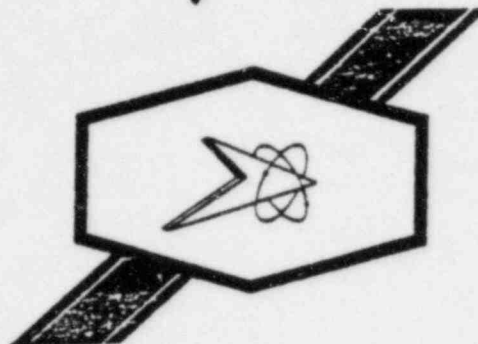


Imperial



TECHNICAL REPORT

NUMBER

469-81

TITLE

Recoatability of Aged Mutec 6 and Mutec 1201 films:
Radiation Tolerance and DBA Results (ORNL)
FOR

CUSTOMER

Submitted by: Gerald E. Arnold

Accepted by: *Gerald E. Arnold*

Approved: *[Signature]*

Date: February 2, 1981

SOUTHERN IMPERIAL COATINGS CORPORATION, INC.
P. O. Box 29077, * New Orleans, Louisiana 70189
Phone: (504) 254-1433

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PDR FOIA
GARDEB5-59 PDR

SCOPE - To evaluate the recoatability of Nutec 6 and Nutec 1201, aged for various time intervals, with minimal surface preparation between the aged film and the touch-up coating.

BACKGROUND

AND COMMENTS - The data in this report is valuable because recoating is a common occurrence at the jobsite. Recoating is usually required for the following reasons:

- A) Low film thickness/buildup required
- B) Coating damage and repair
- C) Repair of pinholes or surface defects
- D) Cosmetic application

Many epoxy coating systems (primer and topcoat) impose maximum recoat times, after which the aged film must be "etched" (i.e. sweep blasted) to provide a anchor pattern for subsequent coats. This test was designed to evaluate minimal surface preparation methods - solvent wiping, hand sanding - and no preparation at all.

PROCEDURE - The test panels used in this evaluation were prepared by one of the following methods prior to recoating:

1. Hand sanding - The aged coating was lightly snaded with a fine sand paper to provide a "tooth" for the subsequent coating(s). The panel was then wiped clean with DL-6A solvent to remove dust resulting from the sanding procedure.
2. Solvent wiping - The aged coating was solvent wiped with a clean cloth, dampened with DL-6A. The surface was allowed to dry before the subsequent coat was applied.

The remaining panels received no special surface preparation.

Radiation Tolerance
and
Design Basis Accident Procedures
Statement from ORNL

Manufacturer: Imperial
New Orleans, LA

Analytical Chemistry Division
Oak Ridge National Laboratory
Date: 11/13/80

Report of Irradiation and DBA Testing

The irradiation and design basis accident (DBA) tests are conducted, respectively, in accordance with Bechtel Corp. *Standard Specification Coatings for Nuclear Power Plants*, specs. CP-951 and CP-956 (or with modifications as noted in Table 2, DBA test conditions). The tests are designed to meet the specifications set in both A.N.S.I. report N 101.2-1972, *Protective Coatings (Paints) for Light Water Nuclear Reactor Containment Facilities*, and N 5.12-1974, *Protective Coatings (Paints) for the Nuclear Industry*. The DBA test spray solution and the test conditions are listed in Tables 1 and 2. After both the DBA and the irradiation tests, the coatings are examined for signs of chalking, blistering, cracking, peeling, delamination, and flaking, according to ASTM standards where applicable. All test panels are returned to the coating manufacturer.

The irradiation tests are run using a spent fuel assembly, removed from the High-Flux Isotope Reactor (HFIR) at ORNL, as the source of radiation. These fuel assemblies are stored under 20 feet of demineralized water. The fuel is 93% enriched U^{235} as U_3O_8 combined with aluminum. The spent fuel assemblies are removed after each 23-megawatt day period. Irradiation is done using the gamma energy from the accumulated mixed fission products. This more readily simulates conditions around a reactor than does a cobalt source. Also, the higher gamma activity affords shorter irradiation time to achieve accumulated doses. The dose rate four days after removal of a fuel assembly from the reactor is 1×10^6 rads/hr.

