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SURFACE VEHICLE RECOMMENDED PRACTICE

Submitted for recognition as an American National Standard

SAE J216 REV. DEC89

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Superseding J216 NOV70

(R) PASSENGER CAR GLAZING - ELECTRICAL CIRCUITS

1. SCOPE:

This document establishes limits for electrical circuits on passenger car safety glazing materials.

2. DEFINITIONS:

2.1 ELECTRICAL CIRCUITS: Electrical conductors used to carry current for lighting, facilitate radio reception, and promote vision through the removal of moisture condensation, ice films, frost, or snow.

2.2 SAFETY GLAZING MATERIALS: Glazing materials so constructed, treated, or combined with other materials as to reduce, in comparison with ordinary sheet, plate, or float glass, the likelihood of injury to persons as a result of contact with these safety glazing materials if they are broken or unbroken.

2.3 WINDSHIELD: The principal forward-facing, safety glazing material provided for forward vision in operating a motor vehicle.

2.4 REAR WINDOW: The principal rearward-facing, safety glazing material provided for rearward vision in operating a motor vehicle.

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3. GENERAL:

This document defines the limits of electrical circuits on passenger car safety glazing materials. The safety glazing materials used may be of any type that meets the requirements of Federal Motor Vehicle Safety Standard No. 205, Glazing Materials.

Presently there are two types of electrical circuits: opaque and transparent. Opaque types consist of either small wires in/on the plastic interlayer of laminated safety glazing materials or conductors integral with the surface of a safety glazing material. Opaque conductors should be of low reflectivity and of neutral or unobtrusive color.

Transparent types consist of very thin electrically conductive coating meeting the light transmittance requirements described in the American National Standard for Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways - Safety Code ANSI Z26.1.

As electrical conductors may also reduce vision or cause optical distortion, a practical limitation of their use is desirable. Until substantial research data is obtained, which does not exist at present, limitation in the use of electrical circuits must be based on present manufacturing processes, practices, and on existing data on field of view. Consequently, this document will be reviewed periodically and revised as additional information becomes available.

4. SAFETY GLAZING MATERIALS - ELECTRICAL CIRCUITS:

4.1 Areas Not Requisite for Driving Visibility: There is no limitation on the use of electrical circuits with safety glazing materials in those areas defined by SAE J100 and ANSI Z26.1 as not requisite for driving visibility.

4.2 Windshields:

4.2.1 Opaque Conductors: Opaque conductors shall not exceed 2.5% of the area defined in SAE J100 as requisite for driving visibility.

Defrosting or demisting conductors up to 0.035 mm (0.0014 in) in diameter or width, in a "zig-zag" or sinusoidal form, with a density of up to 10 wires/cm if vertical and 7 wires/cm if horizontal, are acceptable but should not impair the vision areas requisite for driving visibility before, during, and after a power cycle.

Opaque conductors not exceeding 0.5 mm (0.02 in) in diameter or width are allowed but shall be restricted to an area 25.4 mm (1.0 in) each side of the vertical centerline of the windshield and outside the "B" area as defined by SAE J903.

4.2.2 Transparent Conductors: Transparent electrical conductive coatings used in the windshield vision area should neither decrease the light transmittance below 70% as defined in ANSI Z26.1 or otherwise interfere with the safety and optical properties of the safety glazing material.

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4.3 Rear Windows:

4.3.1 Opaque Electrical Circuits: Opaque electrical circuits shall not exceed 5% of the primary rear vision area of the safety glazing material defined as the field of view of the inside rear view mirror by SAE J834 and shall consist of conductors no greater than 1 mm (0.04 in) wide and no closer together than 25.4 mm (1.00 in).

In other rear vision areas, opaque electrical conductors shall not exceed 6.5% of the remaining area of the rear window.

4.3.2 Transparent Electrical Circuits: Transparent electrical conductive coatings used in the rear vision areas shall not decrease the light transmittance below 70% as defined in ANSI Z26.1 or otherwise interfere with the safety and optical properties of a safety glazing material.

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The (R) is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. If the symbol is next to the report title, it indicates a complete revision of the report.

RATIONALE:

Not applicable.

RELATIONSHIP OF SAE STANDARD TO ISO STANDARD:

Not applicable.

APPLICATION:

This document establishes limits for electrical circuits on passenger car safety glazing materials.

REFERENCE SECTION:

SAE J100 MAR88, Passenger Car Glazing Shade Bands

SAE J834 JUN67, Passenger Car Rear Vision

SAE J903 NOV73, Passenger Car Windshield Wiper Systems

FMVSS No. 205

ANSI Z26.1

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