

PAINT MATERIAL REQUIREMENTS - METAL PARTS

1. SCOPE

1.1 This specification covers specific performance requirements for paint materials used on CNH metal parts. Paint performance is specified for CNH products based on durability and appearance requirements. Paint materials supplied to this specification shall also comply with color requirements of CNH MAT0101 (86628042) Color Requirements and Color Control. Approved paint materials for use on CNH metal parts are shown in CNH MAT0103Q (48158409) Approved Paint Materials - Metal Parts.

1.2 Finish system performance requirements are provided in Tables 8 and 9 for both paint materials and process paint for production of finished metal painted parts. Only certain thermal or chemical cure primers, topcoats, or powder material systems can achieve Class 3, 4, 4W, 5, 5W, and 6 performance.

1.3 Primer performance requirements are provided for both primer materials and process primer paint. Properties listed in Table 10 apply when only primer materials and primed only parts are specified.

1.4 Table 1 provides a basic cross-reference between new CNH paint performance Classes and comparable prior company material specifications and performance level designations.

1.5 Revision AC of this specification added information and requirements for primer materials of autophoretic coatings (A-Coat) and electrophoretic coatings (E-Coat). Autophoretic (A-Coat) specification FNHA 2-J-071.00, (86615362), and E-Coat Primer, specification FNHA 2-J-071.00, (87015057) were superseded by MAT0103. See Table 2.

TABLE 1: Former Company Paint Performance Designations

CNH MAT0103 Performance Class	New Holland, Case and CNH Former Designations
Complete Finish System	
Class 1 (86628056)	- NH Penna, Standard Perf., FNHA-2-J-061.00 (86509537) - Case, Standard Perf. MS-1
Class 2 (86628055)	- NH Tractor, NHT MS 002, Classes C and D
Class 3 (86628054)	- NH Penna, Premium Perf., FNHA-2-J-062.01 (86570426) - Case, Superior Perf., MS-1 - NH Tractor, NHT MS 002, Class B4
Class 4 (86628053)	- NH Tractor, NHT MS 002, Class B1, B2, B3
Class 4W (48011482)	- Not applicable
Class 5 (86628052)	- CNH MAT0103, Class 4 (86628053) - NH Tractor, NHT MS 002, Class A, B1, B2 and B3
Class 5W (91833601)	- Not applicable
Class 6 (87070110)	- ES-PA014 (84196364) Class 6
Primer and Primed Only Parts	
Class 1P (86628059)	- NH Penna, Standard Primer Perf., FNHA-2-J-065.00 (86514388) - Case, Standard Primer Perf., MS-1
Class 2P (86628058)	- NH Penna, Premium Primer Perf., FNHA-2-J-066.00 (86565256) - Case, Superior Primer Perf., MS-1, - NH Tractor, NHT MS 002, Class B4, C and D
Class 3P (86628057)	- NH Tractor, NHT MS 002 Class A1, A2, A3, B2 and B3

ISSUED BY J HANSEN 21APR26	ECN NO. 35526002	NAME PAINT MATERIAL REQUIREMENTS METAL PARTS	
APPROVED BY T SHAH 21APR26	REV. AD	PAGE 1 OF 15	CNH NUMBER 86628044

THE INFORMATION HEREON IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF CNH INDUSTRIAL N.V. AND/OR ITS SUBSIDIARIES OR DIVISIONS. ANY USE, EXCEPT THAT FOR WHICH IT MAY BE LOANED, IS PROHIBITED.

UNCONTROLLED COPY When Printed

TABLE 2: Autophoretic and E-Coat Primer Designations

Coating Type	Part Number	Designation	Color	Part Performance	Superseded Specification
Autophoretic Coating Primer	86614293	Auto Coating per MAT0103 (86628044)	Black (86629831)	Class 2P (86628058)	FNHA 2-J-071.00, (86615362)
E-Coat Primer	87015058	E-Coat per MAT0103 (86628044)	Black (86629831)	Class 3P (86628057)	FNHA 2-J-308.00, (87015057)

1.6 This specification may involve hazardous materials, apparatus, and procedures. This specification does not claim to address all the safety, health, and environmental issues associated with its use, application, or removal. Specification users bear responsibility for consulting appropriate safety, health, and environmental practices, and determining the applicability of regulatory limitations prior to use, application, or subsequent removal of paints supplied to this specification. Consult with facility safety, health, and environmental professionals or contact CNH Corporate Environmental Health and Safety if guidance in this area is needed.

2. DESIGNATION ON DRAWINGS AND PURCHASE ORDERS

2.1 Paint performance Class, color designation, and corresponding part numbers must be specified in the Engineering Parts List on the Engineering drawing. Figures 1 and 2 provide examples of how the performance Class and color can be specified on the engineering drawing. Also, reference DWGA110, Requirements for Painted Parts.

