

**AUTO GLASS
SAFETY COUNCIL™**

*Automotive Glass Replacement Safety
Standard™ (AGRSS)*

AGRSS

Automotive Glass Replacement Safety Standard™



ANSI/AGSC/AGRSS
004-2018
Revision of
ANSI/AGSC/AGRSS 003-2015

American National Standard
Automotive Glass
Replacement Safety Standard™
(AGRSS)

Secretariat

Auto Glass Safety Council™

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American National Standard

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Foreword (This foreword is not part of American National Standard ANSI/AGSC/AGRSS 004-2018.)

The Automotive Glass Replacement Safety Standard™ (AGRSS) was created and is continuously maintained by the Auto Glass Safety Council working under the auspices of the American National Standards Institute (ANSI). AGSC also serves as secretariat for the standard.

The AGRSS Standard represents the windshield replacement industry's best practices as compiled under ANSI guidelines by a balanced committee of windshield replacement practitioners, suppliers and other interested parties.

This standard contains an industry consensus of recommended terminology, definitions, processes, and procedures. These recommendations reflect the expertise of the AGSC AGRSS Standards Committee members who hold a combined experience of hundreds of years and many thousands of actual windshield replacements.

This standard contains one annex. Annex A is informative and is not considered part of this standard.

AGSC welcomes proposals for amendments to any portion of this Standard. These proposals should be in writing and sent to the address below and accompanied by a statement of the rationale for the proposal along with the proponent's complete contact information. All proposals will be referred to the AGSC AGRSS Standards Committee for consideration. Submit proposals to: AGSC/AGRSS Standards Committee, 20 PGA Drive, Suite 201, Stafford, VA 22554 or by email to info@agsc.org.

This standard was developed, processed and approved for submittal to ANSI by the AGRSS Standards Committee of the Auto Glass Safety Council. Committee approval of the standard does not necessarily imply that all committee members voted for its approval. At the time it approved this standard, the AGRSS Standards Committee had the following members:

Bob Beranek, Chair, AGSC AGRSS Standards Committee
(Automotive Glass Consultants)

<i>Organization Representative</i>	<i>Name of Representative</i>
ABRA Auto Body & Glass	Mitch Becker
AGRR Magazine	Debra Levy
American AutoGlass Administrators.....	Steven Rossetti
Arrow Auto Glass	Charlie Turiello
Auto GlassMasters, LLC	Terry Dennis
Auto One Glass & Accessories	Ronald Overbeck
Beveridge Enterprises	Keith Beveridge
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Bostik, Inc.	Steve Steinman
Burco, Inc.	Bill Castleberry
Carlex Glass, America.....	Rod Watson
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City Auto Glass.....	Mike Schenian
DINOL U.S. Inc.....	Joe Renzi
Don's Mobile Glass	Jacques Navant
Dow Automotive Systems	Steve Allison
eDirect Glass.....	Maria Iorio
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Excel Auto Glass	Scott Owens
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Pilkington North America, Inc.	Bill George
Richardson Glass Services	Gene Nichols
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Serf Midwest, Inc.	Mark Formentini
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Introduction

(This introduction is not part of American National Standard ANSI/AGSC/AGRSS 004-2018.)

The Auto Glass Safety Council™ (AGSC) was founded in the late 1990s when professionals from windshield manufacturers, car makers, adhesive companies, and auto glass retailers came together with the goal of defining auto glass safety. This group began the process of establishing a safety standard for the auto glass industry.

By 1999, AGSC had developed the Auto Glass Replacement Safety Standard™ (AGRSS) in partnership with the American National Standards Institute. Since that time, many safety-conscious auto glass retailers have voluntarily agreed to follow the AGRSS Standard, giving the consumer an increased level of safety. The AGSC has provided the necessary standard for auto glass retailers to follow to make sure all precautions are taken to ensure driver and passenger safety.

Prior to the formation of the AGSC, the auto glass replacement industry had no standard for windshield installation. There was no consensus in the industry regarding proper installation methods. Unfortunately, this resulted in lives lost and serious injuries that could have been prevented. The lack of responsibility for providing a proper windshield replacement has also exposed many auto glass shops and their insurance providers to legal actions from unsuspecting automobile passengers who thought their glass replacement was performed correctly and safely.

