduct or practices. This AGRSS Tool Kit is intended as a guide only and is not a guarantee or warranty by Sika to prospective registrant of its successful registration with the Auto Glass Replacement Safety Standards Council, of compliance with AGRSS Standards, or of compliance with Sika handling use and application instructions or applicable local, state or federal law. Sika is not however responsible for nor does Sika guarantee any installation technician's compliance with Sika's guidelines for handling and use of its products or its training instructions. TRAINING BY SIKA AS WELL AS A CERTIFICATION OF TRAINING COMPLETION SHALL NOT CONSTITUTE A WARRANTY OF ANY KIND BY SIKA OF AN INSTALLATION TECHNICIAN'S WORKMANSHIP OR THE HANDLING, USE, STORAGE AND APPLICATION OF SIKA'S PRODUCTS. SIKA GIVES NO WARRANTY OR GUARANTEE OF ANY KIND EXPRESS OR IMPLIED WITH RESPECT TO THE INFORMATION AND/OR ANY GUIDANCE WHICH MAY BE PROVIDED HEREIN OR ITS USE. SIKA SHALL NOT UNDER ANY CIRCUMSTANCES BE RESPONSIBLE FOR CONSEQUENTIAL DAMAGES OF ANY KIND UNDER ANY LEGAL THEORY ARISING FROM THE USE OF OR RELIANCE UPON THE INFORMATION AND/OR GUIDANCE PROVIDED HEREIN.

AGRSS Declaration of Standard Conformance

DELIVERABLE 5.1

Deliverable 5.1

“Those engaged in automotive glass replacement shall use retention systems that are produced under the ISO 9001 standard or any standard that contains the entire text of ISO 9001.”

Sika Response:

Each of Sika's AGR adhesives and primers is manufactured according to our documented quality assurance procedures. These internal quality assurance procedures have been certified by a third party approved ISO registrar to meet the requirements of ISO 9001 and IATF.

ISO (International Organization for Standardization) is the world's largest developer of standards. For more information on ISO and this standard you can log onto its website using the following address.

www.iso.org



Dan Hilliard
Senior Vice President – BU Industry
Sika Corporation

AGRSS Declaration of Standard Conformance

DELIVERABLE 5.3

Deliverable 5.3

“Those engaged in automotive glass replacement must use either an OEM approved retention system or equivalent retention system as certified in writing by the equivalent retention system manufacturer directly or through a private labeler.”

Sika Response:

Sika automotive OEM direct glazing polyurethane adhesive systems are used by a number of automobile manufacturers, such as Audi, BMW, Chrysler, Ford, Honda, Volkswagen, and others. This fact validates Sika's ability to produce qualified adhesive systems that meet or exceed the stringent OEM specifications for quality and performance for automobiles produced in the United States as well as worldwide.

When used as directed, each of Sika's AGR adhesives are considered appropriate for use in auto glass replacement applications.



Dan Hilliard
Senior Vice President – BU Industry
Sika Corporation

AGRSS Declaration of Standard Conformance

DELIVERABLE 5.4

“Those engaged in automotive glass replacement shall obtain and follow written comprehensive and current application instructions from the retention systems manufacturer or private labeler. These instructions shall include at least the proper use of the retention system, storage specifications, minimum drive-away time charts containing temperature and humidity variables if applicable, and any special procedures required for adverse weather conditions.”

Registrant Response:

The diagram on the next page represents the current cover of the Sika AGR Technician Training Manual and represents comprehensive application instructions covering all requirements stated within Section 5 of the AGRSS Standard. This manual is currently used by the registrant.

Sika AGR Technician Training Manual

Volume 3.9

Table of Contents:

