

2017 QUALIFIED PRODUCTS LIST

Edition 2017-1 (March 15, 2017)
Prepared by the:
Vermont Agency of Transportation
Research and Development Section

The following lists have been extracted from www.nepcoat.org. For the most up to date lists and testing parameters, please refer to lists A and B on this website. The lists are organized as follows:

List A: Three Coat Systems for New or Bare Steel; Inorganic Zinc Rich Primer / Epoxy or Urethane Intermediate / Aliphatic Urethane Finish
List B: Three Coat Systems for New or Bare Steel; Organic Zinc Rich Primer / Epoxy or Urethane Intermediate / Aliphatic Urethane Finish

Both lists A and B have been created for new steel or steel cleaned to white/near white quality. Please see section 513 of the "2011 Standard Specifications for Construction" for details. Systems from List A and B may be used for shop applied work, with List A systems generally providing greater performance. For field application, List B is preferred as organic zinc paints have much more forgiving application properties; however List A can also be used so long as there has been sufficient surface preparation and an increased level of care upon application is taken.


Upon the use of any product herein, the Resident Engineer is required to:

1. Verify by inspection that the material being incorporated in the project is listed on the current version of the APL. If it is not, the material or product shall be rejected.
2. Complete a form TA 556 (Project Materials Acceptance Report). The form **must** include the **exact and full product name and manufacturer**. A copy can be found in Appendix A.
3. Mail or email the TA 556 Approved Product List form to the Materials Acceptance Program – Certification Unit of the Construction and Materials Bureau.
4. The Resident Engineer should keep a copy of form TA 556 for his/her records.

Questions regarding this list should be directed to the Research and Development Section of the Policy, Planning, and Research Bureau at (802) 498-7586 or Email at AOT.ResearchSection@Vermont.gov.




Emily Parkany, P.E.
Research Manager


Date



NEPCOAT Qualified Products List A

for Protective Coatings for

NEW and 100% BARE EXISTING Steel for Bridges

NTPEP System No.	Coats	Slip Coef	Manuf'r Coating Class	VOC Tested g/L	QPL Accepted Dates
	3-COAT SYSTEM				
	TESTED AND ACCEPTED				

NEPCOAT LIST A - INORGANIC Zinc Rich Primer / Epoxy or Urethane Intermediate / Aliphatic Urethane Finish

SSC(09)-01	SHERWIN WILLIAMS COMPANY					
Primer	Zinc Clad [®] DOT Inorganic Zinc Rich Primer	B ¹	2-4	50-100	336	from 11/09/2010
Interm	Steel Spec Epoxy Intermediate		3-6	75-150	301	until mtg.
Topcoat	High Solids Polyurethane		3-5	75-125	281	fall 2017

¹Footnote 4 mils max DFT, 48 hours min cure, 4% max thinner

SSC(12)-03*	CARBOLINE COMPANY					
Primer	Carbozinc [®] 11 HS Inorganic Zinc Primer	B ¹	2-6	50-150	267	from 04/14/14
Interm	Carboguard [®] 893 Epoxy Intermediate		3-6	75-150	198	until mtg.
Topcoat	Carbothane 133 LV Aliphatic Polyurethane		3-5	75-125	245	spring 2018

¹Footnote 6 mils max DFT, 19 hrs min cure, 12% max thinner

¹Footnote Information from the Slip-Coefficient and Creep Resistance Test Certificate is given for use w/ primed bolted connections.

- NOTE 1** NEPCOAT- NORTHEAST PROTECTIVE COATINGS COMMITTEE of CT, DE, ME, MA, NH, NJ, NY, PA, RI, VT
- 2 NTPEP (Nat'l Transport'n Product Evaluat'n Program). See Structural Steel Coating test data at <http://data.ntpep.org>.
 - 3 Accelerated lab and field testing of coating systems is performed according to AASHTO NTPEP R-31 criteria.
 - 4 Systems are accepted for use on NEW and 100% BARE EXISTING steel for bridges cleaned by abrasive blasting.
 - 5 SSC(yr)-xx systems comply with AASHTO R-31 Evaluation Practice & NEPCOAT Acceptance Criteria.
 - 6 VOC values are lab test results using unthinned samples. NEPCOAT max VOC limit is 420 g/L (3.5 lb/gal). Individual state requirements for VOC limits may differ.
 - 7 Recommended DFT values are listed by manufacturer (see Product Data Sheets.)
 - 8 Any change in coating formulation from that tested will result in removal of the system from the QPL.
 - 9 The full QPL term is seven years starting from the date of acceptance until the next biannual NEPCOAT meeting.
- * Acceptance is **CONDITIONAL** pending submission within four years of successful 2-year field history. A startup list of five bridges painted with the paint system must be submitted within two years. See Acceptance Criteria.
- Note that R-31-09 Section 12.1, Requalification Testing, has been discontinued.
- es VOC value adjusted for exempt solvents



