

1. Scope and purpose

1.1 Scope

To develop and publish nationally-recognized automotive glass replacement safety standards addressing procedures, education, and product performance.

1.2 Purpose

- To improve the performance and practices of industry technicians and raise their level of professionalism.
- To guide the industry in auto glass replacement procedures that meet the pertinent Federal Motor Vehicle Safety Standard requirements.
- To provide guidelines and objectives for groups that supply products, education, and training for the industry.
- 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.
- To provide a comprehensive automotive glass replacement standard.
- To achieve a higher degree of consistency among installation practices.
- 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⁾

¹⁾ [For electronic copies of some standards, visit ANSI's Electronic Standards Store \(ESS\) at www.ansi.org. For printed versions of all these standards, contact Globe Engineering Documents, 15 Inverness Way East, Englewood, CO 80112-5704, \(800\) 854-7179.](#)

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

3. Definitions and Acronyms

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

3.2 AGR: automotive glass replacement.

3.3 ARG: automotive replacement glass.

3.4 butyl sealant: a copolymer of isobutylene and isoprene.

3.5 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.

3.6 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.

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

3.8 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](#).

3.9 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.

3.10 OE: original equipment.

3.11 OEM: original equipment manufacturer.

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

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

3.14 primer: an agent that is designed specifically by the adhesive manufacturer to either promote adhesion between the substrate and the adhesive or provide shielding from ANSI/AGRSS 003-~~2009~~.

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environmental factors.

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

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

3.17 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

4.1 Those engaged in automotive glass replacement shall not undertake or complete such installation when any related condition would compromise the retention system and the owner/operator shall be so notified.

5. Selection of Glass and Retention Systems

5.1 Those engaged in automotive glass replacement shall use retention systems that are produced under documented quality assurance standards.

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 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.

5.4 Those engaged in automotive glass replacement shall obtain and follow written comprehensive and current application instructions from the retention systems manufacturer (either an OI314s)4y(em)-6c0.0667 Twr-5.5(r)6.6(od-5.67.97.5l)-5.6(. The(ei.8(al)-7(em)-6cu)-5.55.8(n)-5.5s(e)-5.5.8()6



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 Section 5.

6.2 Products must 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 advised of the minimum drive-away time under the circumstances of the replacement.

6.5 Adhesive must be applied so that the finished bead cross section profile and dimensions meet or exceed original equipment configuration.

6.6 If the OEM installation was polyurethane, then the glass must 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 must be traceable to each job.

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

6.9 No product that has exceeded its expiration date, open shelf life, or active shelf life shall be used.

6.10 All supplemental mechanical glass retention devices must 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 Section 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 must be used in the installation. In cases when the OEM didn't 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 or classic vehicle restorations, or in cases in which this practice 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).

7.4 When sealing air or water leaks within a rubber gasket/SEALANT SYSTEM only OE compatible sealant shall 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, must 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 The failure of any product used in the glass installation process that the installer believes could jeopardize customer safety shall be reported promptly to the manufacturer or supplier of the product.

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 establish and maintain records | ANSI/AGRSS 003-~~2009~~.

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to demonstrate compliance with this standard. Records shall be legible, readily identifiable and retrievable.

9. Education

9.1 Technicians installing replacement automotive glass shall be fully qualified for the tasks they are required to perform including the successful completion of a comprehensive training program consisting of, at a minimum, the following requirements:

1. One or more training courses which, either separately or in combined form, includes at least:
 - a. Comprehensive retention system training;
 - b. Training in the mechanics of AGR removal and replacement and relevant technical specifications;
 - c. Thorough understanding of applicable OEM installation standards and procedures;
 - d. AGR safety issues;
2. Demonstration of skill learned;
3. A comprehensive written final exam(s) demonstrating retained knowledge;
4. Ongoing education;
5. Evidence of successful completion of a training course(s);
6. Training to the most current version of the AGRSS standard.

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b) an understanding of OEM installation standards and procedures. ¶
c) relevant technical specifications. ¶
d) comprehensive retention system specific training. ¶
<#>the opportunity to apply and demonstrate the skills technicians learn.¶

Annex A (informative)

Bibliography

Federal Motor Vehicle Safety Standard 216
Any other applicable FMVSS standards.