Preface	Changes in Volume 3.9
1.0	Quality Installation Guidelines
2.0	Glass Removal
3.0	Pinchweld Preparation
3.1	Full Cut Method
3.2	Sika® Primer-207 AGR on Pinchwelds
3.3	Corrosion Removal
3.4	Corrosion Treatment
3.5	Complete Adhesive Removal
3.6	Repaired, Newly Painted Pinchwelds , and when the OEM has
3.7	Aluminum Pinchwelds and FRP Bonding Flanges
4.0	Glass Preparation
4.1	Traditional and Non-Traditional Contamination
4.2	Sika® Aktivator PRO on Glass
4.3	Sika® Primer-207 AGR on Glass
4.4	Inner Layer Frit
4.5	Removal and Replacement
4.6	Used Glass
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5.0	Special Sets
5.1	Gasket Sets
5.2	PAAS
5.3	Rear Sliders and PVC Encapsulated Glass Parts
5.4	Freightliner Cascadia
5.5	Organic Glass
6.0	Urethane Application & Glass Installation
6.1	The Adhesive System
6.2	“V” Bead Application
6.3	Date Codes
6.4	Hot Applied Adhesives
6.5	Primer Hot -to-glass Adhesives
6.6	Unipacks
6.7	“Wet” Adhesive Strength Properties
6.8	Traceability of AGR Super Kit Components
6.9	Non-Conductive Urethanes
6.10	High Modulus Urethanes
6.11	PowerCure Adhesives
7.0	Seasonal Concerns
8.0	Additional Information
8.1	FMVSS 111
8.2	Sika Field Quality Correction Form
8.3	Questions & Answers
9.0	Sika AGRSS Toolkit
10.0	AGR Technician Test

www.sikaindustry.com

September 4, 2020

AGRSS Declaration of Standard Conformance

DELIVERABLE 6.3

“No automotive glass replacement shall be undertaken using an adhesive glass retention bonding system that would not achieve minimum drive-away strength by the time the vehicle may be reasonably expected to be operated.”

Registrant Response:

Sika measures the strength build up rates of each AGR adhesive under varying weather conditions using proprietary Minimum Drive Away Time (MDAT) determination test methods. The resulting MDATs are then validated under the supervision of a third party crash test facility using the FMVSS 212 standard. This process provides a reliable means to establish MDAT charts for each of Sika’s AGR adhesives. The information published in the MDAT chart for each AGR adhesive allows an auto glass technician to determine how long the vehicle must remain out of service prior to use. Such time allowances depend on which product is being used, temperature, humidity and the presence of a passenger side airbag.

The registrant has provided each of its installation technicians with the Sika MDAT charts for the Sika AGR adhesives that they use. The registrant has also provided training to each of its technicians to ensure that they are able to interpret this information properly and inform the vehicle owners of this information when necessary.

The Minimum Drive Away Time chart for each of Sika's AGR polyurethanes can be found on the Product Data Sheet for that specific adhesive. Current Product Data Sheets for your adhesive(s) can be obtained on Sika's website at the following link:

<https://usa.sika.com/en/industry/automotive-commercialvehicleaftermarket/automotive-aftermarket.html>

Click the white arrow in the yellow box next to your product name for additional information including Product Data Sheets and Safety Data Sheets. A snapshot of Sika's AGR homepage can be seen on the following page.



AUTOMOTIVE AFTERMARKET

Industry > Automotive & Commercial Vehicle Aftermarket > Automotive Aftermarket



Sika AGZ products have been specifically designed to meet the needs of all customers. Sika offers Hot-Applied, Cold-Applied, Primerless to Glass, and Pre-treatments for the use in installing auto glass replacement windshields. Each product has different Safe-Drive-Away-Times (SDAT) to meet the specific needs of technicians in the field while also providing safety for vehicle owners.

Auto Glass Bonding

Hot-Applied Adhesives

Cold-Applied Adhesives

Primerless to Glass Adhesives

PowerCure Adhesives

General Sealing & Bonding



SikaForce®-315
Super Fast Plastic and Metal Adhesive



SikaLastomer®-714

Primers, Cleaners & Accessories

Pretreatments

Accessories

AGRSS Declaration of Standard Conformance

DELIVERABLE 9.1

“Technicians installing replacement automotive glass shall be fully qualified for the tasks they are required to perform. Such qualifications shall include, at a minimum, completion of a comprehensive training program with a final exam and an ongoing education component. The program shall include, among other things:

- a) AGR safety issues;
- b) An understanding of OEM installation standards and procedures;
- c) Relevant technical specifications;
- d) Adhesive System Manufacturer specific comprehensive retention system training;
- e) The opportunity to apply and demonstrate the skills technicians learn.”