3	0		86628054		PAINT PERF CL3 STD 86628044
2	0		84433810		CNH DARK GRAY STD 86628042
1	1		416801A1		STRAP RETAINING
ITEM	QUANTITY	U/M	PART NUMBER	TYPE	NOUN, DESCRIPTION
Description STRAP RETAINING, CNH DARK GRAY					Part Number 8XXXXXX2
ENGINEERING PARTS LIST					

Figure 1: Paint Performance Class and Color Specified on Drawing

4	0		87015058		E-COAT PER 86628044
3	0		86628057		PRIMER PERF CL3P STD 86628044
2	0		86629831		BLACK PRIMER STD 86628042
1	1		8XXXXXX1		PLATE
ITEM	QUANTITY	U/M	PART NUMBER	TYPE	NOUN, DESCRIPTION
Description PLATE					Part Number 8XXXXXX2
ENGINEERING PARTS LIST					

Figure 2: Primer Only Part with E-Coat, Class, and Color Specified on Drawing

NAME	REV.	PAGE	CNH NUMBER
PAINT MATERIAL REQUIREMENTS METAL PARTS	AD	2 OF 15	86628044

3. REFERENCED SPECIFICATIONS

ASTM B117 Standard Practice for Operating Salt Spray (Fog) Apparatus
 ASTM D523 Standard Test Method for Specular Gloss
 ASTM D714 Standard Test Method for Evaluating Degree of Blistering
 ASTM D870 Standard Practice for Testing Water Resistance of Coatings
 ASTM D1014 Std. Pract. Conducting Exterior Exposure Tests of Paints & Coatings on Metal Substrates
 ASTM D1210 Standard Test Method for Fineness of Dispersion of Pigment-Vehicle Systems by Hegman-Type Gage
 ASTM D1475 Standard Test Method for Density of Liquid Coatings, Inks, and Related Products
 ASTM D1654 Std. Test Method Evaluation of Painted Coated Specimens in a Corrosive Environment
 ASTM D1729 Standard Practice for Visual Appraisal of Color and Color Differences of Diffusely Illuminated Opaque Materials
 ASTM D1735 Standard Practice for Testing Water Resistance of Coatings using Water Fog Apparatus
 ASTM D2369 Standard Test Method for Volatile Content of Coatings
 ASTM D2697 Standard Test Method for Volume Nonvolatile Matter in Clear or Pigmented Coatings
 ASTM D2794 Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
 ASTM D3170 Standard Test Method for Chipping Resistance of Coatings
 ASTM D3335 Standard Test Method for Low Concentrations of Lead, Cadmium, and Cobalt in Paint by Atomic Absorption Spectroscopy
 ASTM D3363 Standard Test Method for Film Hardness by Pencil
 ASTM D3718 Standard Test Method for Low Concentrations of Chromium in Paint by Atomic Absorption Spectroscopy
 ASTM D4212 Standard Test Method for Viscosity by Dip-Type Viscosity Cups
 ASTM D4366 Standard Test Method for Hardness of Organic Coatings by Pendulum Damping Test
 ASTM D5965 Standard Test Methods for Density of Coating Powders
 ASTM E308 Standard Practice for Computing the Colors of Objects by Using the CIE System
 CNH DWGA110 (86641291) Requirements for Painted Parts
 CNH ENS0505 (91833504) Regulated Substances
 CNH MAT0101 (86628042) Color Requirements and Color Control
 CNH MAT0103Q (48158409) Approved Paint Materials for Metal Parts
 CNH MAT0103S (47406457) Process Paint Materials for Metal Parts, Supply Requirements
 CNH MTM0102 (86628045) Test Panel Preparation
 CNH MTM0104 (86628046) Recoating of Finishes
 CNH MTM0105 (90450601) Salt Spray Testing – Painted Panels
 CNH MTM0106 (86628047) Cyclic Corrosion Test
 CNH MTM0108 (86628048) Chemical Resistance
 CNH MTM0113 (87556294) Weatherometer Test
 CNH MTM0120 (87021663) Tape Adhesion, Paint Materials
 CNH MTM0124 (87021665) Flexibility Test
 FNHA-4-A-007 (86529862) Surface Requirements

3.1 DEFINITIONS / ACRONYMS

Autophoretic or A-coat: - is a primer material with a chemical reaction between the aqueous polymer and the iron substrate of parts. It offers excellent coverage and adhesion for challenging geometries, including elongated structures, coiled elements, Faraday Cage parts, and threaded surfaces. Unlike E-coat, there is no charging, grounding, anodes, or cathodes needed. The drawback is there are limited applicators worldwide. This process requires immersion, and parts should be designed for drainage. A topcoat paint is required to protect from UV energy and when color matching is needed.