The fuel assembly is 20 inches high. A 20-foot long, 3-1/2-inch diameter pipe, with one end capped, is used for the air irradiation tests. The capped end is lowered into the four-inch opening of the center of the fuel assembly. The open end, above the water level, is covered with an "O" ring sealed flange to which is attached a steel cable and an air outlet hose. The air inlet is located at the bottom of the pipe. The test specimens are connected to the bottom of the cable and lowered into the radiation field. Also at the center of the fuel assembly is a stainless steel clad cadmium tube used as a neutron absorber. This prevents contamination of the test specimens by induced radiation.

Evaluated Ralph F. Hyle
Approved L. T. Cochran

Manufacturer: Imperial
New Orleans, LA

Analytical Chemistry Division
Oak Ridge National Laboratory
Date: 11/13/80

ORNL Log Book No. A 7562; A10-29-80

Table 1. DBA solution composition, distilled water

Reagent	Concentration
Boric acid, H_3BO_3	6200 ppm
Hydrazine, NH_2NH_2	50 ppm
Trisodium phosphate, $Na_3PO_4 \cdot 12H_2O$	Required to adjust pH to 9.7

Table 2. DBA test conditions

Time	Temperature (°F)	Pressure (psig)	Comments
Start	214		Autoclave preheated.
58 s	385	68	Steam injected.
10 min	385	70	Pressure maintained by relief valve.
4 min	385-340	70	
6 h	340	70	
20 s	220	30	Spray solution added at 75°F.
20 min	220-250	30	Adjusted pressure with N_2 .
4 days	250	30	
20 s	170	-15	Fresh spray solution added after draining autoclave.
25 min	170-200	10	
3 days	200	10	

Evaluated

Robert L. Apple

Approved

W. T. Cochran

Panel Preparation Sheets

DBA AND RADIATION TOLERANCE

TEST PANEL PREPARATION DATA

50 Month Intercoat Period

1. PRODUCT TO BE TESTED: Nutec 6/1201/Solvent Wipe-1201 and Nutec 6/1201/No Prep -1201
2. TYPE SUBSTRATE: ASTM A-36 Carbon Steel SIZE: 2" x 4" x 1/4"
3. SURFACE PREPARATION (Describe): Panel was abrasively blasted per SSPC-SP-10 near
white blast, with a profile of 20 mils.
4. PRODUCT DATA: SAMPLE NO.(s): 681
5. DATE AND TIME CURING COMPOUND OR PRIMER APPLIED: 07/29/76

DAT	PRODUCT	PRODUCT CODES	BATCH #	APPLICATION METHOD	CONDITIONS		THICKNESS (ins.)	TIME & DATE APPLIED
					R/M(°F)	R.H.		
1	Nutec-	6	6169 6170	Spray	82°	73%	F) .0030-.0034 R) .0030-.0034	07/29/76
2	Nutec	1201*	6171 6172	Spray	92°	59%	F) .0088-.0092 R) .0052-.0063	08/05/76
3	Nutec	1201	1958 1959	Spray	80°	61%	F) .0045-.0055 R) .0045-.0055	10/08/80

*NOTE: Aged 1201 on front of panel was solvent wiped with Imperial's DL-6A.
1201 on rear received no preparation.

Total Dry Film Thickness Range: .0015 - .0018 Inches

CURING CONDITIONS: AMBIENT TEMP. 80 - 95 °F REL. HUMIDITY 55 - 75
MINIMUM CURE 5 DAYS

TEST PROCEDURE: DBA - Radiation Tolerance

TESTING PERFORMED BY: Oak Ridge National Laboratories DATE SUBMITTED 10/13/80

APPROVED: Frederic E. Arnold

TEST REPORT NO. 469-81

DBA AND RADIATION TOLERANCE

TEST PANEL PREPARATION DATA

50 Month Intercoat Period

1. PRODUCT TO BE TESTED: Nutec 6/1201/Sanded/1201 and Nutec 6/1201/No. Prep./1201
2. TYPE SUBSTRATE: ASTM A-36 Carbon Steel SIZE: 2" x 4" x 1/4"
3. SURFACE PREPARATION (Describe): Panel was abrasive blasted per SSPC-SP-10, near white blast, with a profile of 2.0 mils.
4. PRODUCT DATA: SAMPLE NO.(s): 685
5. DATE AND TIME CURING COMPOUND OR PRIMER APPLIED: 07/29/76

COAT	PRODUCT	PRODUCT CODES	BATCH #	APPLICATION METHOD	CONDITIONS R/M(°F) %R.H.	THICKNESS (ins.)	TIME & DATE APPLIED
1	Nutec	6	6164	Spray	82° 73% F)	.0030-.0034 R) .0027-.0031	07/29/76
2	Nutec	1201*	6171 6172	Spray	72° 59% F)	.0079-.0083 R) .0082-.0086	08/05/76
3	Nutec	1201	1958 1959	Spray	80° 61% F)	.0050-.0060 R) .0050-.0060	10/08/80 2:45

*NOTE: Front side was hand sanded prior to recoating.
Rear side received no preparation between coats.