The AGRSS Standard addresses six critical areas relative to the installation process, including:

- Vehicle assessment;
- Selection of glass and retention systems;
- Installation standards for adhesive bonded glass;
- Installation standards for rubber gasket set glass, as well as additional requirements for all other glass in a vehicle; and
- Continuing education for auto glass technicians.

The AGRSS Standard is continuously monitored by AGSC and the industry.

American National Standard Automotive Glass Replacement Safety Standard™ (AGRSS)

1 Scope and purpose

1.1 Scope

An automotive glass replacement safety standard addressing procedures, education and product performance for motor vehicles falling within the guidelines of FMVSS 212/208.

1.2 Purpose

1.2.1 To improve the performance and practices of industry technicians and raise their level of professionalism.

1.2.2 To guide the industry in auto glass replacement procedures that meet the pertinent Federal Motor Vehicle Safety Standard requirements.

1.2.3 To provide guidelines and objectives for groups that supply products, education, and training for the industry.

1.2.4 To promote public awareness of the need for safe installation procedures, which will reduce the risk of personal injury and/or death from traffic accidents.

1.2.5 To provide a comprehensive automotive glass replacement standard.

1.2.6 To achieve a higher degree of consistency among installation practices.

1.2.7 To create an automotive glass installation benchmark for anyone engaged in the replacement of automotive glass.

2 Normative References

The following standards contain provisions which, through reference in this text,

constitute provisions of this American National Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this American National Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

ANSI Z26.1 version currently incorporated in FMVSS 205, *Safety Glazing Materials for Glazing Motor Vehicles and Motor Vehicle Equipment Operating on Land Highways – Safety Standard*¹⁾

Federal Motor Vehicle Safety Standard 111²⁾

Federal Motor Vehicle Safety Standard 205²⁾

Federal Motor Vehicle Safety Standard 208²⁾

Federal Motor Vehicle Safety Standard 212²⁾

3 Definitions and Acronyms

3.1 ADAS: Advanced Driver Assistance Systems; automated systems that enhance vehicle safety and assist in reducing driver error.

3.2 adhesive bonding system: an engineered system using chemical products, used together as a technique or process, to bond substrates.

3.3 AGR: automotive glass replacement.

3.4 anti-pinch mechanism: a feature that reverses the window or panel direction of travel when resistance is encountered.

3.5 ARG: automotive replacement glass.

3.6 butyl sealant: a copolymer of isobutylene and isoprene.

3.7 equivalent retention system: a system that meets or exceeds the vehicle manufacturer's performance strength specifications, or has been certified by the retention system manufacturer or private labeler as appropriate for the specific application.

¹⁾ ANSI Z26.1 has been withdrawn as an American National Standard. Please use the version of that standard incorporated in FMVSS 205.

²⁾ Available from the Superintendent of Documents, US Government Printing Office, P.O. Box 371954, Pittsburgh, PA 15250.

3.8 final exam: a comprehensive exam that evaluates the individual's knowledge and skills including but not limited to retention-system-specific replacement procedures, a variety of automotive safety issues, minimum drive-away time, environmental conditions as they affect retention system performance, federal safety requirements, and the basics of safe and effective automotive glass replacement.

3.9 full cut: removing existing bead of urethane to a height of approximately 1 to 2 mm wherever the residual bead is structurally sound and the substrate condition is not defective.

3.10 initialize: a procedure that re-establishes proper operation of the intended function. Also used: initialization, re-initialization.

3.11 minimum drive-away strength: the minimum properties as defined and specified by the retention systems manufacturer or private labeler to meet the requirements of FMVSS 208 and 212 as it pertains to glass retention systems.

3.12 minimum drive-away time: the time necessary for a given adhesive system to attain minimum drive-away strength after an adhesive bonded glass part is set in place.

3.13 OE: original equipment.

3.14 OEM: original equipment manufacturer.

3.15 polysulfide adhesive: an adhesive containing sulfur that cures to a cross-linked rubber compound.

3.16 polyurethane adhesive: a thermoplastic polymer adhesive produced by the condensation reaction of polyisocyanate and a hydroxyl containing material.

3.17 primer: an agent that is designed specifically by the adhesive manufacturer to promote adhesion between the substrate and the adhesive and/or provide shielding from environmental factors.