Registrant Response:

Sika offers training covering the proper use of Sika products when used as the retention system of any automobile. Such training includes the provision and study of the current Sika Auto Glass Replacement Technician Training Manual, skill development through Sika personnel’s observance of technician installations during the training session and a comprehensive test at the conclusion of the training to ascertain the technician’s knowledge base of proper product usage. Each technician who successfully completes Sika training receives a certificate of training completion, along with an identification card to carry with them. It should be noted that Sika maintains the “Sika AGR Technician Training Course” as an AGRSS Registered Course and is certified to provide training in all 4 subject areas required by the Standard.

On the following page is a copy of our training completion certificate. We retain copies of the training completion certificates issued by Sika for our technicians who have successfully completed the course.

SIKA AGR CERTIFICATE

OF ACHIEVEMENT

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO:

CERTIFICATE #:

FOR THE SUCCESSFUL COMPLETION OF THE SIKA AGR TECHNICIAN TRAINING COURSE

THIS TRAINING CERTIFICATE PERTAINS TO AGRSS STANDARD:
ANSI/AGSC/AGRSS Standard 004-2018

THIS IS AN AGRSS REGISTERED TRAINING COURSE APPROVED IN ALL FOUR REQUIRED
CATEGORIES, WHICH INCLUDE:

- COMPREHENSIVE RETENTION SYSTEM TRAINING
- MECHANICS OF AGR REMOVAL, REPLACEMENT AND RELEVANT TECHNICAL SPECIFICATIONS
- OEM INSTALLATION STANDARDS AND PROCEDURES
- AGR SAFETY ISSUES

SIKA TRAINER:

DATE TRAINED:

**Expires 2 years from date listed*



10.0 Sika Auto Glass Technician Test
(Version 1.0)

(Printed name of Technician)

(Technician Signature) _____ (Date)

(Sika Trainer) _____ (Date)

Technician Mailing Address:

Technician Email Address:



TECHNICIAN TRAINING TEST

Section 1

Please determine if each statement is TRUE or FALSE

<p>1. When preparing a glass part using Sika® Aktivator-307 (orange cap) at a temperature of 10°F, there are special low temperature precautions to be concerned with.</p> <p>A) TRUE B) FALSE</p>
<p>2. A complete adhesive removal is required if the bonded glass part was installed using a non-urethane adhesive.</p> <p>A) TRUE B) FALSE</p>
<p>3. There is no reason to worry about scratching the paint of a vehicle because Sika® Primer-207 AGR can be used to restore the corrosion protection system back to the OEM level.</p> <p>A) TRUE B) FALSE</p>
<p>4. It is acceptable to apply Sika® Primer-207 AGR over rust.</p> <p>A) TRUE B) FALSE</p>
<p>5. SikaTack® MACH-30 XV can be applied if the ambient temperature is -5°F</p> <p>A) TRUE B) FALSE</p>
<p>6. SikaTack® ULTIMATE is rated as all-in-one modulus and non-conductive.</p> <p>A) TRUE B) FALSE</p>
<p>7. A bonded glass part that was previously installed with a silicone adhesive can be re-installed if properly prepared using Sika® Aktivator-307.</p> <p>A) TRUE B) FALSE</p>
<p>8. A glass part that was prepared properly using Sika® Aktivator (PRO or 307) (orange cap) can be installed 12 hours after the Aktivator application.</p> <p>A. TRUE B. FALSE</p>
<p>9. A high modulus urethane may be considered to be stiffer than a conventional urethane with a normal modulus.</p> <p>A. TRUE B. FALSE</p>
<p>10. If a 250 ml can of Sika® Aktivator (PRO or 307) (orange cap) or Sika® Primer-207 AGR (black cap) expires 8 months from today and you open this same can today, it can be used for the next 6 months or until it becomes contaminated.</p> <p>A. TRUE B. FALSE</p>