6. CURING CONDITIONS: AMBIENT TEMP. 80 - 95 °F REL. HUMIDITY 55 - 75
MINIMUM CURE 5 DAYS

7. TEST PROCEDURE: DBA - Radiation Tolerance

8. TESTING PERFORMED BY: Oak Ridge National Laboratories DATE SUBMITTED 10/13/80

APPROVED: Harold E. Arnold
TEST REPORT NO. 469-81

DBA AND RADIATION TOLERANCE

TEST PANEL PREPARATION DATA

31 Month Intercoat Period

1. PRODUCT TO BE TESTED: Nutec 6/No Prep./1201 and Nutec 6/No. Prep./6/1201
2. TYPE SUBSTRATE: ASTM A-36 Carbon Steel SIZE: 2" x 4" x 1/4"
3. SURFACE PREPARATION (Describe): Panel was abrasive blasted per SSPC-SP-10, near white blast, with a profile of 2.0 mils.
4. PRODUCT DATA: SAMPLE NO.(s): 3826
5. DATE AND TIME CURING COMPOUND OR PRIMER APPLIED: 03/14/78

<u>QAT</u>	<u>PRODUCT</u>	<u>PRODUCT CODES</u>	<u>BATCH #</u>	<u>APPLICATION METHOD</u>	<u>CONDITIONS R/M(°F) & R.H.</u>	<u>THICKNESS (ins.)</u>	<u>TIME & DATE APPLIED</u>
1	Nutec	6	6169 3889	Spray	78° 63%	F) .0033-.0036 B) .0060-.0070	03/14/78
NOTE: No surface preparation on aged Nutec #6 Primer							
2	Nutec	6	2067 8401	Spray	80° 61%	R) .0040-.0050*	10/08/80 3:15
3	Nutec	1201	1958 1959	Spray	76° 74%	F) .0050-.0060 B) .0050-.0060	10/09/80 10:30

*Fresh Nutec #6 applied only to back of panel.

- CURING CONDITIONS: AMBIENT TEMP. 75 - 85 °F REL. HUMIDITY 60 - 75
MINIMUM CURE 4 DAYS
- TEST PROCEDURE: DBA
- TESTING PERFORMED BY: Oak Ridge National Laboratories DATE SUBMITTED 10/13/80

APPROVED: Donald C. Arnold

TEST REPORT NO. 469-81

DBA AND RADIATION TOLERANCE

TEST PANEL PREPARATION DATA

8 Month Intercoat Period

1. PRODUCT TO BE TESTED: Nutec 6/1201/Solvent Wiped 1201
2. TYPE SUBSTRATE: ASTM A-36 Carbon Steel SIZE: 2" x 4" x 1/4"
3. SURFACE PREPARATION (Describe): Panel was abrasive blasted per SSPC-SP-10 near white blast, with a 2.0 mil profile.
4. PRODUCT DATA: SAMPLE NO.(s): 6069
5. DATE AND TIME CURING COMPOUND OR PRIMER APPLIED: 02/08/80

COAT	PRODUCT	PRODUCT CODES	BATCH #	APPLICATION METHOD	CONDITIONS R/M(°F) & R.H.	THICKNESS (ins.)	TIME & DATE APPLIED
1	Nutec	6	1953 1954	Spray	59° 78%	F) .0030-.0040 R) .0030-.0035	02/08/80
2	Nutec	1201*	6637 6311	Spray	48° 59%	F) .0048-.0052 R) .0040-.0045	02/11/80
3	Nutec	1201	1958 1959	Spray	76° 74%	F) .0050-.0060 R) .0060-.0070	10/08/80

*NOTE: Aged 1201 was solvent wiped with Imperial DL-6A prior to recoating.

Total Dry Film Thickness Range: .013 - .015 inches.