NEPCOAT Qualified Products List B

for Protective Coatings for
NEW and 100% BARE EXISTING Steel for Bridges

NTPEP System No.	Coats	Slip Coef Class	Manuf'r Coating	VOC Tested g/L	QPL Accepted Dates
3-COAT SYSTEM					
TESTED AND ACCEPTED					
NEPCOAT LIST B - ORGANIC Zinc Rich Primer / Epoxy or Urethane Intermediate / Aliphatic Urethane Finish					
SSC(10)-03	PPG/AMERON				from
	Primer Amercoat® 68HS Zinc Rich Epoxy Primer	B ¹	3-5	75-125 276	12/14/2011
	Interm Amercoat® 399 Fast Drying Epoxy		4-8	100-200 177	until mtg.
	Topcoat Amercoat® 450H Gloss Aliphatic Polyurethane		2-5	50-125 306	fall 2018
	¹ Footnote 3 mils max DFT, 7 days min cure, 3% vol max thin				
SSC(10)-05	WASSER HIGH TECH COATINGS				from
	Primer MC-Zinc 100	Ø	3-5	75-125 115 es	4/03/12
	Interm MC-Miomastic 100	no	3-5	75-125 173 es	until mtg.
	Topcoat MC-Ferrox A 100	report	2-4	50-100 144 es	spring 2019
	ØFootnote No data reported.				
SSC(11)-01*	SHERWIN WILLIAMS COMPANY				from
	Primer Zinc Clad® III HS Organic Zinc Rich Epoxy Primer	B ¹	3-5	75-125 337	10/02/12
	Interm Steel Spec Epoxy Intermediate		3-8	75-200 293	until mtg.
	Topcoat Hi-Solids Polyurethane		3-5	75-125 288	spring 2017
	¹ Footnote 5 mils max DFT, 7 days min cure, zero thinner				
SSC(11)-02	INTERNATIONAL PAINT INC				from
	Primer Interzinc® 315B Epoxy Zinc Rich	B ¹	2-6	50-150 304	10/02/12
	Interm Intergard 475HS Epoxy		4-8	100-200 187	until mtg.
	Topcoat Interthane® 870 UHS		3-5	75-125 242 es	fall 2019
	¹ Footnote 4 mils max DFT, 48 hours min cure, zero thinner				
(continues)	(List B continues)				

¹ Footnote Information from the Slip-Coefficient and Creep Resistance Test Certificate is given for use w/ primed bolted connections.

NOTE 1 NEPCOAT- NORTHEAST PROTECTIVE COATINGS COMMITTEE of CT, DE, ME, MA, NH, NJ, NY, PA, RI, VT

2 NTPEP (Nat'l Transport'n Product Evaluat'n Program). See Structural Steel Coating test data at <http://data.ntpep.org>.

3 Accelerated lab and field testing of coating systems is performed according to AASHTO NTPEP R-31 criteria.

4 Systems are accepted for use on NEW and 100% BARE EXISTING steel for bridges cleaned by abrasive blasting.

5 SSC(yr)-xx systems comply with AASHTO R-31 Evaluation Practice & NEPCOAT Acceptance Criteria.

6 VOC values are lab test results using unthinned samples. NEPCOAT max VOC limit is 420 g/L (3.5 lb/gal). Individual state requirements for VOC limits may differ.

7 Recommended DFT values are listed by manufacturer (see Product Data Sheets.)

8 Any change in coating formulation from that tested will result in removal of the system from the QPL.

9 The full QPL term is seven years starting from the date of acceptance until the next biannual NEPCOAT meeting.

* Acceptance is CONDITIONAL pending submission within four years of successful 2-year field history. A startup list of five bridges painted with the paint system must be submitted within two years. See Acceptance Criteria.

Note that R-31-09 Section 12.1, Requalification Testing, has been discontinued.

es VOC value adjusted for exempt solvents



NEPCOAT Qualified Products List B

for Protective Coatings for
NEW and 100% BARE EXISTING Steel for Bridges

NTPEP System No.	Coats	Slip Coef Class	Manuf'r Coating	VOC Tested g/L	QPL Accepted Dates
	3-COAT SYSTEM				
	TESTED AND ACCEPTED				

NEPCOAT LIST B - ORGANIC Zinc Rich Primer / Epoxy or Urethane Intermediate / Aliphatic Urethane Finish