TECHNICIAN TRAINING TEST

Section 2

Please determine the BEST answer to each question

<p>11. The “full-cut” method requires trimming the existing bead of urethane down to a height of</p> <p>A) ¼ to ½ inch B) 1 to 2 millimeters C) 1 to 2 centimeters</p>
<p>12. The primary reason to apply Sika® Primer-207 AGR to the pinchweld of the vehicle is to</p> <p>A) provide a UV barrier for the paint of the vehicle B) provide coverage for bare metal in order to reduce future corrosion C) to cover the existing urethane bead for improved adhesion</p>
<p>13. When applying Sika® Aktivator (PRO or 307) to the windshield using a single use applicator Pad, it is critical to</p> <p>A) make multiple passes around the windshield to ensure good coverage and wait 3 minutes B) apply in one direction and dispose of the Pad after use C) apply in one direction, wait 10 minutes, and then wipe-off using a clean, paper towel</p>
<p>14. Any glass cleaner is acceptable to use as long as</p> <p>A) there is no alcohol or ammonia contained within the product B) the glass cleaner has no odor or fragrance C) the glass cleaner does not contain anti-static ingredients</p>
<p>15. Which of the following Sika adhesives should NOT be used for installations requiring a non-conductive urethane?</p> <p>A) SikaTack® MACH 30 XV B) Sikaflex® 220+ C) SikaTack® ULTIMATE</p>
<p>16. The shelf life of a Sika® Aktivator (PRO or 307) (orange cap) or Sika® Primer-207 AGR (black cap) in a can, from date of manufacture is</p> <p>A) 9 months B) 12 months C) 6 months</p>
<p>17. The reason for applying adhesive using a “V” cut nozzle is</p> <p>A) to prevent air from being trapped between the adhesive bead and the glass and ensure the correct amount of urethane is applied in the correct configuration B) to prevent the adhesive from “skinning over” too quickly C) to provide an OEM appearance</p>
<p>18. The proper procedure for cleaning a dirty pinchweld is to</p> <p>A) remove loose debris using a towel and water or oil-free compressed air if necessary. For heavy cleaning Sika® Aktivator (PRO or 307) can be used. Then trim the existing urethane bead. B) blow out loose debris after trimming urethane to ensure all contaminants are removed. If additional cleaning is required, use Sika® Aktivator (PRO or 307). C) remove loose debris prior to trimming bead. After trimming the existing urethane bead, clean the opening with alcohol.</p>

TECHNICIAN TRAINING TEST

Section 2 (continued)

Please determine the BEST answer to each question

<p>19. To properly prepare a rear slider, with a frame constructed of a rubber encapsulation (PVC or RIM urethane) you must</p> <p>A) abrade the bonding surface and then apply Sika® Aktivator (PRO or 307) B) abrade the bonding surface, clean using an approved method, then apply one coat of Sika® Primer-207 AGR. C) dry wipe the surface only.</p>
<p>20. To ensure all contamination (traditional and non-traditional) has been removed from a glass part, Sika recommends</p> <p>A) scrubbing the bonding area with a Sika® PowerClean Aid sponge and confirming contamination removal by spraying with glass cleaner and looking for proper wet out B) cleaning the glass part twice with glass cleaner and a lint free paper towel C) using an anti-static glass cleaner</p>
<p>21. The Sika urethane adhesive with the shortest open time is</p> <p>A) Sikaflex® P2G Plus B) Sikaflex® 220+ C) SikaTack® MACH 30 XV</p>
<p>22. When applying Sika® Primer-207 AGR at temperatures below 40°F</p> <p>A) there are no special requirements B) dry the primer with a heat gun and test with a nitrile glove to assure that it is dry C) lightly spray wet primer surfaces with warm water to speed up the cross-linking of the urethane polymer that is in the primer</p>
<p>23. When applying the "V" bead to the pinchweld, the height of the bead should</p> <p>A) exceed the roofline of the vehicle by ½ inch B) not exceed the pre-cut dimensions of the provided Sika nozzle C) match or slightly exceed the height of the vehicle's roofline</p>
<p>24. When replacing a windshield in a vehicle that just had the pinchweld repaired and repainted by a body shop, which of the following is the proper procedure to prepare the fully cured etch primer (i.e; PPG DP-40) prior to adhesive application?</p> <p>A) Lightly abrade and apply Sika® Aktivator (PRO or 307) B) Lightly abrade, clean using odorless mineral spirits or Sika® Aktivator (PRO or 307), and apply one coat of Sika® Primer-207 AGR C) One coat of Sika® Primer-207 AGR only</p>
<p>25. Level 3 corrosion can best be characterized by which following description?</p> <p>A) Moderate corrosion which typically has some red spots B) Identified by deep pitting, dark red spots and raised edges C) Varies from microscopic holes to loss of metal</p>

TECHNICIAN TRAINING TEST

Section 2 (continued)

Please determine the BEST answer to each question

26. It is acceptable to treat up to 24 in² of corrosion on the pinchweld using which of the following procedures, assuming that the corrosion has not perforated the metal?

