

INTERNATIONAL TRUCK AND ENGINE CORPORATION		
TMS (TRUCK MATERIAL SPECIFICATION)		NUMBER: TMS-1064
TITLE Suspension Stabilizer Bars		REVISION: B
WRITTEN/EDITED BY: Materials Engineering	APPROVED BY: Materials Engineering	DATE ISSUED: August 2007
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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: Added part number in Section 4.5 test requirements table; added Section 2.1; editorial changes.		
Reference: File 03-1	Keywords: stabilizer bar; front suspension;	

1.0 APPLICATION

This specification covers the requirements for round heat-treated steel stabilizer bars which are used in front suspension systems for truck applications.

2.0 SCOPE

This specification covers the requirements for raw material, heat treatment, microstructure, mechanical properties, dimensional tolerances, source approval, and quality control.

2.1 Restricted Chemical Substances

Effective January 1, 2007, all product supplied to the requirements of this specification must comply with the requirements of the CEMS B-50 specification.

3.0 REFERENCE DOCUMENTS

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

Quality System Standard ISO 9001 or TS-16949	ASTM A 29	ASTM E 112
CFR Title 29, Part 1910	ASTM E 45	ASTM E 1382
INTERNATIONAL Engineering Design Std. A-16	SAE J422	TMS-9009
INTERNATIONAL Mfg Std. D-13	SAE J419	CEMS B-50
INTERNATIONAL CEMS A-0, Part I	SAE J442	
INTERNATIONAL CEMS A-39		

4.0 REQUIREMENTS

4.1 Material

Open hearth, basic oxygen or electric furnace, ingot cast, or strand cast steel may be used. Unless otherwise specified, the general requirements for steel as described in ASTM A 29 shall be applicable. Steel supplied shall be fully killed, made to fine grain practice, and shall meet the minimum Steel Cleanliness Requirements of Class I per CEMS A-0, Part I. Nonmetallic inclusions shall not exceed grade 3 (JK scale) per ASTM E 45, Method A, or Rating Grade 6 per SAE J422.

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4.2 Chemical composition

The raw material used for production of the stabilizer bars shall meet the following compositional requirements in order to achieve the specified drawing requirements and other requirements of this specification (unless otherwise agreed upon between supplier and purchaser):

Carbon 0.55% min.
Phosphorus 0.030% max
Sulfur 0.050% max
Alloying elements as required

4.3 Heat Treatment

Bars shall be hardened and tempered at 425°C (800°F) minimum so as to obtain a Brinell hardness of 388-429 HBW (42-46 HRC), except in designated areas of the bar as shown on the applicable drawing. Hardness shall be checked at 0.8 mm minimum below the surface at or near the center of the bar after grinding away any decarburization layer.

4.4 Microstructure

The microstructure shall consist of 90% minimum tempered martensite at the center of the bar. The steel shall be fine grained (size 5 or finer, per ASTM E 112 or ASTM E 1382), and exhibit uniform grain distribution. Intergranular oxidation shall not exceed 0.05 mm (0.002 in.). After heat treatment, there must not be any complete decarburization. Depth of partial decarburization (Type 2, per SAE J419) shall be controlled within the following limits:

<u>Bar diameter</u>	<u>Decarburization depth</u>
Up to 20 mm (0.79 in.)	0.20 mm (0.008 in.) max
Greater than 20 mm (0.79 in.)	1% of bar diameter

4.5 Endurance Test Requirements

The stabilizer bars shall meet the requirements for endurance testing specified in the table below. Testing will be performed with one end of the stabilizer bar constrained or connected to the axle, thereby holding it in place, while the other end of the bar would be loaded vertically with the fully reversed load specified in the table for the given part number. If specified, the bar should be further constrained in the center section by bushings located consistently with the positions of bushings on the vehicle.

<u>ENDURANCE TEST REQUIREMENTS</u>			
<u>Part No.</u>	<u>Test Load</u>	<u>B(10) Life (min.)</u>	<u>Center Bushing Support</u>
3594525C1	4448 N (±4448 N) or 1000 lbf (±1000 lbf)	35,000 cycles	Y
3814058C1	5000 in-lb	1200 cycles	N

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