5. CURING CONDITIONS: AMBIENT TEMP. 45 - 80 °F REL. HUMIDITY 55 - 80
- MINIMUM CURE 5 DAYS
7. TEST PROCEDURE: DBA
8. TESTING PERFORMED BY: Oak Ridge National Laboratories DATE SUBMITTED 10/11/80

APPROVED: Gerald E. Arnold

TEST REPORT NO. 469-81

DBA AND RADIATION TOLERANCE

TEST PANEL PREPARATION DATA

8 Month Intercoat Period

1. PRODUCT TO BE TESTED: Nutec 6/1201/Solvent Wiped-1201
2. TYPE SUBSTRATE: ASTM A-36 Carbon Steel SIZE: 2" x 4" x 1/4"
3. SURFACE PREPARATION (Describe): Panel was abrasive blasted per SSPC-SP-10, near white blast, with a profile of 2.0 mils.
4. PRODUCT DATA: SAMPLE NO. (s): 6070
5. DATE AND TIME CURING COMPOUND OR PRIMER APPLIED: 02/08/80

CAT	PRODUCT	PRODUCT CODES	BATCH #	APPLICATION METHOD	CONDITIONS		THICKNESS (ins.)	TIME & DATE APPLIED
					R/M(°F)	%R.H.		
1	Nutec	6	1953 1954	Spray	59°	78%	F) .0030-.0040 R) .0030-.0035	02/08/80
2	Nutec	1201*	6637 6333	Spray	48°	59%	F) .0048-.0052 R) .0040-.0045	02/11/80
3	Nutec	1201	1958 1959	Spray	76°	74%	F) .0045-.0055 R) .0060-.0070	10/08/80

*NOTE: Aged 1201 was solvent wiped with Imperial's DL-6A prior to recoating.

6. CURING CONDITIONS: AMBIENT TEMP. 45 - 80 °F REL. HUMIDITY 55 - 80
MINIMUM CURE DAYS
7. TEST PROCEDURE: DBA
8. TESTING PERFORMED BY: Oak Ridge National Laboratories DATE SUBMITTED 10/13/80

APPROVED: *Charles E. Arnold*
TEST REPORT NO. 469-81

DBA AND RADIATION TOLERANCE

TEST PANEL PREPARATION DATA

8 Month Intercoat Period

1. PRODUCT TO BE TESTED: Nutec 6/1201/Sanded-1201/1201
2. TYPE SUBSTRATE: ASTM A-36 Carbon Steel SIZE: 2" x 4" x 1/4"
3. SURFACE PREPARATION (Describe): Panel was abrasive blasted per SSPC-SP-10 near white blast, with a surface profile of 2.0 mils
4. PRODUCT DATA: SAMPLE NO.(s): 6071
5. DATE AND TIME CURING COMPOUND OR PRIMER APPLIED: 02/08/80

<u>LOT</u>	<u>PRODUCT</u>	<u>PRODUCT CODES</u>	<u>BATCH #</u>	<u>APPLICATION METHOD</u>	<u>CONDITIONS R/M(°F) & R.H.</u>	<u>THICKNESS (Ins.)</u>	<u>TIME & DATE APPLIED</u>
1	Nutec	6	1953 1954	Spray	59° 78% F) R)	.0025-.0030 .0025-.0030	02/08/80
2	Nutec	1201*	6637 6333	Spray	48° 59% F) R)	.0045-.0050 .0045-.0050	02/11/80
3	Nutec	1201	1958 1959	Spray	80° 61% F) R)	.0045-.0055 .0050-.0060	10/08/80
4	Nutec	1201	1958 1959	Spray	76° 74% F) R)	.0040-.0050 .0050-.0060	10/09/80

*NOTE: Aged 1201 was hand snaded prior to recoating.

6. CURING CONDITIONS: AMBIENT TEMP. 45 - 85 °F REL. HUMIDITY 55 - 80
MINIMUM CURE 4 DAYS
7. TEST PROCEDURE: DBA
8. TESTING PERFORMED BY: Oak Ridge National Laboratories DATE SUBMITTED 10/13/80

APPROVED: *Paul E. Arnold*
TEST REPORT NO. 469-81

DBA AND RADIATION TOLERANCE

TEST PANEL PREPARATION DATA

8 Month Intercoat Period

1. PRODUCT TO BE TESTED: Nutec 6/Nutec 1201/Nutec 1201/Nutec 1201
2. TYPE SUBSTRATE: ASTM A-36 Carbon Steel SIZE: 2" x 4" x 1/4"
3. SURFACE PREPARATION (Describe): Panel was abrasive blasted per SSPC-SP-10, near white blast, with a profile of 2.0 mils.
4. PRODUCT DATA: SAMPLE NO.(s): 6072
5. DATE AND TIME CURING COMPOUND OR PRIMER APPLIED: 02/08/80