SSC(04)-03	SHERWIN WILLIAMS COMPANY				from	
SSC(11)-03	Primer Zinc Clad [®] III HS Organic Zinc Rich Epoxy Primer	B ¹	3-5	75-125	329	10/02/12
	Interm Macropoxy [®] 646 Fast Cure Epoxy		3-10	75-250	238	until mtg.
	Topcoat Acrolon [™] 218 HS Acrylic Polyurethane		3-6	75-150	263	spring 2017
	¹ Footnote 5 mils max DFT, 7 days min cure, zero thinner					
SSC(12)-04*	CARBOLINE COMPANY				from	
	Primer Carbozinc [®] 859 Organic Zinc Rich Epoxy Primer	B ¹	3-10	75-250	322	04/14/14
	Interm Carboguard [®] 893 Epoxy Intermediate		3-6	75-150	207	until mtg.
	Topcoat Carbothane 133 VOC Aliphatic Polyurethane		3-5	76-127	185 es	spring 2018
	¹ Footnote 6 mils max DFT, 4 days min cure, 10% vol max thin					

¹ Footnote Information from the Slip-Coefficient and Creep Resistance Test Certificate is given for use w/ primed bolted connections.

- NOTE 1 NEPCOAT- NORTHEAST PROTECTIVE COATINGS COMMITTEE of CT, DE, ME, MA, NH, NJ, NY, PA, RI, VT
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 - 7 Recommended DFT values are listed by manufacturer (see Product Data Sheets.)
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- Note that R-31-09 Section 12.1, Requalification Testing, has been discontinued.
- es VOC value adjusted for exempt solvents



NEPCOAT Acceptance Criteria List A, B, C, D

for Protective Coatings for
NEW and 100% BARE EXISTING Steel for Bridges

AASHTO R31-Testing Standard & NEPCOAT Acceptance Criteria (3/16/04, 2/15/05, 10/16/08, 4/7/09, 10/12/11)

*** **PERFORM ALL REQUIRED TESTS FOR EACH COATING SYSTEM.** ***

TEST NO. 1 - SLIP COEFFICIENT - Perform Slip Co test on the same primer batch used for the other tests.
- The Slip Co test results may be applied to more than one system provided all Primer samples come from the same container.

<u>Primer</u>	(min.)
IOZ	Acceptance criteria: Required to have Class B Slip coefficient min. 0.5
OZ	Acceptance criteria: None. Report results only. Class B Slip Co. recommended but not required.

TEST NO. 2 - SALT FOG RESISTANCE (ASTM B117)

Delamination Acceptance criteria: no delamination allowed
Rust / Blistering Acceptance criteria (max.):

	//----- RUST CRITERIA -----//	-- BLISTER CRITERIA--						
<u>Primer</u>	<u>System</u>	<u>@ Hrs</u>	<u>max creep</u>	<u>ave creep</u>	<u>% length</u>	<u>in scribe</u>	<u>@ Hrs</u>	<u>Convers'n #</u>
IOZ	P-I-T	5000	4 mm	2 mm	not req'd	not req'd	4000	8
OZ	P-I-T	5000	8 mm	4 mm	not req'd	not req'd	4000	7

TEST NO. 3 - CYCLIC WEATHERING RESISTANCE (ASTM D5894)

Delamination Acceptance criteria: no delamination allowed
Rust / Blistering Acceptance criteria (max.):

	//----- RUST CRITERIA -----//	-- BLISTER CRITERIA--						
<u>Primer</u>	<u>System</u>	<u>@ Hrs</u>	<u>max creep</u>	<u>ave creep</u>	<u>% length</u>	<u>in scribe</u>	<u>@ Hrs</u>	<u>Convers'n #</u>
IOZ	P-I-T	5040	4 mm	2 mm	not req'd	not req'd	4032	9
OZ	P-I-T	5040	8 mm	4 mm	not req'd	not req'd	4032	8

GLOSS value Acceptance criteria: Report results only
GLOSS % Retent'n Acceptance criteria: Report results only
COLOR Change, Δe Acceptance criteria: Report results only

TEST NO. 4 - ABRASION RESISTANCE (ASTM D4060) – NOT REQUIRED

Weight Loss Acceptance criteria: Test discontinued
Wear Index Acceptance criteria: Test discontinued

TEST NO. 5 - ADHESION (ASTM D4541)

Pull-Off Strength Acceptance criteria (min.) for both primer and PIT panels:
IOZ 2.4 MPa (350 psi)
OZ 4.1 MPa (600 psi)

TEST NO. 6 - FREEZE THAW STABILITY

Pull-Off Strength Acceptance criteria: achieve min. Test 5 req'd PIT adhesion results and fall within 60% of Test 5 values

(continued)



NEPCOAT Acceptance Criteria List A, B, C, D

for Protective Coatings for
NEW and 100% BARE EXISTING Steel for Bridges

AASHTO R31-09 Testing Standard & NEPCOAT Acceptance Criteria (3/16/04, 2/15/05, 10/16/08, 4/7/09, 10/12/11)

TEST NO. 7 - COATING IDENTIFICATION TESTS

- VOC Acceptance criteria: Max. 420 g/L (3.5 lb/gal). Individual state requirements may differ.
- Coating properties Acceptance criteria: Report only
- Coating thickness Acceptance criteria: A 2-coat system shall be tested and applied at min. total 9 mils DFT.

