

Sheet Molding Compound With In Mold Coating (IMC)

1. SCOPE

1.1 The material defined by this specification is a thermoset polyester sheet molding compound (SMC) created for use in compression molding. This base material shall be coated in mold with a thermosetting modified acrylic compound. Typically there will be a supplementary painting process performed to this material after molding. High quality surface finishes type Class "A" is expected.

1.2 This specification may involve hazardous materials, procedures and apparatus. This specification does not address the health and safety problems associated with its application or use. It is the specification user's responsibility to follow appropriate health or safety practices and determine the application or regulatory limitation prior to use.

2. APPLICATION

This specification was originally released for materials used with an in molded coating for very visible exterior surface applications of fenders and hoods for tractors.

3. DESIGNATION

3.1 The Engineering drawing shall contain the following notation for the specification of the subject plastic. As described in standard 86511126 (FNHA-3-B-100.00), the Applicable Standards Block will each include a space for one standard. The part number shall be the number of this specification and the name shall be the name of this specification.

4. RELATED STANDARDS

ASTM D256 - Test Methods for Impact Resistance of plastic and Electrical Insulating Materials.
 ASTM D570 - Test Methods for Water Absorption of Plastics
 ASTM D638 - Test Methods for Tensile Properties of plastics
 ASTM D648 - Test Method for Deflection Temperature of Plastic Under Flexural Load
 ASTM D695 - Test Methods for Compressive Properties of Rigid Plastics
 ASTM D790 - Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical insulating Materials
 ASTM D792 - Test Methods for Specific Gravity (Relative Density) and Density of Plastics by Displacement
 86507649(FNHA-2-J-001.14) - Humidity Test
 86511126(FNHA-3-B-100.00) -- Specifying and Referencing Standards Numbers on Drawings
 86529682(FNHA-4-A-007.00) - Surface Finish Requirements
 86541552(FNHA-4-B-200.00) -- Supplier painting Process Quality

5. REQUIREMENTS

5.1 SMC SUBSTRATE REQUIREMENTS

5.1.1 The properties for base SMC material after molding are listed in Table 1.

5.1.2 The material for the SMC is a thermoset polyester. This material shall be representative of product in production tooling. Testing samples shall be taken from production level tooling for final approval to these specifications.

					NAME	STD IMC MATERIAL		
					NEW HOLLAND		ENGINEERING SPECIFICATION	
							FRAME	OF
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MATERIALS / PLASTICS**FNHA-2-D-902.00**

5.1.3 The best molding practice shall be used in processing of the specified material. Surface finish and surface imperfections shall be resolved prior to any final processing of the material. Vacuum-assist molding may be used to reduce surface imperfections.

5.2 IN-MOLD COATING REQUIREMENTS**5.2.1 Material**

Material for the in mold coating shall be a thermoset modified acrylic. This material shall be representative of product produced in production tooling. Testing samples shall be taken from the production level tooling for final approval to these specifications.

5.2.2 Color

The color of the in mold coating after applied on the surface of the structural part shall be black or dark gray.

5.2.3 Gloss Level

The in mold coatings after applied and cured shall have a gloss level of 40 or greater. This measurement shall be taken with a 60° gloss meter.

5.2.4 Leveling

The in mold coating as applied shall exhibit a smooth uniform appearance free from pits, pin holes, cracks, bubbles, etc.

5.2.5 Coating thickness

The in mold coating shall be tested for applied thickness using a TOOK GAGE. The minimum dry thickness shall not be less than 19 µm.

5.2.6 Hardness

The subject materials shall have a hardness level of F to 2H pencil. (Eagle Turquoise T2375 pencils)

5.3 PAINT TOP COAT REQUIREMENTS

5.3.1 The paint shall be specified on the Engineering drawings. Approval for this paint from a specific paint company shall be performed in the New Holland Materials Laboratory for use in production. Approvals shall be given by Materials Engineering in writing.

5.3.2 Paint Application Suppliers.

The paint application companies painting the in mold coated parts shall perform tests from actual parts to indicate the successful application of the approved paint on the subject substrate. This will be attached to the ISR and comply with standard 86529682 (FNHA-4-A-007.00) requirements noted on Engineering drawings and standard 86541552 (FNHA-4-B-200.00). The required tests shall be performed with the addition of the below mentioned tests;

- 1) Salt spray testing is not required.
- 2) Humidity test per standard 86507649 (FNHA-2-J-001.14) for minimum of 240 hours
- 3) Water Immersion test - 240 Hrs

Test Method: The test sample is immersed for 240 hours in distilled or deionized water maintained at 32 +/- 1°C. Then the parts are removed from the water and immediately scribed with an X through the painted coating to the substrate. Then dry the scribed area with towel or air and immediately apply with thumb pressure a 1" wide Scotch Cellophane Tape (#600). Allow this tape to set up for one minute and then remove the tape by pulling one end at a 90° angle at a moderate speed. Any removal of paint will cause a failure.

4) Thermal Shock Resistance: Pass

Test Method: Immerse this test panel in distilled or deionized water at 38° +/-2°C for 4 hours. Then place the panel in a cold chamber and expose it to -29°C temperature for 3 hours. Remove and rapidly scribe an X in the test panel. Then apply a steam blast for a minimum of 30 seconds. The angle of impingement is 45 degrees and 50 to 75 mm away. Remove from this blast and examine and report any loss of paint adhesion and/or any blushing (i.e. Whitening, loss of gloss)

 NEW HOLLAND	NAME STD IMC MATERIAL				PART NUMBER 86590003	
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