<u>DATE</u>	<u>PRODUCT</u>	<u>PRODUCT CODES</u>	<u>BATCH #</u>	<u>APPLICATION METHOD</u>	<u>CONDITIONS R/M(°F) & R.H.</u>	<u>THICKNESS (ins.)</u>	<u>TIME & DATE APPLIED</u>
1	Nutec	6	1953 1954	Spray	59° 78%	F) .0025-.0030 R) .0025-.0030	02/08/80
2	Nutec	1201	6637 6333	Spray	48° 59%	F) .0045-.0050 R) .0045-.0050	02/11/80
NOTE: Aged 1201 was hand sanded prior to recoating.							
3	Nutec	1201	1958 1959	Spray	80° 61%	F) .0040-.0050 R) .0050-.0060	10/08/80
4	Nutec	1201	1958 1959	Spray	76° 74%	F) .0040-.0050 R) .0050-.0060	10/09/80

6. CURING CONDITIONS: AMBIENT TEMP. 45 - 85 °F REL. HUMIDITY 55 - 80 %
MINIMUM CURE 4 DAYS

7. TEST PROCEDURE: DBA

8. TESTING PERFORMED BY: Clark Ridge National Laboratories DATE SUBMITTED 10/11/80

APPROVED: Charles E. Arnold

TEST REPORT NO. 469-81

DBA AND RADIATION TOLERANCE

TEST PANEL PREPARATION DATA

8 Month Intercoat Period

1. PRODUCT TO BE TESTED: Nutec 6/1201/Sanded-6.1201 and Nutec 6/1201/Solvent wiped-6/1201
2. TYPE SUBSTRATE: ASTM A-36 Carbon Steel SIZE: 2" x 4" x 1/4"
3. SURFACE PREPARATION (Describe): Panel was abrasively blasted per SSPC-SP-10 near white blast, with a profile of 1.5 mils.
4. PRODUCT DATA: SAMPLE NO.(s): 6073
5. DATE AND TIME CURING COMPOUND OR PRIMER APPLIED: 02/08/80

COAT	PRODUCT	PRODUCT CODES	BATCH #	APPLICATION METHOD	CONDITIONS R/M(°F) & R.H.	THICKNESS (ins.)	TIME & DATE APPLIED
1	Nutec	6	1953 1954	Spray	59° 78%	F) .0025-.0030 R) .0025-.0030	02/08/80
2	Nutec	1201	6637 6333	Spray	48° 59%	F) .0045-.0050 R) .0045-.0050	02/11/80
NOTE: Front - aged 1201 was hand sanded prior to application of Nutec #6 Rear - aged 1201 was solvent wiped prior to application of Nutec #6							
3	Nutec	6	2067 8401	Spray	80° 61%	F) .0030-.0035 R) .0040-.0045	10/08/80
4	Nutec	1201	1958 1959	Spray	76° 74%	F) .0045-.0050 R) .0050-.0060	10/09/80

5. CURING CONDITIONS: AMBIENT TEMP. 45 - 85 °F REL. HUMIDITY 55 - 80
MINIMUM CURE 4 DAYS

7. TEST PROCEDURE: DBA

8. TESTING PERFORMED BY: Oak Ridge National Laboratories DATE SUBMITTED 10/13/80

APPROVED: Sheld E Arnold

TEST REPORT NO. 469-R1

DBA AND RADIATION TOLERANCE

TEST PANEL PREPARATION DATA

8 Month Intercoat Period

1. PRODUCT TO BE TESTED: Nutec 6/1201/Sanded-6/1201 and Nutec 6/1201/Solvent Wiped-6/1201
2. TYPE SUBSTRATE: ASTM A-36 Carbon Steel SIZE: 2" x 4" x 1/4"
3. SURFACE PREPARATION (Describe): Abrasive blasted per SSPC-SP-10 near white blast,
with a surface profile of 2.0 mils.
4. PRODUCT DATA: SAMPLE NO.(s): 6074
5. DATE AND TIME CURING COMPOUND OR PRIMER APPLIED: 02/08/80

