

INTERNATIONAL TRUCK AND ENGINE CORPORATION		
TMS (TRUCK MATERIAL SPECIFICATION)		NUMBER: TMS-7079
TITLE: Bright Decorative Metallizing - Plastics		REVISION: D
WRITTEN/EDITED BY: Materials Engineering	APPROVED BY: Materials Engineering	DATE ISSUED: August 2005
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<i>This specification may involve hazardous materials, equipment, and procedures. This specification does not purport to address all of the safety issues associated with its use. The user is responsible to consult appropriate safety and health practices and to determine the applicability of regulatory limits prior to use.</i>		
Change: Modified Section 4.4 on accelerated weathering testing.		
Reference: File 30-13E	Keywords: Decorative Metallizing; Plastics	

1.0 APPLICATION

This specification covers a bright, vacuum metallized, decorative finish applied to clear or opaque plastic parts used for interior applications such as dome light bezels, arm rests, horn buttons, and similar applications. It is applied as a first-surface coating (the nearest visible surface when the part is installed in the vehicle). The use of these parts should be limited to applications where corrosion and wear conditions are considered to be mild.

2.0 SCOPE

This specification covers processing, finish requirements, performance requirements, quality, source approval and quality control.

3.0 REFERENCE DOCUMENTS

Unless otherwise specified, the latest issue of all referenced standards shall apply. The following standards, specifications and regulations are referenced in this specification.

Quality System Standard QS-9000 (*ISO 9000 or TS-16949*)
INTERNATIONAL IQR Quality Standard
CFR Title 29, Part 1910
CEMS GT-31

4.0 REQUIREMENTS

The coating shall consist of three layers on the plastic substrate:

4.1 Finish Coating Process

- 1) A resinous base coat applied to the cleaned and dried significant (first-surface) surface by spraying, flowing, or dipping, and then baked.
- 2) A bright, thin metallic film deposited in a vacuum from the vaporization of a metal such as aluminum, chromium, copper, gold or silver.
- 3) A baked, clear, resinous protective top coat.

4.2 Finish

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Coating shall be a bright, uniformly reflective film which is free from shadows or color fringes on the significant visible surfaces excluding the attachment areas. The appearance shall be similar to a bright, lustrous, chrome plated surface and must match the prototype parts approved by the Industrial Design Department at TDTC.

4.3 Adhesion

4.3.1 Method

Apply a strip of adhesive tape (#710 Scotch Tape - 3M Company) 1.9 cm (3/4 in) wide to the coated surface. Pull tape at 90° to the surface.

4.3.2 Required

Coating shall not adhere to tape.

4.4 Accelerated Weathering

4.4.1 Method

Interior parts, which are exposed to sunlight under glass, shall be tested per Method A of CEMS GT-31 for a minimum of 1200 kj.

4.4.2 Required

Shall have no visible color change greater than ΔE of 3.

4.5 Wear Resistance

4.5.1 Method

Expose coated surface to RCA abrasion machine for 40 cycles. Perfection Paper Company #7976 perforation tape [buff colored, unoled, 1.7 cm (11/16 in) wide on 5.1 cm (2 in) core, 21.6 cm (8.5 in) diameter roll].

Tape Travel: 2.84 m (112 in)

Length of Tape in Contact with Sample: 5.5 cm (2.18 in)

Speed: 2.94 cycles/sec

4.5.2 Required

No deterioration of surface or metallic film.

4.6 Thermal Cycling

4.6.1 Method

Subject to one complete cycle consisting of the following sequence:

- 1) $95 \pm 3^{\circ}\text{C}$ ($185 \pm 5^{\circ}\text{F}$) for 24 hours.
- 2) $22 \pm 3^{\circ}\text{C}$ ($72 \pm 5^{\circ}\text{F}$) for 3 hours.
- 3) $-29 \pm 1^{\circ}\text{C}$ ($-20 \pm 2^{\circ}\text{F}$) for 24 hours.
- 4) Allow to return to room temperature.

4.6.2 Required

No evidence of failure due to cracks, crazing, blistering, blooming or loss of adhesion.

4.7 Perspiration Resistance

4.7.1 Method

Immerse metallized part in each of the required solutions for 24 hours. Remove and allow to drain. Heat in a recirculating oven at $38 \pm 1^{\circ}\text{C}$ ($100 \pm 2^{\circ}\text{F}$) for six hours.

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