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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|------------------------------------------------|
| <b>NAVISTAR, INC.</b>                                                                                                                                                                                                                                                                                                                   |                                  |                                                |
| <b>Material, Parts, and Process Specifications<br/>(MPAPS)</b>                                                                                                                                                                                                                                                                          |                                  | NUMBER:<br><b>MPAPS L-6041</b>                 |
|                                                                                                                                                                                                                                                                                                                                         |                                  | Former Designation: <b>TMS-6041</b>            |
| <b>Flooring Components, Bus</b>                                                                                                                                                                                                                                                                                                         |                                  | CURRENT REV No.:<br><b>1608</b>                |
|                                                                                                                                                                                                                                                                                                                                         |                                  | DATE:<br><b>Aug. 2016</b>                      |
| WRITTEN/EDITED BY:<br><b>W. Cook</b>                                                                                                                                                                                                                                                                                                    | APPROVED BY:<br><b>R. Goluch</b> | SUPERSEDES:<br><b>Rev. 0810 – October 2008</b> |
| <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 non-blooming, low migration vinyl or rubber mats used in school bus floor systems and step tread. See MPAPS D-7135 for plywood requirements and MPAPS K-6931 for bonding requirements.

## 2.0 SCOPE

This specification covers the general requirements, property and performance requirements, quality, quality control requirements, 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 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     | MPAPS GT-31  | ASTM D1171 |
| CFR Title 29, Part 1910                          | MPAPS K-6931 | ASTM D1784 |
| NAVISTAR Supplier Packing and Shipping Std. D-13 | MPAPS P-9543 | ASTM D2047 |
| NAVISTAR Engineering Design Std. A-16            | MPAPS P-9544 | ASTM D2137 |
| NAVISTAR MPAPS B-50                              | ASTM B117    | ASTM D2240 |
| CFR 49, Part 571.302                             | ASTM D395    | ASTM D2395 |
| AATCC Method 30                                  | ASTM D412    | ASTM D3163 |
| MPAPS A-6, Part I                                | ASTM D573    | FMVSS 302  |
| MPAPS D-7135                                     | ASTM D624    | SAE J861   |
| MPAPS DT-12                                      | ASTM D903    |            |
| MPAPS G-9009                                     | ASTM D1002   |            |

## 4.0 REQUIREMENTS

### 4.1 Material Requirements

**4.1.1 Mat:** The base material shall be either rubber or vinyl with fibers or films added for dimensional stability and aesthetic content. Mats shall have a flat, smooth backing that is ready for bonding and shall be compatible with adhesive requirements of MPAPS K-6931. In some cases, the back may be sanded or treated to improve adhesive performance. Table 1 lists the base material requirements.

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|--------------------------------|-------------------------------------------|--------------------------|
| NUMBER:<br><b>MPAPS L-6041</b> | TITLE:<br><b>Flooring Components, Bus</b> | REVISION:<br><b>1608</b> |
|--------------------------------|-------------------------------------------|--------------------------|

**TABLE 1: Floor Mat Material Requirements**

| Property                                           | Test Method                                                                                         | Vinyl      | Rubber   |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------|------------|----------|
| <b>Specific Gravity</b>                            | Report                                                                                              | 1.4 to 1.7 | TBD      |
| <b>Hardness [<math>\pm</math> 5 points]</b>        | ASTM D2240 – Type A                                                                                 | 90         | 85       |
| <b>Tensile Strength [MPa]</b>                      | ASTM D412, Die C                                                                                    | 7.0        | 5        |
| <b>Elongation [%]</b>                              | ASTM D412, Die C                                                                                    | 200        | 30       |
| <b>Tear Resistance [kN/m]</b>                      | ASTM D624, Die B                                                                                    | 15         | 15       |
| <b>Compression Set [max %]</b>                     | ASTM D395, Method B, 22 hours                                                                       | 50         | 50       |
| <b>Low Temperature</b>                             | ASTM D2137, Method A, Non-Brittle at -40°C (-40°F).                                                 | Pass       | Pass     |
| <b>Ozone Resistance (Quality-Retention Rating)</b> | ASTM D1171, Method B, Expose samples to 70 hours of 100 pphm ozone partial pressure at 38°C (100°F) | N/A        | 85%      |
| <b>Coefficient of Friction</b>                     | ASTM D2047, dry                                                                                     | .8         | .6       |
| <b>Heat Resistance</b>                             | ASTM D573, 70 hrs at 70°C                                                                           |            |          |
| <b>Hardness [max. % change]</b>                    | ASTM D2240 – Type A                                                                                 | $\pm$ 10   | $\pm$ 10 |
| <b>Tensile Strength [max. % change]</b>            | ASTM D412, Die C                                                                                    | $\pm$ 30   | $\pm$ 30 |
| <b>Elongation [max. % change]</b>                  | ASTM D412, Die C                                                                                    | -50        | -50      |
| <b>Tear Resistance [max. % change]</b>             | ASTM D412, Die C                                                                                    | -50        | -50      |
| <b>Recycled Content</b>                            | Report                                                                                              | Report     | Report   |

N/A – Not Applicable

**4.1.2 Step Treads:** Step tread shall consist of a mat bonded to a carrier. The mat shall meet the requirements of 4.1.1. The carrier shall be metal or plastic. All materials and coatings shall be compatible with any adhesives used in the assembly plant.

**4.1.2.1 Metal:** Metal backing will be steel, Grade 1, per MPAPS A-6, Part I, unless otherwise specified.

**4.1.2.2 Paint:** Metal parts shall be painted to meet MPAPS G-9009 Class II.

**4.1.2.3 Plastic:** PVC per ASTM D1784 Class 16354

## 4.2 Dimensions

### 4.2.1 Base Stock Thickness

Shall be either  $2.8 \pm 0.13$  mm or  $3.6 \pm 0.13$  mm thick, as specified on the engineering print.

### 4.2.2 Mat Length and Width Tolerances\*

| Inches           |                  | mm               |                  |
|------------------|------------------|------------------|------------------|
| <u>DIMENSION</u> | <u>TOLERANCE</u> | <u>DIMENSION</u> | <u>TOLERANCE</u> |
| 0 - 4.00         | $\pm$ .040       | 0 - 100          | $\pm$ .5         |
| 4.01 - 10.00     | $\pm$ .050       | 101 - 250        | $\pm$ 1.25       |
| 10.01 - 25.0     | $\pm$ .125       | 251 - 600        | $\pm$ 3          |
| 25.1 AND UP      | $\pm$ .125       | 601 AND UP       | $\pm$ 3          |

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