

NAVISTAR, INC.		
TMS (TRUCK MATERIAL SPECIFICATION)		NUMBER: TMS-9018
TITLE: Chemical Agent Resistant Coating (CARC) Painting		CURRENT REV No.: 1212
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WRITTEN/EDITED BY: Materials Engineering	APPROVED BY: Materials Engineering	SUPERSEDES: N/A
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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>		
Change Notice: NEW		
Keywords: CARC, paint, military coatings		

1.0 APPLICATION

This specification outlines the requirements for Chemical Agent Resistant Coatings (CARC) painted parts used in NAVISTAR DEFENSE trucks, parts, and components.

2.0 SCOPE

This document establishes materials and procedures for the application of Chemical Agent Resistant Coating (CARC) on painted parts used in NAVISTAR DEFENSE trucks, parts, and components.

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 CEMS B-50 specification.

All paint systems described in this document are free of hexavalent chromium. All applicable federal, state, and local regulations must be met in the application of the paint systems described herein.

NOTE: Use of Wash Primers, DOD-P-15328 and MIL-C-8514, is prohibited.

3.0 REFERENCE DOCUMENTS

Unless otherwise specified, the latest issue of all referenced standards shall apply. The following specifications and standards are referenced in this specification.

Quality System Standard ISO 9001	or TS-16949	Quality Systems Standards
NAVISTAR Manufacturing Std	MS-D-13	
CFR Title 29, Part 1910		
CEMS B-50		NAVISTAR Restricted Chemical Substances
MIL-DTL-5541		Chemical Conversion Coatings on Aluminum and Aluminum Alloys
MIL-DTL-81706		Chemical Conversion Materials for Coating Aluminum and Aluminum Alloys
TT-C-490		Chemical Conversion Coatings and Pretreatments for Ferrous Surfaces
MIL-DTL-53072		Chemical Agent Resistant Coating (CARC) System Application Procedures and Quality Control Inspection
MIL-DTL-53022		Primer, Epoxy Coating, Corrosion Inhibiting, Lead and Chromate Free
MIL-DTL-53030		Primer Coating, Epoxy, Water Reducible, Lead and Chromate Free
MIL-DTL-53084		Primer, Cathodic Electrodeposition, Chemical Agent Resistant
A-A-52474		Commercial Item Description, Electrocoating Primer (Water Borne, Cathodic Epoxy)

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DECEMBER 2012

NUMBER: TMS-9018	TITLE CARC Painting	REVISION: 1212
----------------------------	-------------------------------	--------------------------

MIL-DTL-53039	Coating, Aliphatic Polyurethane, Single Component, Chemical Agent Resistant
MIL-DTL-64159	Coating, Water Dispersible Aliphatic Polyurethane, Chemical Agent Resistant
A-A-59745	CID Zinc-Rich Coatings
MIL-P-14105	Paint, Heat Resistant (for Steel Surfaces)
A-A-3007	Thinner: for Phenol-Formaldehyde and Medium Oil and Styrenated Alkyd Paints and Varnishes
SAE AMS 3166	Solvents, Cleaning, Cleaning Prior to Application of Sealing Compounds
ASTM B117	Standard Practice for Operating Salt Spray (Fog) Testing Apparatus
SSPC-SP5/NACE	No. 1 - Steel Structures Painting Manual Vol. 2
SSPC-SP10/NACE	No. 2 - Steel Structures Painting Manual Vol. 2
SSPC-SPCOM	Steel Structures Painting Manual Vol. 2
NACE RP0287	Field Measurement of Surface Profile of Abrasive Blast Cleaned Steel Surfaces Using a Replica Tape
ASTM D1654	Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments
ASTM D4138	Measurement of Dry Film Thickness of Protective Coating systems by Destructive, Cross Sectioning Means
GM9540P	General Motors – Accelerated Corrosion Test
ASTM E376	Calibration of Instruments for Measurement of Dry Film Thickness
ASTM A967	Standard Specification for Chemical Passivation Treatments for Stainless Steel Parts
AMS 2488	Anodic Treatment, Titanium and Titanium Alloys Solution pH 13 or Higher

3.1 Precedence

In the event of a conflict between the text of this document and the references cited herein, the order of precedence shall be:

1. The contract or purchase order
2. The engineering drawing
3. This document
4. Referenced documents to the extent specified herein

Nothing in this document supersedes applicable laws and regulations unless a specific deviation has been obtained from NAVISTAR DEFENSE.