TEST NO. 8 - ATMOSPHERIC EXPOSURE (TWO YEAR) at outdoor site: – NOT REQUIRED

Acceptance criteria: Test discontinued

ITEM NO. 9 - FIELD HISTORY (TWO YEAR)

Acceptance criteria: (All systems after SSC 06-05) The coating manufacturer shall submit two notifications;

- (1) a startup list within two years of product acceptance identifying five bridges (in a cold/wet climatic region) which have been coated with a minimum of 400 liters (100 gallons) of the coating system (i.e. total volume of primer, intermediate and topcoat); and
- (2) the same list of bridges within four years of product acceptance after the system has two years (min.) of successful field performance. "Successful performance" is simply defined as whether the Owner is satisfied with its application and performance to date, and whether the Owner would recommend the use of the coating again.

PRODUCT VERIFICATION TESTING

AASHTO R-31-09 Appendix X1 recommends that the Owner perform product verification testing for determining if the coatings supplied to a project are the same quality as the manufacturer's materials originally tested and certified for acceptance.

The R-31-09 Test 7- Coating Identification Tests are described in Sect. 9.7 and Appendix X1, and the lab test results are given in NTPEP DataMine (<http://data.ntpep.org>) along with the manufacturer's listed values.

When the Owner performs verification testing, the following tolerances apply:

<u>Verification Test</u>	<u>R-31-09 Section</u>	<u>R-31-09 App X1</u>	<u>ASTM Test</u>	<u>DataMine Test 7</u>	<u>Tolerance *</u>
Total solids (% by mass)	9.7.9.1	X1.1.1.6	D 2369	Line 2	± 5 %
Pigment (% by mass)	9.7.9.5	X1.1.1.8	D 2371	" 3	± 5 %
Mass per volume (g/L)	9.7.9.8	X1.1.1.5	D 1475	" 6	± 2 %
Viscosity (Stormer)	9.7.9.9	X1.1.1.4	D 562	" 7	± 8 %

* The tolerance is applied to the DATAMINE "test result" value (not the manufacturer's "listed value").

These tolerances apply to the primer and intermediate coats each in their mixed condition (not Part A, Part B components). For topcoats, if the color is different from the original color in NTPEP testing, then these tolerances apply to the Owner's verification test values the first time a particular color is used.

Note 1. Test Criteria: Two of three panels must pass for each test to pass. (e.g. Tests 2, 3, 5, 6)

Note 2. Materials: NEPCOAT does not accept waterborne coatings for the QPL for use in the Northeast States.

State of Vermont
AGENCY OF TRANSPORTATION
RESEARCH & DEVELOPMENT SECTION
PROJECT MATERIALS ACCEPTANCE REPORT

Project Name: _____ **Project Number:** _____

The following materials, covered by the Agency's "Approved Products List", were inspected and authorized for use on the above project.

<u>Project Line No.</u>	<u>Item No. & Name:</u>	<u>Product Name:</u>	<u>Quantity:</u>	<u>Manufacturer/Supplier:</u>
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Additional Information:

Date: _____

Submitted by:

Resident Engineer

cc: C & I.A. Unit Supervisor (Original document)
RE project file
Regional project file

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION & MATERIALS BUREAU
Materials Acceptance Program

TA556 Approved Produce List Procedure

Upon the use of a product included on the Approved Product List (APL), the Resident Engineer shall:

1. Verify that the material being incorporated in the project is on the APL that is applicable at the time of material installation.
2. Complete a TA556 (Approved Product List) form. More than one pay item can be placed on each individual form. Please include the manufacturer and the quantity installed as well as the project (not contract) line number.
3. Email to Certification Unit at AOT.MaterialsCertifications@vermont.gov ; with a cc to the appropriate Regional Construction office. If necessary the form can be mailed via the USPS to the address below.

Mailing address:

Vermont Agency of Transportation
Materials Acceptance Program
Certifications Unit
2178 Airport Road, Unit B
Berlin, Vermont 05641-8628

4. The Resident Engineer should keep a copy of TA556 (Approved Product List) form for their records.

NOTE: The Approved Products List (APL) is a listing of products and materials that have been tested and/or evaluated and have been deemed satisfactory for use on Agency projects. Materials required to be on the APL do not have certification requirements, therefore material substitutions are not allowed.

However, should a product not be listed that is desired to be used, the manufacturer or distributor can submit a *New Product Submittal Form*, along with materials safety data sheets and any pertinent information necessary to determine acceptable performance. The New Product Submittal Form should be submitted to the Research Engineer in the Research Section. A determination of its use and/or future testing requirements prior to inclusion on the APL will then be made at a meeting of the New Products Committee.