SURFACE VEHICLE RECOMMENDED PRACTICE

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Plastic Motor Vehicle Safety Glazing - Tolerances and Fabrication Details

RATIONALE

This revision updates publication references in 2.2.1 and 2.2.2.

1. SCOPE

This SAE Recommended Practice is intended to cover plastic safety glazing for use in motor vehicles and motor vehicle equipment. Nominal specifications for thickness, flatness, curvature, size, and fabrication details are presented principally for the guidance of body engineers and designers. For additional information on plastic safety glazing materials for use in motor vehicles and motor vehicle equipment, please refer to SAE J673.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (U.S. and Canada only) or +1 724-776-4970 (outside U.S. and Canada), www.sae.org.

SAE J673 Automotive Safety Glazing Materials

2.2 Related Publications

The following publications are provided for information purposes only and are not a required part of this SAE Technical Report.

2.2.1 NHTSA Publications

Available from National Highway Traffic Safety Administration, 1200 New Jersey Avenue SE, West Building, Washington, DC 20590, Tel: 1-888-327-4236, www.nhtsa.gov.

49 CFR Part 571.205 Glazing Materials (FMVSS 205)

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2.2.2 Transport Canada Publications

Available from Transport Canada, Tower C, Place de Ville, 330 Sparks Street, Ottawa, Ontario K1A 0N5, Canada, Tel: 1-888-830-4911, www.tc.canada.ca.

Canada Motor Vehicle Safety Standards (CMVSS) 205 Glazing Materials

3. SIZES

There are no standard sizes applicable to plastic safety glazing for use in motor vehicles and motor vehicle equipment. The feasibility of proposed plastic safety glazing sizes developed by the motor vehicle/motor vehicle equipment manufacturer must be determined by conference with the plastic glazing fabricator.

The various types of plastic safety glazing (flat or curved) are as follows: injection molded, extruded (formed), and cell cast.

4. TYPICAL COMMERCIAL TOLERANCE INFORMATION

4.1 Thickness

Commercially available flat or curved plastic safety glazing has thickness tolerance as follows in Table 1:

Table 1 - Thicknesses (1)

Type of Plastic Safety Glazing	Typical Nominal Thickness
Injection Molded and Extruded	4.00, 5.00, and 6.00 (±5% of total thickness) mm 0.157, 0.197, and 0.236 (±5% of total thickness) inch
Cell Cast	4.00, 5.00, and 6.00 (+10%/-20% of total thickness) mm 0.157, 0.197, and 0.236 (+10%/-20% of total thickness) inch

(1) Other plastic safety glazing thicknesses may be acceptable for use in motor vehicles and motor vehicle equipment, provided they meet the requirements of all applicable laws, regulations, codes, and practices in effect.

4.2 Flatness

Flat safety plastic glazing of the types noted may have 0.8 mm (0.03 inch) maximum total bow per 305 mm (12 inches) length, and each part may have a maximum overall bow, in millimeters, of 0.0026 times the length of the part.

4.3 Curvature

Dimensional tolerances on the physical dimensions of curved injection molded, extruded (formed), or cell cast plastic automotive safety glazing parts shall be specified as follows, with reference to numeric design data or to a master die model derived from numeric data supplied by the automotive manufacturer.

a. Size - Maximum size (plus zero) with specified minimum size. Allowances must be made for the thermal expansion and contraction of the material based upon design and installation. In addition, material stresses need to be accounted for in order to meet acceptable dimensional tolerance limits. These material stresses are both a function of the thermal deformation vector (i.e., CTE) and the material's elastic modulus. The coefficient of thermal expansion for several plastic glazing materials (e.g., polycarbonate and acrylic) is shown in Table 2, along with the modulus of elasticity for each material.

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