4.0 PRETREATMENTS AND CHEMICAL AGENT RESISTANT COATINGS (CARC)

4.1 TT-C-490 Type I Zinc Phosphate

When TT-C-490 Type I Zinc Phosphate is used as a pretreatment, the supplier must certify that the conversion coating and process used meets all of the testing requirements in accordance with TT-C-490 for corrosion resistance and coating weight. TT-C-490 Type I Zinc Phosphate rinses and sealers are to be free of materials containing hexavalent chrome.

4.2 MIL-DTL-5541

When MIL-DTL-5541 pretreatment is used the supplier must certify that the conversion coating used is in accordance with and registered under the Qualified Product Database (QPD) for MIL-DTL-81706 Type II Class 1A. The supplier must also certify that all testing requirements within MIL-DTL-5541 for corrosion resistance and coating weight have been met.

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DECEMBER 2012

NUMBER: TMS-9018	TITLE CARC Painting	REVISION: 1212
----------------------------	-------------------------------	--------------------------

4.3 A-A-59745 Zinc Rich Epoxy Coating

When Zinc Rich Epoxy Primer in accordance with A-A-59745 is required, only the following products may be used on NAVISTAR Military trucks, parts, and components.

Approved Products:

Sherwin-Williams E90G17

4.4 MIL-DTL-53022 (Primer, Epoxy Coating, Corrosion Inhibiting, Lead and Chromate Free)

Only primers listed on the Qualified Product Database (QPD) for MIL-DTL53022 are approved for use on NAVISTAR DEFENSE trucks, parts, and components.

Approved Products:

Sherwin-Williams product numbers:

E90H226 E90HC227 E90A228 E90A229

4.5 MIL-DTL-53030 (Primer, Epoxy Coating, Water Reducible, Lead and Chromate Free)

Only primers listed on the Qualified Product Database (QPD) for MIL-DTL53030 are approved for use on NAVISTAR DEFENSE trucks, parts, and components.

Approved Products:

Sherwin-Williams: E90W501

4.6 MIL-DTL-53039 (Aliphatic Polyurethane, Single Component, Chemical Agent Resistant Coating)

All CARC Topcoats used are to be in accordance with MIL-DTL-53039 and listed on the Qualified Product Database (QPD) as Type III, Type IV, Type V, Type VI, or Type IX for general painting or Type VIII when field touch-up is required. These coating types are free of volatile organic hazardous air pollutants (VOHAP-free) contain polymeric flattening agents.

4.7 MIL-DTL-64159 (Water Dispersible, Aliphatic Polyurethane, Chemical Agent Resistant Coating)

All CARC Topcoats used are to be in accordance with MIL-DTL-64159 and listed on the Qualified Product Database (QPD) as Type II for general painting or Type III when field touch-up is required. These coating types are free of volatile organic hazardous air pollutants (VOHAP-free) contain polymeric flattening agents.

5.0 GENERAL REQUIREMENTS

5.1 Ferrous Metals (Hardness < 40 HRC) Mild Steel

5.1.1 Clean per applicable Method I through V, per TT-C-490. (When Method I is used, it must be in accordance with SSPC-SP5 or SSPC-SP10 to a 1.0 – 2.0 mil surface profile.)

5.1.2 Pretreat per the following:

- Apply organic epoxy zinc rich primer, per A-A-59745, or
- Zinc Phosphate per TT-C-490 Type I utilizing an activating rinse prior to phosphate and a non-chromium final rinse.

5.1.3 Prime using one of the following:

- Apply epoxy coating, corrosion inhibiting, lead and chromate free, specification MIL-DTL-53022
- Apply epoxy coating, water reducible, lead and chromate free, specification MIL-DTL-53030
- Apply waterborne cathodic epoxy electrodeposition coating, specification A-A-52474,

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