

NAVISTAR, INC.		
TMS (TRUCK MATERIAL SPECIFICATION)		NUMBER: TMS-6820
TITLE: Brake Fluid, DOT 3		CURRENT REV. No.: 0906 DATE: June 2009
WRITTEN/EDITED BY: Materials Engineering	APPROVED BY: Materials Engineering	SUPERSEDES ISSUE DATED: N/A
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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: NEW		
Reference: 30-8E	Keywords: Brake Fluid	

1.0 APPLICATION

This specification covers a glycol based hydraulic brake fluid to be used in brake systems that require a DOT 3 brake fluid meeting the requirements of FMVSS 116 and SAE J1703.

2.0 SCOPE

This specification covers the physical and chemical properties for a glycol based hydraulic brake fluid including quality plan, source approval, quality control, and shipping and identification requirements.

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 D 445
NAVISTAR Manufacturing Std. MS-D-13	FMVSS 116
CFR Title 29, Part 1910	SAE J1703
ASTM D 92	ASTM D 1287
CEMS B-50	ASTM D 1123

4.0 REQUIREMENTS

4.1 Physical and Chemical Properties of Brake Fluid

4.1.1 Equilibrium Reflux Boiling Point (ERBP) (FMVSS 116)

Shall not be less than 205°C (401°F)

4.1.2 Wet ERBP (FMVSS 116)

Shall not be less than 140°C (284°F)

4.1.3 Kinematic Viscosity at -40°C (ASTM D445)

Shall be 1050mm²/s (cSt) max.

4.1.4 Kinematic Viscosity at 100°C (ASTM D445)

Shall be 1.5mm²/s (cSt) min.

4.1.5 Flash Point (ASTM D92)

Shall be 135°C (275°F) min.

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4.1.6 pH (ASTM D1287)

Shall be 8.0 to 10.2

4.1.7 Mineral Oil Contamination (Method to be determined)

Shall not exceed 0.025% (250ppm)

4.1.8 Water Content (ASTM D1123)

Shall not exceed 0.20%

4.1.9 Color (Visual)

Shall be colorless to amber

4.1.10 Thermal Stability Corrosion Test (FMVSS 116 "Corrosion Test Method")

After storage in a sealed quart container for 5 days at 100°C, the brake fluid shall not exceed the following limits:

Steel/Iron – 0.2mg/sq. cm max. with no visible pitting

Aluminum - 0.1mg/sq. cm max. with no visible pitting

Brass/Copper - 0.4mg/sq. cm max. with no visible pitting

4.2 Storage and Transfer of Brake Fluid

Care must be taken to use storage and transfer equipment that is compatible with DOT 3 brake fluid and this equipment shall be dedicated solely for the brake fluid application to minimize the risk of cross contamination with other fluids.

5.0 QUALITY

All product supplied shall be suitable for the intended application clean and free from foreign materials and dirt, and suitably packaged and identified.

5.1 Qualification

Material submitted for qualification shall be accompanied by detailed test information and certification that material meets all requirements of this specification.

6.0 SOURCE APPROVAL AND QUALITY CONTROL

6.1 Supplier Requirements

All suppliers to NAVISTAR are required to be registered to ISO 9001 Quality System Requirements. NAVISTAR will also accept TS-16949 registration as long as the supplier can also fulfill all AIAG PPAP (Production Part Approval Process) documentation and approval requirements. Suppliers must maintain their certification with an accredited registrar and must furnish copies of registration certificates to their NAVISTAR Corporate Buyer upon request.

6.2 Approval

Product supplied against contracts or purchase orders citing this specification shall be equivalent in all respects to those samples that were approved by the purchaser. No changes in formulation or processing practices are permitted without approval. In the event that changes in material, properties, processing practices, construction, color, or labeling of the product are required, the supplier shall notify Materials Engineering at the Truck Development and Technology Center and Navistar Purchasing and Supplier Development of the proposed change(s). Test data indicating conformance to all requirements of this specification, test samples, and new or amended or updated Material Safety Data Sheet(s) (MSDS), in accordance with CFR Title 29, Part 1910 shall be submitted with the request for change.

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