

INTERNATIONAL TRUCK AND ENGINE CORPORATION		
TMS (TRUCK MATERIAL SPECIFICATION)		NUMBER: TMS-7055
TITLE: Acetals, Molded		REVISION: F
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 Notice: Modified Section 4.2.1 on accelerated weathering.		
Reference: File 30-14D	Keywords: Molded Acetals	

1.0 APPLICATION

This specification covers acetal homopolymer and copolymer type plastics for manufacture of finished parts by injection molding or extrusion. Parts such as washers, bearings, and gears are typical applications.

2.0 SCOPE

This specification covers the physical, mechanical and thermal properties of acetal plastics. It also covers additional processing requirements for specific applications, 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)	ASTM D 256
INTERNATIONAL IQR Quality Standard	ASTM D 638
INTERNATIONAL Manufacturing Standard D-13	ASTM D 790
CFR Title 29, Part 1910	ASTM D 792
INTERNATIONAL CEMS G-5	TMS-9544
	ASTM D 2117
	FMVSS-302
	ASTM D 648
	CEMS GT-31

4.0 REQUIREMENTS

4.1 Basic Properties

Material purchased to this specification shall meet the basic property requirements shown in the table. Properties are minimums unless otherwise indicated and shall be specified by designating either Type 1 for homopolymer or Type 2 for copolymer. See Table 1.

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TABLE I

<u>Property</u>	<u>ASTM Test</u>	<u>Type 1 Acetal Homopolymer</u>	<u>Type 2 Acetal Copolymer</u>
Tensile Strength	D-638	69.0 MPa 10 000 psi	58.6 MPa 8 500 psi
Specific Gravity	D-792	1.425	1.410
Flexural Modulus @ 23°C (73°F)	D-790	3.8 GPa 410 000 psi	2.5 GPa 360 000 psi
Elongation @ Break, %	D-638	15-75%	40-75%
Deflection Temperature @ 1820 kPa (264 psi)	D-648	124°C 255°F	110°C 230°F
Izod Impact Strength	D-256	0.10 J/mm of Notch 2.0 ft•lbf/in of Notch	0.05 J/mm of Notch 1.0 ft•lbf/in of Notch
Crystalline Melt Point	D-2117	175°C 347°F	163°C 325°F

4.2 Suffixes

Suffix letters indicate material or molded part property requirements in addition to those shown in the table. The following suffixes shall be used to indicate additional required properties.

4.2.1 Accelerated Weathering

C1: 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.

C2: Exterior parts, shall be tested per Method B of CEMS GT-31 for a minimum of 3600 kj.

4.2.1.1 Required – shall have no visible color change greater than ΔE of 3.

4.2.2 D - Color Requirements

D1 Pigmented part color shall be specified on the drawing per designation system in CEMS G-5. The pigment must be evenly dispersed to insure uniform coloring throughout the part.

D2 Paint color shall be specified on the drawing per designation system in CEMS G-5. Parts shall have surface preparation per DuPont's Satinizing Process (U.S. Pat. 3,235,426) before painting.

4.2.3 E -Surface Finish

Requirements shall be noted as follows, and shall compare to finishes found in the SPI-SPE Mold Finish Comparison Kit (D-M-E Corporation):

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