3.18 private labeler: any individual, corporation or the entity engaged in sale or distribution of a product labeled as its own, but manufactured by any different entity.

3.19 recalibration: the process by which a vehicle's Advanced Driver Assistance System is returned to the vehicle manufacturer's specifications.

3.20 retention system: refers to any original equipment or equivalent method of glazing attachment.

3.21 those engaged in automotive glass replacement: refers to any individual, business, or organization that replaces automotive glass; examples include but are not limited to individual technicians, automotive glass replacement businesses, automotive body shops, and dealerships.

4 Vehicle Assessment before Replacement

Those engaged in automotive glass replacement shall not undertake or complete any installation unless first a thorough assessment of the vehicle has been made. If, after such assessment, it has been determined that:

4.1 Any discovered condition(s) on the vehicle could compromise the vehicle's retention system, the technician shall not undertake or complete the installation. The owner/operator then shall be so notified verbally and in writing.

4.2 The vehicle has an ADAS which could require recalibration after any automotive glass replacement, and the technician chooses not to follow the guidelines in 8.9, the technician shall not undertake or complete the installation. The owner/operator then shall be so notified verbally and in writing.

4.3 The following are exempt from the requirements of 4.1 and 4.2: egress applications, antique/classic or collector vehicle (as defined by the state in which it is licensed) restorations, or cases in which the requirements of this Standard conflict with current vehicle manufacturer specifications.

Documentation of customer notification shall be kept as record pursuant to 8.7.

5 Selection of Glass and Retention Systems

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.

5.2 Those engaged in automotive glass replacement shall use glass products meeting the requirements of ANSI Z26.1 as required by Federal Motor Vehicle Safety Standard 205.

5.3 Those engaged in automotive glass replacement shall 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.

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.

5.5 Those engaged in automotive glass replacement shall only use retention systems that have lot numbers and expiration dates printed on appropriate products.

5.6 Those engaged in automotive glass replacement shall use glass products compatible with the ADAS which may be affected/impacted by the glass replacement.

6 Installation Standards – Adhesive Bonded

6.1 Those engaged in automotive glass replacement shall follow the adhesive manufacturer's application instructions as provided by the manufacturer directly, or through the private labeler. All in-shop or mobile installations shall be performed under environmental and other conditions that are compatible with the application instructions required in clause 5.

6.2 Products shall be stored and controlled according to manufacturers' requirements as provided directly or through a private labeler.

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.

6.4 The vehicle owner/operator shall be notified prior to and after the installation process of the minimum drive-away time under the circumstances of the replacement.

6.5 Adhesive shall be applied so that the finished bead cross-section profile and dimensions meet or exceed original equipment configuration or recommendation of adhesive system manufacturer.

6.6 If the OEM installation was polyurethane, then the glass shall be replaced with polyurethane or an equivalent adhesive bonding system. If the OEM installation was butyl, polysulfide, or other non-polyurethane, and the vehicle is licensed for highway use, adhesive bonded stationary glass installations shall be performed using polyurethane or an equivalent retention system unless in conflict with current OEM specifications.

6.7 All adhesive system component lot numbers shall be traceable to each job.

6.8 All glass parts shall be traceable to the installation by a DOT number and part number.

6.9 No product that has exceeded the manufacturer or private labeler's stated expiration date, open shelf life, or active shelf life shall be used.

6.10 All supplemental mechanical glass retention devices shall be replaced to original equipment specifications.

6.11 When inappropriate replacement materials or methods are detected, those engaged in automotive glass replacement shall report their findings to the vehicle owner/operator.

6.12 When those engaged in automotive glass replacement correct inappropriate glass installations, they shall remove any inappropriate materials that would compromise the retention system. They shall fully correct any adverse glass installation related condition(s) caused by the use of inappropriate materials or methods, and they shall use appropriate methods described elsewhere within clause 5 of this document.

6.13 When sealing air or water leaks within a polyurethane retention system, only compatible polyurethane adhesive shall be used. (No silicone or butyl may be used.)

6.14 Only the full cut method should be used for polyurethane retention systems.

7 Installation Standards – Rubber Gasket

7.1 If the OEM utilizes the combination of a rubber gasket and polyurethane as a retention system, an equivalent adhesive bonding system shall be used in the installation. In cases when the OEM did not include polyurethane or an equivalent adhesive system, such systems shall be used if later production models included the addition of adhesive systems without body style modification.