NAME	REV.	PAGE	CNH NUMBER
PAINT MATERIAL REQUIREMENTS METAL PARTS	AD	3 OF 15	86628044

Electrophoretic, Electropainting or E-Coat: - is a process where a primer coating is applied to a metal surface using an electric current. The metal part is immersed in a water-based paint bath. An electric current is passed through the bath, causing the paint particles to migrate toward the metal surface. The paint particles deposit onto the metal surface, forming a uniform, protective coating. Advantages include uniformity as it provides consistent, even coating thickness, excellent corrosion protection, and high-edge versions help edge corrosion. This process requires immersion, and parts should be designed for drainage. A topcoat paint is required to protect from UV energy and when color matching is needed.

4. REQUIREMENTS

4.1 PAINT PERFORMANCE CLASS

4.1.1 Paint materials, as finished paint systems, applied to CNH parts or components shall meet Class 3 performance requirements as a minimum unless another performance Class is specified.

4.1.2 Primer paint materials applied for primed only parts shall meet Class 2P performance requirements as a minimum unless another performance Class is specified.

4.2 DRY FILM PROPERTIES

4.2.1 Paint Materials over Laboratory Test Panels for Engineering Approval

Paint materials supplied to this specification shall meet cured, dry film material property requirements established by this specification. Paint materials submitted for testing to obtain CNH Materials Engineering approval shall be applied to Bonderite M-FE 1000TM iron phosphate with Bonderite M-PT 99X chrome-free seal test panels per CNH MTM0102 (86628045) Test Panel Preparation.

4.2.2 Process Paint Materials for Finished Painted Parts

Process paints are approved paint materials, listed in the MAT0103Q, supplied to CNH or supplier facilities for the production of finished metal painted parts. Process paint performance, topcoat, and/or primer materials, shall comply with specified performance class requirements and shall be verified according to CNH MAT0103S. Test samples for process paint material testing shall be prepared per MTM0102.

4.2.3 Process Paint Materials, Production Approval

Process paint materials intended for production use at CNH Plants shall not be used before completion of successful plant production trials. Materials Engineering shall be notified by the applicable Manufacturing plant upon successful completion of these trials.

4.2.4 Paint Storage: Plant storage and application areas should be climate controlled per the recommendations of the paint manufacturer to avoid potential application issues. As an example, powder coating application performance can be negatively affected by temperature and humidity.

4.2.5 All parts should be painted prior to assembly whenever possible. Uniform film build that meets the recommended minimums shall be achieved on all surfaces, including edges and recesses. Parts shall be primed and/or topcoated only with materials that have been approved by CNH Materials Engineering. Finished parts shall be cured per the specified schedule prior to exposure to any detrimental environment.

NAME	REV.	PAGE	CNH NUMBER
PAINT MATERIAL REQUIREMENTS METAL PARTS	AD	4 OF 15	86628044

4.2.6 Primer Paint Materials

Primer paint materials supplied to this specification shall meet dry film material property requirements listed in Table 10 for the appropriate Primer Class specified. Primer requirements are the same regardless of whether a primed only part is subsequently topcoated and must also comply with requirements of a finish system performance Class. Testing for approval of primer materials shall follow methods and procedures specified for material on test panels according to Sections 4.2.1 and 4.2.2.

4.2.7 E-Coat and A-coat Primer

E-Coat and A-Coat primer paint materials supplied to this specification shall meet minimum dry film material property requirements listed in Table 10 of Class 2P for A-coat, and Class 3P for E-coat, unless otherwise specified on the drawing. Reference also Table 2.

4.2.8 Primer and Topcoat Compatibility

4.2.8.1 Primer performance and the corresponding paint technology will affect the overall performance of the complete finish system. Primer performance Classes will typically support complete finish system performance as shown in Table 3.

TABLE 3: Typical Performance Compatibility

Primer		Complete Finish System Performance Class
Performance Class	Material Technology Example	
1P	Alkyd	4, 3, 2, 1
2P	Urethane, Epoxy, Isocyanate, Non-Isocyanate (NISO), A-Coat	6, 5W, 5, 4, 4W 3, 2, 1
3P	Epoxy, E-Coat	6, 5W, 5, 4, 4W 3, 2, 1

4.2.8.2 Paint material incompatibility may exist between certain primers and finish system performance classes or technologies. Contact Materials or the paint supplier for information on specific applications.

4.2.9 Performance Class Application

In general, the following paint technologies are capable of meeting complete finish system performance Class requirements as indicated in Table 4. This does not mean that all paint material technologies listed will meet the CNH performance Class requirements. Before use, specific formulations being considered for CNH product applications must be approved by CNH Materials Engineering.

TABLE 4: Performance Class Applications

Paint Material Technology	Complete Finish System Performance Class
Alkyd Enamel	2, 1
Acrylic, Urethane, Isocyanate, Non-Isocyanate (NISO), Powder	6, 5W, 5, 4, 4W, 3

4.2.10 Performance Class Substitutions

Table 5 indicates paint classes which can be used or substituted where the part drawing indicates a class requirement.

