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| <b>NAVISTAR, INC.</b>                                                                                                                                                                                                                                                                                                                   |                                  |                                        |
| <b>Material, Parts, and Process Specifications<br/>(MPAPS)</b>                                                                                                                                                                                                                                                                          |                                  | NUMBER:<br><b>MPAPS G-9005</b>         |
|                                                                                                                                                                                                                                                                                                                                         |                                  | Former Designation: <b>TMS-9005</b>    |
| TITLE:<br><b>Prepaint Treatment, Plastic Parts</b>                                                                                                                                                                                                                                                                                      |                                  | CURRENT REV No.:<br><b>1705</b>        |
|                                                                                                                                                                                                                                                                                                                                         |                                  | DATE:<br><b>May 2017</b>               |
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| <b>PRINTED COPIES OF THIS DOCUMENT MUST BE VERIFIED FOR CURRENT REVISION</b>                                                                                                                                                                                                                                                            |                                  |                                        |
| <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 covers the prepaint treatment required for open or closed mold fiberglass reinforced thermosetting plastic parts, or thermoplastic parts that are injection molded or thermoformed, which are to be subsequently finish painted in NAVISTAR facilities. Typical parts are hood and fender assemblies, headlight panels, radiator grilles, window panel inserts, engine covers, and similar exterior and interior applications.

## 2.0 SCOPE

This specification covers surface appearance and dry film property requirements of the primer, inspection, KCC, quality control and source approval, repair of primed surfaces, and handling required for prime painted FRP or thermoplastic parts prior to shipment to the using NAVISTAR plant. Parts receiving heat cured topcoats and parts that specify air dry topcoat finish are covered by this specification.

### 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 herein.

|                                                     |                       |
|-----------------------------------------------------|-----------------------|
| Quality System Standard <i>ISO 9001 or TS-16949</i> | NAVISTAR MPAPS G-9012 |
| NAVISTAR Supplier Packing and Shipping Std. D-13    | ASTM D3359            |
| NAVISTAR Engineering Design Std A-16                | ASTM D3363            |
| CFR Title 29, Part 1910                             | ASTM D4138            |
| NAVISTAR MPAPS B-50                                 | ASTM D523             |
| NAVISTAR MPAPS G-5                                  | SAE J400              |
| NAVISTAR MPAPS GT-Paint                             |                       |

## 4.0 GENERAL REQUIREMENTS

This specification is not intended to limit or to specify the exact process and materials to be used in providing plastic parts ready for topcoating in NAVISTAR painting operations. The control of the primer quality and its application shall be the responsibility of the part supplier. All primed parts supplied shall be compatible with the finish painting operations employed by the using NAVISTAR plant.

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#### **4.1 Material/Process Approvals**

**4.1.1** The primers used by the supplier must be approved by NAVISTAR Materials Engineering to meet the dry film requirements of Table 2 prior to their first use in production.

**4.1.2** Primer Grade -52<sup>1</sup> and Grade -52HS dry film properties are defined in the [General Information](#) section (A.1) of this specification as an example of typical values of products that work well with NAVISTAR production paint systems.

**4.1.3** In addition, parts primed with the materials and application processes/methods to be used by the supplier shall be approved by Materials Engineering and, after approval, no deviation in materials and/or manufacturing processes shall be permitted without written approval by Materials Engineering.

**4.1.4** A typical preparation and priming procedure is shown in the General Information Section (A.2). This procedure has provided acceptable parts when used with good substrate and the proper materials.

#### **4.2 In-Mold-Coating**

Priming of FRP parts which use in-mold-coating (IMC) as a sealer to seal the part requires special treatment. In cases where coverage of the part with IMC is essentially complete, if needed, the use of spot primer will be satisfactory. In cases where coverage of the part with IMC is less than complete, the use of a 1.0-2.0 mil dry film primer-sealer (with oven bake after application of the primer-sealer) will be required to seal the substrate. If the incompletely covered area is less than 2 inches in diameter, no priming may be necessary if the area does not show through the topcoat and does not promote surface defects (e.g., pitting and porosity). Spot priming (and rebake) of these areas is acceptable if there is no show-through of primer boundaries after topcoat. If show-through occurs, the entire part must be primed and oven baked prior to topcoating.