7.2 If the OEM gasket installation did not include adhesive and the vehicle is licensed for highway use and is less than 10,000 lbs. Gross Vehicle Weight (GVW), the installation shall include polyurethane or an equivalent adhesive bonding system. The following are permissible exceptions: egress applications, antique/classic vehicle (as defined by the state in which it is licensed) restorations, or in cases in which this requirement conflicts with current vehicle manufacturer specifications.

7.3 When sealing air or water leaks within a rubber gasket/polyurethane adhesive system only compatible polyurethane shall be used. (No silicone or butyl may be used.)

8 Additional Requirements

8.1 All mechanically fastened automotive glass parts shall be replaced according to original equipment specifications.

8.2 Glass parts, including custom cut parts, shall be marked in compliance with the certification requirements specified in FMVSS 205 and the marking requirements of ANSI Z26.1 incorporated by reference therein for those vehicles licensed for highway use.

8.3 Those engaged in automotive mirror replacement shall install external and internal replacement mirrors that meet or exceed original equipment specifications and the requirements of Federal Motor Vehicle Safety Standard 111.

8.4 Whenever OEM retention systems are modified on later production models without body style modification, the most current retention system shall be used in the replacement unless otherwise specified by the OEM.

8.5 Notification of defective product:

- A failure or defect in any product used or intended for use in the automotive glass replacement process that could jeopardize customer safety shall be reported promptly to the manufacturer or supplier of the product.
- Any product installed by those engaged in automotive glass replacements that is discovered to be defective or which is determined could jeopardize customer safety shall be immediately reported to the customer with an offer to remedy the situation.

8.6 Those engaged in automotive glass replacement shall not introduce any chemical agents, such as cleaners, solvents, lubricants, release agents, or utilize any installation practice, which will adversely affect the glass retention system.

8.7 Those engaged in automotive glass replacement shall create and retain records of each auto glass replacement for a period of at least three years from the date the work was completed sufficient to demonstrate compliance with this standard. Records, either electronic or hard copy, shall be legible, easily identifiable and readily available. Such three-year period may be temporarily shortened for specific, clear, and substantial reasons, but shall be adhered to when such reasons no longer exist.

8.8 Those engaged in the repair, removal, or replacement of motorized windows and/or panels in automobiles that are equipped with anti-pinch mechanisms shall reset, initialize, and/or confirm their proper operation before the vehicle is released to its owner/operator. If the reset operation cannot be completed for any reason, the vehicle owner/operator shall be informed verbally and in writing of the failure to reset the system. In addition, the owner/operator shall be instructed to seek out a facility equipped to reset the system. The replacement glass installer is not responsible for the selection of any reset facility. Documentation of customer notification shall be kept as record pursuant to 8.7.

8.9 If the vehicle has an ADAS, it may require recalibration after any automotive glass replacement. Those engaged in automotive glass replacement who elect to provide recalibration services may only complete the recalibration if they obtain and use proper equipment, by trained personnel and provide the outcome of the recalibration to the owner/operator. If these conditions cannot be met, or if the automotive glass installer does not provide recalibration services, the owner/operator shall be advised prior to and at the completion of the installation, that:

- 1) The vehicle has an ADAS;
- 2) After automotive glass replacement, the vehicle may require the recalibration of the ADAS;
- 3) The replacement glass installer will not recalibrate the ADAS;
- 4) There are locations where recalibration may be obtained;
- 5) The replacement glass installer is not responsible for the selection of any recalibration location.

Documentation of customer notification shall be kept as record pursuant to 8.7.

9 Education

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.

9.2 Training with respect to the content and requirements of the current version of this standard shall be required for all personnel directly involved in the automotive glass replacement process (examples: scheduling, purchasing, installing, customer service, quality control, management). Records of this training detailing content, date, participants, and acknowledgment of the participant's successful completion of the training and receipt of a printed copy of the current standard shall be maintained.

Documentation of all such records shall be kept as record pursuant to 8.7.

Annex A
(informative)

Bibliography

Federal Motor Vehicle Safety Standard 216a
Any other applicable FMVSS standards
AGRSS Training Guide