TABLE 5: Paint Performance Class Substitutions

For a Part Drawing Indicating Class:	Paint Materials Listed in MAT0103Q with these classes can be used:
1	1, 3, 5, 4, 2
2	2, 3, 5, 4
3	3, 5, 4W, 4, 5W, 6
4	4, 5, 5W
4W	4W, 5W, 6
5	5, 5W
5W	5W (no substitute for class 5W)
6	6 (no substitute for class 6)
Order of Preference	Most Preferred → Least Preferred

4.2.11 Complete Finish System Requirements are specified in Tables 8 and 9.

4.2.12 Primer Material and Process Paint-Primer Requirements are specified in Table 10.

4.3 LIQUID AND POWDER PROPERTIES

All paint materials supplied to this specification shall meet the following property guidelines of Table 6 and Table 7, in addition to any specified performance Class requirements.

TABLE 6: Liquid Material Requirements

Properties	Material Requirements	Test Method
Weight Per Unit Volume	Report value via TDS ⁽¹⁾ ; shall be within $\pm 0.120\text{kg/L}$ of qualification sample	ASTM D1475
Weight Solids, % by Weight	Report value via TDS ⁽¹⁾ ; $\pm 2\%$ from qualification sample	ASTM D2369
Volume Solids, % by Volume	Report value via TDS ⁽¹⁾ ; $\pm 2\%$ from qualification sample	ASTM D2697
Viscosity at 25°C, Seconds	Report value via TDS ⁽¹⁾ ; ± 5 seconds from qualification sample	ASTM D4212
Volatile Organic Content (VOC), % by Weight	Report value via TDS ⁽¹⁾ ; Shall be less than local regulations where used	ASTM D2369
Fineness of Grind	Report value via TDS ⁽¹⁾ ;	ASTM D1210

(1) TDS = Technical Data Sheet

TABLE 7: Powder Material Requirements

Properties	Material Requirements	Painted Part Requirements	Test Method
Specific Gravity	Report value via TDS ⁽¹⁾ ; shall be within ± 0.05 of qualification sample		ASTM D5965
Particle Size Distribution	Report value via TDS ⁽¹⁾		Supplier Method

(1) TDS = Technical Data Sheet

4.4 SURFACE QUALITY

Where required, surface finish requirements or quality for parts shall be specified on the engineering drawing using established specifications such as FNHA-4-A-007 Surface Requirements. Acceptance levels defined in FNHA-4-A-007 are applicable for metallic and non-metallic substrates.

TABLE 8: Paint Material and Process Paint Performance Requirements – (Classes 6,5W,5,4,4W)

Performance Class and Part Number		Class 6 (87070110)		Class 5W (91833601)		Class 5 (86628052)		Class 4 (86628053)		Class 4W (48011482)		Test Method
Properties		Paint Material	Process Paint ⁽¹⁾	Paint Material	Process Paint ⁽¹⁾	Paint Material	Process Paint ⁽¹⁾	Paint Material	Process Paint ⁽¹⁾	Paint Material	Process Paint ⁽¹⁾	
Color – Visual		Visual Match to Color Standard; No visible metamerism permitted Evaluate under CIE Illuminant light sources: D65, daylight; A-10, incandescent; and F02-10, (CWF) cool white fluorescent										ASTM D1729
Color Tolerance, maximum		Paint Material (Standard Test Panels) ΔL* = 0.3, Δa* = 0.3, Δb* = 0.3, ΔE* = 0.5					Finished Painted Parts (Parts/Process Panels) ΔL* = 0.6, Δa* = 0.6, Δb* = 0.6, ΔE* = 1.0					ASTM E308 CIE LAB Spherical D65/10° included
Hardness, Full cure, minimum		Persoz = 150		Persoz = 250		Persoz = 250		Persoz = 250		Persoz = 150		ASTM D4366-95 Method B
		Pencil = H		Pencil = 2H		Pencil = 2H		Pencil = 2H		Pencil = H		ASTM D3363
Impact Resistance, Forward, minimum		30 kg cm		40 kg cm		40 kg cm		40 kg cm		30 kg cm		ASTM D2794
Chip Resistance, min.		5B										ASTM D3170
Flexibility		7% elongation, minimum No cracks or adhesion loss										CNH MTM0124 Method A
Adhesion		Ad 1, minimum										CNH MTM0120
Accelerated Weathering (WOM) And South Florida Exposure, (FE)	600 Hrs (WOM), 12 Months (FE)	N/A		N/A		Gloss Retention, 60° = 90%, min 20° = 65%, min ΔE* ≤ 3.0 change		Gloss Retention, 60° = 90%, min 20° = 65%, min ΔE* ≤ 3.0 change		N/A		Weatherometer: CNH MTM0113 (87556294) Modified ASTM G155-05a Cycle 7A Florida Exposure: ASTM D1014
	1200 Hrs (WOM), 24 Months (FE)	N/A		N/A		Gloss Retention, 60°=75%, min 20°=45%, min ΔE* ≤ 5.0 change		Gloss Retention, 60°=75%, min 20°=45%, min ΔE* ≤ 5.0 change		N/A		
	1800 Hrs (WOM), 36 Months (FE)	N/A		Gloss Retention, 60° = 90%, min 20° = 65%, min ΔE* ≤ 3.0 change		N/A		N/A		Gloss Retention, 60° = 90%, min 20° = 65%, min ΔE* ≤ 3.0 change		
	2400 Hrs (WOM), 48 Months (FE)	N/A		Gloss Retention, 60°=75%, min 20°=45%, min ΔE* ≤ 5.0 change		N/A		N/A		Gloss Retention, 60°=75%, min 20°=45%, min ΔE* ≤ 5.0 change		
	3600 Hrs (WOM), 72 Months (FE)	Gloss Retention 60° = 90% min 20° = 65% min ΔE* ≤ 3.0 change		N/A		N/A		N/A		N/A		
	4800 Hrs (WOM), 96 Months (FE)	Gloss Retention 60° = 75% min 20° = 45% min ΔE* ≤ 5.0 change		N/A		N/A		N/A		N/A		

