

INTERNATIONAL TRUCK AND ENGINE CORPORATION		
TMS (TRUCK MATERIAL SPECIFICATION)		NUMBER: TMS-6511
TITLE: Foam Recirculation Seals		REVISION: A-1
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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>		
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Reference: File 30-1	Keywords: Urethane Foam; Sealer	

1.0 APPLICATION

This specification covers a cellular polyurethane foam which may be slit or cut for use as a radiator recirculation seal. The surface of the foam is coated with a spray applied elastomeric coating which seals the foam from water, dust, etc., and the finished part may be bonded in place.

2.0 SCOPE

This specification covers the general requirements, property and performance requirements, and 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 9001)	ASTM D 3574
INTERNATIONAL IQR Quality Standard	ASTM D 1146
INTERNATIONAL Manufacturing Standard D-13	ASTM D 2247
CFR Title 29, Part 1910	ASTM D 1149

4.0 GENERAL REQUIREMENTS

4.1 Polyurethane Foam: The material shall have a homogeneous cell structure and be free of defects and voids which may have a deleterious effect on performance. Unless otherwise specified on the engineering drawing, color shall be black.

4.2 Elastomer Coating: Unless otherwise specified on the engineering drawing, the coating color shall be black. The coating shall be uniformly applied, with the exception of bonding surfaces shown on the engineering drawing, and shall not be tacky on the finished part. Bonding surfaces must be clearly identified on the engineering drawing and must be free of coating.

4.3 Property And Performance Requirements

All tests shall be performed in accordance with procedures described in ASTM D3574 unless otherwise specified.

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4.3.1 Foam Only

- 4.3.1.1 Density:** 29-32 kg/m³ (1.8-2.0 lb/ft³)
- 4.3.1.2 Tensile Strength:** 100 kPa (15 psi) minimum
- 4.3.1.3 Elongation:** 180% minimum
- 4.3.1.4 Tear Resistance:** 350 N/m (2 lbf/in) minimum
- 4.3.1.5 Compression Force**
- 4.3.1.5.1 Deflection** - 25% compression: 31 kPa (4.5 psi) minimum
- 4.3.1.5.2 Compression Set** - after 70 hours at 90°C (195°F) 50% compression.
Maximum of 50% of the original deflection.

4.3.1.6 Dry Heat Aging - after 22 hours at 140°C (285°F) the following test values shall be obtained:

- Tensile Strength = 80% of original value minimum
- Elongation = 80% of original value minimum
- Tear Resistance = 80% of original value minimum

4.3.1.7 Steam Autoclave Aging - ASTM D3574 Procedure J2

- Tensile strength - 80% or original value minimum
- Elongation - 80% of original value minimum
- Tear Resistance - 80% of original value minimum

4.3.2 Coated Foam

4.3.2.1 Blocking

4.3.2.1.1 Method - ASTM D1146

Place coated sample of foam surface against a steel panel which has been painted as per TMS-9009, Class II and age in a dry air circulating oven at 100°C (210°F) for 24 hours. Remove sample from oven and cool to room temperature.

4.3.2.1.2 Required

First Degree Blocking or Free

4.3.2.2 Humidity

4.3.2.2.1 Method - ASTM D2247

Expose sample to 168 hours of condensing humidity (100% R.H.) at 38°C (100°F).

4.3.2.2.2 Required

There shall be no softening, cracking, or loss of adhesion.

4.3.2.3 Ozone

4.3.2.3.1 Method - ASTM D1149

Expose a looped sample (specimen B) for 70 hours at 40°C (105°F) and at 50 pphm ozone.

4.3.2.3.2 Required

No visible cracking when observed at 7X magnification.

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