

NAVISTAR, INC.		
Material, Parts, and Process Specifications (MPAPS)		NUMBER: MPAPS K-6925
		Former Designation: TMS-6925
TITLE: Moisture Cured and Air Cured, Pumpable Materials		CURRENT REV No.: 1606
		DATE: June 2016
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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>		

1.0 APPLICATION

This specification outlines the requirements for moisture cured and air cured, pumpable sealants and adhesives.

2.0 SCOPE

This specification covers the general requirements, property and performance requirements, quality, source approval and quality control requirements for the various moisture cured and air cured sealants and adhesives, and all approved source lists.

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 MPAPS 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	NAVISTAR MPAPS GT-Paint	ASTM D624
CFR Title 29, Part 1910	NAVISTAR MPAPS P-9543	ASTM D792
NAVISTAR Manufacturing Std. MS-D-13	ASTM B117	ASTM G154
NAVISTAR Engineering Design Std A-16	ASTM C794	SAE J243
NAVISTAR MPAPS B-50	ASTM C1135	SAE J1523
NAVISTAR MPAPS C-10	ASTM C1241	SAE J1545
NAVISTAR MPAPS G-5	ASTM C1246	SAE J1960

4.0 REQUIREMENTS

4.1 Uncured Sealant Properties

4.1.1 Solids

4.1.1.1 Method: SAE J243 Procedure ADS-7, Method A

4.1.1.2 Required: 95% minimum solids.

4.1.2 Density

4.1.2.1 Method: ASTM D792

4.1.2.2 Required: 1.30-1.70kg/L (0.757-0.990lbm/gal)

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JUNE 2016



Documents

Page 1 of 10
Document Sharing Hub

NUMBER: MPAPS K-6925	TITLE: <i>Moisture Cured and Air Cured, Pumpable Materials</i>	REVISION: 1606
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4.1.3 Viscosity

4.1.3.1 Method A: (Types I, II and V) SAE J243, Test method ADS-1, Procedure 3.2.1, Conditioning Method C, 275 kPa (40 psi), $25 \pm 1^\circ\text{C}$ ($77 \pm 2^\circ\text{F}$), 20 g. Orifice size should be chosen so that the test time is equal or longer than 10 seconds.

4.1.3.2 Required: Report value and orifice size

4.1.3.3 Method B: (Types III and IV) SAE J243, Test Method ADS-1, Procedure 3.2.2, Conditioning method C

4.1.3.4 Required: 40-80Ps

4.1.4 Aged Viscosity

4.1.4.1 Method: Age sample at $43 \pm 1^\circ\text{C}$ ($110 \pm 2^\circ\text{F}$) for 72 hours. Test viscosity per corresponding method as specified in section 4.1.3.

4.1.4.2 Required: Report value

4.1.5 Cleaning

The uncured sealant shall clean readily from metal surface, without streaking, when wiped with a cloth dampened with acetone or isopropanol.

4.1.6 Odor

It shall be the supplier's responsibility to determine that the constituent material and finished product are deemed to be non-objectionable and meet all safety standards.

4.2 Property and Performance Requirements

For purposes of screening, quick-knife tests may be performed at RT and after water immersion along with the low temperature adhesion test.

4.2.1 Test Sample Preparation

A minimum of five test samples shall be prepared for each condition tested. The surface condition tested should be representative of production conditions and must be fully described in the test report. A material shall be qualified only on the surface condition in which it will be used during production. The cure conditions should match production conditions as closely as possible and shall be described fully in the test report. If production conditions do not impair or accelerate the cure, then cure samples for 7 days at room temperature and 95%RH for moisture cured materials or 60%RH for air cured materials.

4.2.2 Aluminum Sheet Stock Surface Preparation

Prepare three sets of five test samples from aluminum sheet 5052-H32* per MPAPS C-10. Using a solvent (acetone), clean substrate samples thoroughly. The first set shall be tested clean. The second set shall have a light oil coating. The third set shall be prepared in the following manner:

4.2.2.1 Clean samples thoroughly with acetone.

4.2.2.2 Apply Mill Oil (Ashland Tectyl 900)** liberally to the bonding surface

4.2.2.3 Wipe oil off surface with a clean, soft, paper lab towel. A light oil residue should remain.

4.2.2.4 Bake samples for four (4) hours at 200°C (392°F).

4.2.2.5 Apply drawing lubricant (Quaker 61AUS)** liberally to the bonding surface

4.2.2.6 Wipe oil off surface with a clean, soft, paper lab towel. A light oil residue should remain.

4.2.2.7 Prepare test samples as required

NUMBER: MPAPS K-6925	TITLE: Moisture Cured and Air Cured, Pumpable Materials	REVISION: 1606
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** Other grades of aluminum may be used in production. Testing other aluminum grades is not required for qualification but may be necessary in some special cases. Contact Materials Engineering for further information.*

*** Other lubricants will be used in production. Sealants and lubricants shall be compatible with each other. Testing compatibility shall be the responsibility of the supplier of the new material.*

4.2.3 Aluminum Extrusion Surface Preparation

Prepare two sets of five test samples from aluminum sheet stock of the same grade as the production part. Using a solvent (acetone), clean substrate samples thoroughly. The first set shall be tested clean. The second set shall be prepared using extruding and cutting lubricants representative of production.

4.2.4 Top Coated Surface Preparation

Prepare a set of five test samples for each condition tested. The test samples shall be made from painted metal panels representative of production. Using a lint free cloth, wipe the panels to remove any dust. Solvents shall not be used to clean the painted panels, as they may disturb the coating.

4.2.5 Electrocoated Surface Preparation

4.2.5.1 Metal: Three sets of five test samples shall be made from electrocoated steel representative of production. The steel shall be prepared as described in section 4.2.2

4.2.5.2 Pre-primed metal: Three sets of five test samples shall be made from pre-primed electrocoated steel representative of production. Using a solvent (acetone or isopropanol) and a lint free cloth, clean substrate samples thoroughly.

4.2.5.3 E-coated metal: Materials to be used over E-coat must be tested with current E-coat substrate using a nine-condition test matrix. This matrix tests the adhesion of the sealant to E-coated panels which have been exposed to nominal oven conditions of 30 minutes at 175°C (350°F), over bake conditions of 60 minutes at 200°C (390 °F), and under bake conditions of 15 minutes at 160°C (325°F). This matrix also includes test conditions in which the E-coat film thickness is varied at 0.6 mil, 0.9 mil, and 1.2 mil. Ten (10) 4"x12" panels shall be prepared at each condition. Using a lint free cloth, wipe the panels to remove any dust. Solvent shall not be used to clean the E-coated panels, as it will disturb the coating.

4.2.6 Shear Strength

4.2.6.1 Method: SAE J1523 with a 25 mm (1 in) overlap at a rate of 50.8mm/min (2.0in/min). Bond thickness shall be 30 mil. Test the samples under the conditions described in Table 1A.

4.2.6.2 Required: A minimum of 100 psi for sealants and 200 psi for adhesives. Report failure mode.

4.2.7 Peel Strength

4.2.7.1 Method: ASTM C794 Test the samples under the conditions described on Table 1B. Cure conditions shall be as described in section 4.2.1 Test Sample Preparation. The second coat is to be applied on the 4th day of cure.

4.2.7.2 Required: A minimum of 15 lb/in for sealants and 30 lb/in for adhesives. Report failure mode.

4.2.8 Humidity

4.2.8.1 Method: GT-Paint method 7E for 500 hours on test samples prepared for shear strength and peel strength tests.

4.2.8.2 Required: A minimum of 80% of the strength obtained from the test performed at room temperature.