(1) Accelerated weathering is not required to verify process paint performance. Verify process paint initial supply performance requirements according to MAT0103S

NAME	REV.	PAGE	CNH NUMBER
PAINT MATERIAL REQUIREMENTS METAL PARTS	AD	8 OF 15	86628044



Material Specifications

MAT0103

TABLE 8: continued: Paint Material and Process Paint Performance Requirements – (Classes 6,5W,5,4,4W)

Performance Class and Part Number	Class 6 (87070110)		Class 5W (91833601)		Class 5 (86628052)		Class 4 (86628053)		Class 4W (48011482)		Test Method
Properties	Paint Material	Process Paint ⁽¹⁾	Paint Material	Process Paint ⁽¹⁾	Paint Material	Process Paint ⁽¹⁾	Paint Material	Process Paint ⁽¹⁾	Paint Material	Process Paint ⁽¹⁾	
Cyclical Corrosion	5 Cycles Rating 6, min.		5 Cycles Rating 8, min.		5 Cycles Rating 8, min.		5 Cycles Rating 6, min.		5 Cycles Rating 6, min.		CNH MTM0106
	Edges on Test Panels: Rating 8, min.										
	Un-scribed Areas: No Blisters, No Visible Corrosion										
Salt Spray Resistance Complete Finish System Minimum requirements	700 hrs	500 hrs	1000 hrs		1000 hrs		700 hrs	700 hrs	700 hrs	500 hrs	MTM0105
	Scribed ⁽²⁾ Rating 6	Scribed ⁽²⁾ Rating 6	Scribed ⁽²⁾ Rating 7		Scribed ⁽²⁾ Rating 7		Scribed ⁽²⁾ Rating 6	Scribed ⁽²⁾ Rating 6	Scribed ⁽²⁾ Rating 6	Scribed ⁽²⁾ Rating 6	
	Edges on Test Panels: Rating 8, min.										ASTM D1654-05 Procedure C Method 2
	Un-scribed Areas: No Blisters, No Visible Corrosion										ASTM D1654-05 Procedure B
Humidity Complete Finish System	400 hrs, minimum		600 hrs, minimum		600 hrs, minimum		600 hrs, minimum		400 hrs, minimum		ASTM D1735
	2 hours Recovery Gloss Retention: 60° = 95% min.; 20° = 95% min No visual color change ΔE* = 0.5 change, max Blisters: Size=8, Frequency=Few(F)										ASTM D523 ASTM D1729
											ASTM D714
Water Immersion, at 25 ± 2°C Complete Finish System	300 hr.	200 hr.	500 hr.	400 hr.	500 hr.	400 hr.	500 hr.	400 hr.	300 hr.	200 hr.	ASTM D870
	4 hours Recovery Gloss Retention: 60° = 95% min; 20° = 95% min No visual color change ΔE* = 0.5 change, max Blisters: Size=8, Frequency=Few(F) Adhesion: Ad 1, minimum Hardness: 15% change, max										ASTM D523 ASTM D1729 ASTM D714 CNH MTM0120 ASTM D4366-95
Chemical Resistance	Pass										CNH MTM0108
Recoatability	No visual defects Adhesion; Ad 1, minimum										CNH MTM0104, CNH MTM0120
Lead Content, Wt.%,	0.06, maximum										ASTM D3335
Chromium Content, Wt.%	0.01, maximum										ASTM D3718

(1) Accelerated weathering is not required to verify process paint performance. Verify process paint initial supply performance requirements according to MAT0103S

(2) Test panels shall be scribed with an X pattern with the diagonal scribe lines crossing at the middle of the panel

NAME	REV.	PAGE	CNH NUMBER
PAINT MATERIAL REQUIREMENTS METAL PARTS	AD	9 OF 15	86628044

TABLE 9: Paint Material and Process Paint Performance Requirements – (Classes 1, 2 and 3)

