

NAVISTAR, INC.		
Material, Parts, and Process Specifications (MPAPS)		NUMBER: MPAPS P-9523
		<i>Former Designation: TMS-9523</i>
TITLE: Development and Quality Control Procedures for SMC – FRP Parts		CURRENT REV No.: 1610
		DATE: Oct. 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 is applied to aid in controlling procedures used to develop critical parts molded from SMC reinforced plastics specified as per Navistar MPAPS D-22. Parts, such as tilt hoods, cowl panels, and heater cases, are typical applications. The objective of this specification is to control material flow, and the physical and mechanical properties developed in the prototype parts and insure reproducibility between the prototype, qualification, and production SMC/FRP parts.

2.0 SCOPE

This specification covers the production process data, test analysis data, and sample parts that the molder is required to submit. Requirements for Quality Control of production parts are also covered.

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 standards, specifications and regulations are referenced in this specification.

Quality System Standard ISO 9001 or TS-16949
International IQR Quality Standard
CFR Title 29, Part 1910
NAVISTAR MPAPS B-50

NAVISTAR MPAPS D-22
NAVISTAR MPAPS G-9012
NAVISTAR MPAPS DT-14

4.0 GENERAL REQUIREMENTS

Before production approval is granted, all parts shall be functionally tested by the Navistar Materials Group. The molder shall supply parts for such tests based on materials and manufacturing processes that can be routinely used on a production basis. The minimum process and test data to be supplied with test/prototype parts is indicated below.

4.1 SMC Material

A complete description of the SMC material(s) used in the part shall be provided. This shall include the molder's compound number; the type and percentage by weight of the resin, glass, and filler; and the viscosity of the system. Tolerances or process control limits for these factors shall be included.

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4.1.1 SMC Material Properties

Physical property data for the SMC material(s) (flat panel data) will be submitted. Specific details of properties to be reported will be agreed upon between Navistar Materials Engineering and the supplier.

4.2 Charge Pattern

A drawing of the charge pattern showing the number of plies, the charge weight, and the dimensions of the charge, will be provided.

4.3 Molding Conditions

A description of the molding conditions will be provided. This shall include the mold temperatures (core and cavity), press closure speed, cycle time (time mold is closed) and tonnage exerted on the mold during closing.

4.4 Glass Pattern

Photographs of a burn-off or an X-ray of the entire part clearly showing glass pattern will be provided. Identification of severe flow or knit line conditions shall be shown.

4.5 Molded Part Properties

Physical properties of the molded part as per Navistar MPAPS D-22, at locations indicated on the part drawing will be provided.

4.6 Functional Testing

Functional testing will be performed by Navistar Materials Group. If the functional tests show deficiencies in the molded parts, the molder will be asked to alter or modify the material and/or production process. If material and/or process changes are made, the molder shall resubmit new parts for retesting and provide new process/test data as required by Section 4 of this specification.

4.7 Class 'A' Exterior Surfaces

Parts considered to be Class A, produced with IMC as per MPAPS G-9012, shall have a surface reading of 100 maximum on the Loria® scale as per MPAPS DT-14. Examples of such parts are hood skins, fender extensions and sunshades. The readings shall be taken from a flat section of the part, away from edges, ribs, bosses etc. on an unpainted surface. Material may be qualified for this criterion from flat panels. This testing will be in accordance with International MPAPS DT-14. Results of this qualification will be included in the Pre-Production Part Approval package submission to Navistar Materials Engineering.

4.7.1 Initial Submissions

The Loria® test method (MPAPS DT-14) is intended for initial submissions only, e.g. new material qualifications or PPAP packages. This qualification standard is not meant to be an ongoing test requirement. Once certified, the material shall be considered approved for surface. Any changes to the material formulation or manufacturing process would require another Loria® submission.

4.7.1.1 Molding Tool/Dies

On initial submissions for part qualification, data on the molding tool surface finish will be provided with the Loria® test results.

4.8 Pre-Production Part Approval

Pre-production approval of all parts referencing this specification is required prior to acceptance of PPAP or production parts. Approval of the parts shall be in writing from Navistar Materials Engineering to the supplier, to International Purchasing and Supplier Development, and to the International assembly plants involved.

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