- A) Remove all corrosion, abrade the paint edges, clean using odorless mineral spirits or Sika® Aktivator (PRO or 307) and then 1 coat of Sika® Primer-207 AGR according the recommended application procedures
- B) Remove all corrosion, abrade the paint edges and then apply Sika® Aktivator (PRO or 307)
- C) Remove all corrosion, abrade the paint edges, clean using odorless mineral spirits or Sika® Aktivator (PRO or 307) and then 2 coats of Sika® Primer-207 AGR according the recommended application procedures

27. Under which of the following circumstances may a “removed” glass part be reinstalled using Sika’s AGR adhesive systems?

- A) The adhesive that remains on the glass part is a polyurethane and does not have good adhesion around the entire perimeter
- B) The adhesive that remains on the glass part has good adhesion around the entire perimeter, but it cannot be confirmed to be a polyurethane
- C) The adhesive that remains on the glass part is a polyurethane that has good adhesion around the entire perimeter

28. Windshields that are supplied pre-primed with a factory-applied black primer can be installed

- A) only using a polyurethane adhesive rated for non-conductive applications
- B) by removing the primer down to the frit and applying Sika® Aktivator (PRO or 307)
- C) can be prepared with glass cleaner and Sika® Aktivator (PRO or 307) or Sika® Primer-207 AGR just as if the part was not pre-primed

29. In order to validate that any of the re-sealable cans of primers/Aktivator of Sika are being used within their defined open time of 6 months, technicians should

- A) make sure that purchase orders and invoices are available to review the dates when the products were purchased.
- B) make sure to understand and be able to identify the shelf life listed on the label of the products.
- C) make sure to mark the date opened either on the bottom of the can or in the open window provided on the label.

30. Primerless-to-glass adhesives (Sikaflex® P2G, Sikaflex® P2G Plus, and SikaTack® ULTIMATE) are different than standard polyurethane adhesives because

- A) the installer does not have to remove non-traditional contamination from glass parts
- B) the installer can eliminate all uses of Sika® Aktivator (PRO or 307) or Sika® Primer-207 AGR
- C) the use of Sika® Aktivator (PRO or 307) or Sika® Primer-207 AGR is not required for these adhesives to achieve an acceptable bond to bare glass or ceramic frit

End of General Part

Users of hot-applied or PowerCure products please see next page for additional questions

TECHNICIAN TRAINING TEST

Section 3 – Product Specific Questions

Please determine the BEST answer to each question

Question only required for users of hot applied adhesives

35. In order to make sure that Sika hot applied AGR adhesives receive at least one hour of time in a Sika approved heater (or 30 minutes inside the Pragmatec Hydrotherm Oven), the technician should

- A) mark on the rim of the cartridge the time in which the product was placed in the heater and then rotating the removal of cartridges in a clockwise direction.
- B) make sure to test the temperature of the cartridge in a bare hand, noting that if too hot to handle, the product has reached its required heat time.
- C) mark the date on the rim of the cartridge prior to placing in the oven

Question only required for users of hot applied adhesives

36. Hot applied Sika adhesives can be heated for a cumulative total period of

- A) 1 hour
- B) 10 hours
- C) 9 months

Question only required for users of PowerCure adhesives

37. When using a Sika PowerCure adhesive, which product should be used to prepare glass and frit

- A) Sika® Primer-207 AGR
- B) Sika® Aktivator PRO
- C) Sika® Aktivator-309 P

Question only required for users of PowerCure adhesives

38. When using a SikaTack® ELITE PowerCure, which product should be used to prepare the pinchweld

- A) Sika® Primer-207 AGR
- B) Sika® Aktivator PRO
- C) Sika® Aktivator-309 P

Question only required for users of PowerCure adhesives

39. An adhesive is “Cured to OEM Level” when

- A) no material transfers when touched with a gloved finger
- B) the vehicle can pass an FMVSS 212 crash test
- C) the vehicle’s body stiffness is completely restored, and no restrictions are placed on operation of the vehicle