Performance Class and Part Number		Class 3 (86628054)		Class 2 (86628055)		Class 1 (86628056)		Test Method
Properties		Paint Material	Process Paint ⁽¹⁾	Paint Material	Process Paint ⁽¹⁾	Paint Material	Process Paint ⁽¹⁾	
Color – Visual		Visual Match to Color Standard; No visible metamerism permitted. Evaluate under CIE Illuminant light sources: D65, daylight; A-10, incandescent; and F02-10, (CWF) cool white fluorescent.						ASTM D1729
Color Tolerance, maximum		Paint Material (Standard Test Panels) ΔL* = 0.3, Δa* = 0.3, Δb* = 0.3, ΔE* = 0.5						ASTM E308 CIE LAB Spherical D65/10° included
		Finished Painted Parts (Parts/Process Panels) ΔL* = 0.6, Δa* = 0.6, Δb* = 0.6, ΔE* = 1.0						
Hardness, Full cure, minimum		Persoz = 150		Persoz = 150		Persoz = 100		ASTM D4366-95 Method B
		Pencil = H		Pencil = H		Pencil = B		ASTM D3363
Impact Resistance, Forward, minimum		30 kg cm		30 kg cm		20 kg cm		ASTM D2794
Chip Resistance, min.		5B		5B		4B		ASTM D3170
Flexibility		7% elongation, minimum No cracks or adhesion loss						CNH MTM0124 Method A
Adhesion		Ad 1, minimum						CNH MTM0120
Accelerated Weathering (WOM)	600 Hrs (WOM), 12 Months (FE)	Gloss Retention, 60° = 90%, min 20° = 65%, min ΔE* ≤ 3.0 change		Gloss Retention, 60° = 65%, min 20° = 45%, min ΔE* ≤ 4.0 change		Weatherometer: CNH MTM0113 (87556294) Modified ASTM G155-05a Cycle 7A Florida Exposure: ASTM D1014		
	And South Florida Exposure, (FE)	1200 Hrs (WOM), 24 Months (FE) Gloss Retention, 60°=75%, min 20°=45%, min ΔE* ≤ 5.0 change		N/A				

(1) Accelerated weathering is not required to verify process paint performance. Verify process paint performance requirements according to MAT0103S

NAME

PAINT MATERIAL REQUIREMENTS METAL PARTS

REV.
AD

PAGE
10 OF 15

CNH NUMBER
86628044

TABLE 9: continued: Paint Material and Process Paint Performance Requirements – (Classes 1 and 2)

Performance Class and Part Number	Class 3 (86628054)		Class 2 (86628055)		Class 1 (86628056)		
Properties	Paint Material	Process Paint ⁽¹⁾	Paint Material	Process Paint ⁽¹⁾	Paint Material	Process Paint ⁽¹⁾	Test Method
Cyclical Corrosion	5 Cycles Rating 6, min.		4 Cycles Rating 6, min.				CNH MTM0106
	Edges on Test Panels: Rating 8, min.						
	Un-scribed Areas: No Blisters, No Visible Corrosion						
Salt Spray Resistance Complete Finish System Minimum requirements	700 hrs	500 hrs	500 hrs	350 hrs	400 hrs	200 hrs	ASTM B117 CNH MTM0105
	Scribed ⁽²⁾ Rating 6	Scribed ⁽²⁾ Rating 6	Scribed ⁽²⁾ Rating 6	Scribed ⁽²⁾ Rating 6	Scribed ⁽²⁾ Rating 6	Scribed ⁽²⁾ Rating 6	
	Edges on Test Panels Rating 8, min.						
	Un-scribed Areas: No Blisters, No Visible Corrosion						
Humidity Complete Finish System	400 hrs, minimum		200 hrs, minimum,				ASTM D1735
	2 hours Recovery: Gloss Retention 60° = 95% min.; 20° = 95% min No visual color change ΔE* = 0.5 change, max Blisters: Size=8, Frequency=Few(F)		2 hours Recovery: Gloss Retention 60° = 90% min.; 20° = 90% min No visual color change ΔE* = 0.5 change, max Blisters: Size=8, Frequency=Few(F)				ASTM D523 ASTM D1729 ASTM D714
Water Immersion, at 25 ± 2°C Complete Finish System	300 hr.	200 hr.	200 hr.	100 hr.	200 hr.	100 hr.	ASTM D870
	4 hours Recovery Gloss Retention: 60° = 95% min; 20° = 95% min		4 hours Recovery Gloss Retention: 60° = 90% min; 20° = 90% min				ASTM D523 ASTM D1729
	No visual color change, ΔE* = 0.5 change, max, No Rust. Blisters: Size=8, Frequency=Few(F), Adhesion: Ad 1, minimum Hardness: 15% change, max						ASTM D714 CNH MTM0120 ASTM D4366-95
Chemical Resistance	Pass						CNH MTM0108
Recoatability	No visual defects Adhesion; Ad 1, minimum						CNH MTM0104, CNH MTM0120
Lead Content, Wt.%,	0.06, maximum						ASTM D3335
Chromium Content, Wt.%	0.01, maximum						ASTM D3718