#### **4.3 Surface Quality**

It is recognized that certain defects, such as substrate porosity, may not be detectable in a primed part until after topcoating. Isolated instances of porosity, as defined in Table 1, shall not be considered cause for rejection. Chronic cases of porosity requiring significant rework shall be cause for rejection and the responsibility of the vendor to correct. The supplier has the responsibility to provide quality primed parts which will not cause delayed defects after finishing in the using plant. Parts supplied shall be free of dirt, oils, molding flash, sharp edges or other potential contaminants that could cause in-plant rework and negatively impact overall quality. This will require close cooperation with the paint facility at the using plant and with Materials Engineering.

#### **4.4 Appearance Requirements**

Specific appearance requirements are given in Table 1. Appearance requirements are specified for the following zones or locations on the vehicle:

| <b><u>ZONE</u></b> | <b><u>DESCRIPTION</u></b>                                                                                                                                                                                                     |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| I.                 | Primary, exterior, glamour surfaces, such as: hood and fender exteriors, including visible edges; grilles, cab fronts, sides, doors, corners, and lower aerodynamic fairings.                                                 |
| II.                | Secondary, exterior, glamour surfaces, such as: cab tops, cab backs (between corner radii) and upper aerodynamic fairings. Also, primary, interior, low gloss painted surfaces, such as: engine covers and instrument panels. |
| III.               | Recessed exterior or interior surfaces, such as: door openings, door ends, and painted grab handles.                                                                                                                          |
| IV.                | Hidden areas, such as those covered in assembly and backsides, if primed.                                                                                                                                                     |

<sup>1</sup> Grades – 52 and – 52HS primers are void paint grades per MPAPS G-5.

|                                |                                                    |                          |
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#### **4.4.1 Inspection Conditions**

Parts shall be inspected for appearance requirements at a distance of 2 feet under a light intensity of 100 foot-candles minimum at the part surface. Samples illustrating acceptable appearance and unacceptable appearance defects shall be prepared and displayed in the inspection area.

#### **4.5 Primer-Dry Film Requirements**

Dry film property requirements for the primer are given in Table 2. These requirements apply to each individual coating of the primer where multi-coat primers are used with baking and/or drying between coats. For spot primes, dry film thickness may be less, but no less than 0.5 mils and as close to 1.0 mils as the process will allow.

#### **4.6 Bake Temperatures (For Primers Requiring Oven Bake)**

Primers shall be oven-cured within the minimum and maximum schedules for time and temperature prescribed by the primer supplier. However, the substrate temperature shall reach a minimum of 200°F in at least one oven.

#### **4.7 Test Procedures**

Unless otherwise specified, tests shall be run in accordance with the following test procedures (from MPAPS GT-Paint) except the primed part, or sections of the primed part, are to be used in place of test panels.

| <b><u>TEST</u></b>    | <b><u>PROCEDURE</u></b> | <b><u>TEST</u></b> | <b><u>PROCEDURE</u></b> |
|-----------------------|-------------------------|--------------------|-------------------------|
| Gloss                 | ASTM D523               | Intercoat Adhesion | GT – 5B                 |
| Hardness              | ASTM D3363              | Humidity*          | GT – 7E                 |
| Adhesion              | ASTM D3359              | Conductivity       | GT – 18                 |
| Xylene Rub            | GT – 14A                | Gravelometer*      | SAE J400 & GT-28        |
| Accelerated Adhesion* | GT – 5C                 | Film Thickness *   | ASTM D 4138             |

\* Tested on sections from primed part which have been topcoated and cured with materials and processing representing production. GT test methods are found in MPAPS GT-Paint.

#### **4.8 Repriming Of Surface Repairs**

##### **4.8.1 Parts With In-Mold Coating (IMC) to Receive Oven-Baked Topcoat (ref. MPAPS G-9012)**

1. Sand-throughs of the IMC, or incompletely covered areas greater than 2 inches in diameter, must be reprimed with primer (sealer) and rebaked. Spot priming of these areas is acceptable if it can be demonstrated that the repair area is sufficiently sealed and no show through of the area can be seen after topcoating. Spot priming without rebake is acceptable on exposed substrate areas less than 2 inches in diameter or no priming may be necessary if the transition area between the substrate and IMC cannot be read after topcoat and no surface defects result. If the surface demonstrates that it cannot be adequately sealed, as defined in Table 1, the area in question must be reprimed.

2. Repair areas in the primer, which expose the substrate greater than 2 inches in diameter, must receive a flash coat of primer and rebaked prior to applying the topcoat. Spot priming without rebake is acceptable on exposed substrate areas less than 2 inches in diameter or no priming may be required if the transition area between the substrate and primer cannot be read after topcoat and no surface defects result.