(1) Accelerated weathering is not required to verify process paint performance. Verify process paint performance requirements according to MAT0103S

(2) Test panels shall be scribed with an X pattern with the diagonal scribe lines crossing at the middle of the panel

NAME	REV.	PAGE	CNH NUMBER
PAINT MATERIAL REQUIREMENTS METAL PARTS	AD	11 OF 15	86628044

TABLE 10: Primer Materials and Process Paint Performance Requirements

Performance Class and Part Number	Class 3P (86628057)		Class 2P (86628058)		Class 1P (86628059)		
Properties	Paint Material	Process Paint ⁽¹⁾	Paint Material	Process Paint ⁽¹⁾	Paint Material	Process Paint ⁽¹⁾	Test Method
Color – Visual	Visual Match to Color Standard						ASTM D1729
Hardness, Full cure, minimum	Persoz = 200		Persoz = 100		Persoz = 100		ASTM D4366-95 Method B
	Pencil = H		Pencil = F		Pencil = B		ASTM D3363
Adhesion	Ad 1, minimum						CNH MTM0120
Recoatability	No visual defects Adhesion; Ad 1, minimum						CNH MTM0104 CNH MTM0120
Flexibility	7% elongation, minimum No cracks or adhesion loss						CNH MTM0124 Method A
Chipping Resistance, minimum	5B				4B		ASTM D3170
Impact Resistance, Forward, minimum	30 kg cm		20 kg cm		20 kg cm		ASTM D2794
Salt Spray Resistance Minimum requirements	800 hrs	700 hrs	400 hrs	300 hrs	150 hrs	100 hrs	ASTM B117 CNH MTM0105
	Scribed ⁽²⁾ Rating 7	Scribed ⁽²⁾ Rating 7	Scribed ⁽²⁾ Rating 6	Scribed ⁽²⁾ Rating 6	Scribed ⁽²⁾ Rating 6	Scribed ⁽²⁾ Rating 6	
	Edges on Test Panels: Rating 8, min.						
	Un-scribed Areas: No Blisters, No Visible Corrosion						
Cyclical Corrosion	5 Cycles, Rating 8, min		5 Cycles, Rating 6, min		1 Cycle, Rating 6, min		CNH MTM0106
	Edges on Test Panels: Rating 8, min.						
	Un-scribed Areas: No Blisters, No Visible Corrosion						
Humidity	400 hours, minimum,		200 hours, minimum,		100 hours, minimum,		ASTM D1735, D523
	4 hours Recovery: Blisters: 8 (min.) Few (max.)						ASTM D1729, D714
Water Immersion at 25 ± 2°C	500 hr	400 hr	300 hr	200 hr	150 hr	100 hr	ASTM D870, D523
	4 hours Recovery: No Rust; Blisters: 8 (min) Few (max) Hardness: 15% change, max; Adhesion: Ad 1, min						ASTM D1729, D714 ASTM D4366-95 CNH MTM0120
Lead content, Wt%, maximum	0.06						ASTM D3335
Chromium content, Wt%, maximum	0.01						ASTM D3718

(1) Verify process paint-primer performance requirements according to MAT0103S

(2) Test panels shall be scribed with an X pattern with the diagonal scribe lines crossing at the middle of the panel.

NAME

PAINT MATERIAL REQUIREMENTS METAL PARTS

REV.

AD

PAGE

12 OF 15

CNH NUMBER

86628044

5. QUALITY

5.1 All paint supplied to this specification shall be formulated and manufactured using good commercial practices and shall comply with all applicable governmental regulations.

5.2 All paint shall be non-hazardous with regard to heavy metals and comply with CNH ENS0505 (91833504) Regulated Substances. Upon analyzing ash from a completely incinerated sample of dried paint, the amount of each heavy metal found shall not exceed the levels defined as hazardous in either OSHA or Resource Conservation and Recovery ACT (RCRA) regulations. All paint shall be free of foreign matter and other hazardous materials unless details of such other hazardous materials are furnished in advance of initial qualification.

5.3 Pigments used shall be exterior grade conforming to CNH requirements and those designated in individual material specifications.

5.4 All paints reduced with solvents and applied under normal manufacturing conditions shall flow properly and build the recommended film thickness.

6. PACKAGING AND IDENTIFICATION – PAINT MATERIALS

6.1 Paint containers, except pressurized cans, shall be clearly marked with the following information:

Gross, Tare, and Net Weight

Name of Supplier

Destination

Formula Number or Code and Date of Manufacture

Paint Specification Number and Name

Purchase Order Number

Precautionary Labels (Danger, Caution, or Warning) as Required by Governmental Regulations such as the FDA Hazardous Substance Labeling Act

6.2 Pressurized containers shall be clearly marked with the following information on each container:

Net Weight

CNH Part Number

Type of Propellant

Formula Number or Code

Date of Manufacture

Paint Specification Number and Name

Precautionary Labels (Danger, Caution, or Warning) as Required by Governmental Regulations such as the FDA Hazardous Substance Labeling Act

6.3 Finish painted parts supplied to this specification shall be packaged to prevent damage and deterioration during handling, transportation, and storage.

7. METHODS OF TEST

7.1 All test designations are latest issue unless otherwise specified. Suppliers must ascertain and be able to demonstrate that their paint or finish painted part will conform to the specification limits when tested by the specified methods. Specified methods will be used to reconcile disputed results.

NAME	REV.	PAGE	CNH NUMBER
PAINT MATERIAL REQUIREMENTS METAL PARTS	AD	13 OF 15	86628044

7.2 CNH Materials Test Methods are available through CNH iView, CNH Technical Standards and Materials Intranet Site and over the Internet on the CNH Supplier Portal. Questions or further clarification regarding these test methods may be directed to CNH Materials Engineering.

7.3 ASTM test methods are available at www.ASTM.org.

7.4 ACT orange peel standards and Bonderite 1000 test panels specified per CNH MTM0102 Test Panel Preparation are available from following sources:

7.4.1 ACT Laboratories, Inc., 273 Industrial Drive, Hillsdale, MI 49242-0735, Ph 517-439-1485 Email: sales@acttestpanels.com

7.4.2 Q-Panel Lab Products: North America, 800 Canterbury Road Westlake, OH 44145, Ph 440-835-8700
European Branch, Express Trading Estate, Farnworth Bolton, BL49TP, England, Ph (01204) 861616, Email: info.eu@q-lab.com
China Branch, Room 206, Building D No. 800 Puxing Road Shanghai, China 201114, Ph 86 21-5879-7970, Email: info.cn@q-lab.com

8. MATERIAL AND PROCESS TESTING

8.1 Testing and approval are required for both paint materials and suppliers of primed and/or topcoated parts to CNH. Material approval shall be based on laboratory, engineering, or plant testing conducted or approved by CNH Materials Engineering. Approved formulations of paint materials for finished metal parts are tabulated in the CNH MAT0103Q (48158409). Full CNH approval of paint material suppliers and suppliers of primed and/or topcoated parts also requires Supplier Quality auditing by CNH.

8.2 PAINT MATERIALS

No shipments of paint materials shall be made by a new source until samples of materials they propose to supply to this specification have been approved by CNH Materials Engineering. When requested, the supplier shall furnish samples for formal qualification that may include performance testing. Material submitted for qualification shall be accompanied by detailed test information, certification that the material meets all requirements of this specification, and a completed Safety Data Sheet (SDS). Additional samples may also be required by the receiving CNH location in advance of the first and subsequent production shipments in accordance with the provisions of CNH Supplier Development (SD) or other CNH quality assurance programs.

8.3 FINISH PAINTED PARTS

No shipments of finish painted parts shall be made by a new supplier until samples of finish painted parts (and representative painted test panels if requested,) they propose to supply to this specification have been tested to CNH MAT0103S (47406457) Process Paint Materials for Metal Parts, Supply Requirements or approved by the receiving CNH Plant or their designated representative. Finished painted parts submitted for qualification shall be accompanied by detailed test information and certification that they meet all requirements of this specification. Additional samples may also be required by the receiving CNH location in advance of the first and subsequent production shipments in accordance with the provisions of CNH Supplier Development (SD) or other CNH quality assurance programs.

NAME	REV.	PAGE	CNH NUMBER
PAINT MATERIAL REQUIREMENTS METAL PARTS	AD	14 OF 15	86628044

9. INSPECTION AND REJECTION

Shipments of paint materials or finish painted parts against contracts or purchase orders citing this specification shall be equivalent in every respect to samples approved by the purchaser. No changes in formulation, processing, or place of manufacture are permitted without prior written approval from CNH Supplier Development (SD). Test data, test samples and new supplier code identification are to be submitted to CNH Materials Engineering group with the request for the material change. While the purchaser may test samples from incoming shipments for quality assurance purposes, the supplier is responsible for ensuring that shipments meet the stated requirements without depending upon the purchaser's inspection.

10. SUPPLIER RESPONSIBILITY

10.1 PAINT MATERIALS

All paint materials supplied to this specification shall be equivalent in all characteristics to the material that was originally approved. Prior to making any changes to a paint material approved under this specification, whether such changes affect the ability of the material to meet specified performance requirements, the supplier shall notify CNH Materials Engineering of the proposed changes. Test data, test samples and a new supplier identification code are typically required for the proposed material change. The supplier shall obtain written approval from CNH Materials Engineering prior to any production implementation of a material change. Whenever a new supplier identification code is applied to a paint material formulation new testing and approval are required.

10.2 Contact Materials Engineering for confirmation if a new material code is required.

NAME	REV.	PAGE	CNH NUMBER
PAINT MATERIAL REQUIREMENTS METAL PARTS	AD	15 OF 15	86628044