CAT	PRODUCT	PRODUCT CODES	BATCH #	APPLICATION	CONDITIONS		THICKNESS (ins.)	TIME & DATE APPLIED
				METHOD	R/M(°F)	%R.H.		
1	Nutec	6	1953 1954	Spray	59°	.78%	F) .0030-.0035 R) .0035-.0040	02/08/80
2	Nutec	1201	6637 6333	Spray	48°	59%	F) .0040-.0045 R) .0035-.0040	02/11/80
NOTE: Front - aged 1201 was hand sanded prior to application of Nutec #6. Rear - aged 1201 was solvent wiped prior to application of Nutec #6.								
3	Nutec	6	2067 8401	Spray	80°	61%	F) .0030-.0035 R) .0045-.0050	10/08/80
4	Nutec	1201	1958 1959	Spray	76°	74%	F) .0045-.0050 R) .0050-.0060	10/09/80

CURING CONDITIONS: AMBIENT TEMP. 45 - 85 °F REL. HUMIDITY 55 - 80
MINIMUM CURE 4 DAYS

TEST PROCEDURE: DBA

TESTING PERFORMED BY: Oak Ridge National Laboratories DATE SUBMITTED 10/13/80

APPROVED: Heald E. Arnold
TEST REPORT NO. 469-81

Radiation Tolerance Results

Manufacturer: Imperial
New Orleans, LA

Analytical Chemistry Division
Oak Ridge National Laboratory
Date: 11/13/80

System Identification

x Steel panel Concrete block

6/1201 (3 yrs)/1201

Radiation Tolerance Test Results

ORNL Master Analytical Manual Method No. 2 0921, Bechtel Corp. Spec. No. CP-951.
ORNL Log Book No. A 7562; A10-17-80

Initial dose rate: 1.2×10^7 rad/hour

Tested conducted in: x air water

<u>Sample No.</u>	<u>Cumulative dose rate: comments</u>	
	<u>1×10 rads</u>	<u>1×10^9 rads</u>
681		Front: coatings intact, no defects. Rear: coatings intact, no defects.
685		Front: coatings intact, no defects. Rear: coatings intact, no defects.

Evaluated

Robert P. Hopp

Approved

L.T. Corbin

Manufacturer: Imperial
New Orleans, Louisiana

Analytical Chemistry Division
Oak Ridge National Laboratory
Date: 11/13/80

System Identification

x Steel panel, Concrete block

6 (2 yrs)/6-1201, 1201

Radiation Tolerance Test Results

ORNL Master Analytical Manual Method No. 2 0921, Bechtel Corp. Spec. No. CP-951.
ORNL Log Book No. A 7562; A10-17-80

Initial dose rate: 1.2×10^7 rad/hour

Tested conducted in: x air water

<u>Sample No.</u>	<u>Cumulative dose rate: comments</u>
	<u>1×10^8 rads</u> <u>1×10^9 rads</u>

3826

Front: coatings intact, no defects.
Rear: coatings intact, no defects.

Evaluated

Approved

Roger L. Apple
L. T. Corbin

DBA Results

Recoatability of 50 Month Nutec 6/1201 Panels

Manufacturer: Imperial
New Orleans, LA

Analytical Chemistry Division
Oak Ridge National Laboratory
Date: 11/13/80

System Identification

6/1201 (3 yrs)/1201

x Steel panel Concrete block

DBA Test Results

ORNL Master Analytical Manual Method No. 2 0922.
ORNL Log Book No. A 7562; A10-29-80

Sample No. DBA phase

Comments

681*
(solvent)

spray

Front: coatings intact, no defects.
Rear: single blister, #6.

685*
(sand)

spray

Front: coatings intact, no defects.
Rear: coatings intact, no defects.

*Irradiated.

Evaluated

Ralph F. Apple

Approved

L. T. Collins

DBA Results

Recoatability of 31 Month Nutec 6 Panel -

Manufacturer: Imperial
New Orleans, LA

Analytical Chemistry Division
Oak Ridge National Laboratory
Date: 11/13/80

System Identification

x Steel panel Concrete block

6 (2 yrs)/6-1201, 1201

DBA Test Results

ORNL Master Analytical Manual Method No. 2 0922.
ORNL Log Book No. A 7562; A10-29-80

<u>Sample No.</u>	<u>DBA phase</u>	<u>Comments</u>
3826*	spray	Front: coatings intact, no defects. Rear: coatings intact, no defects.

*Irradiated.

Evaluated Ralph L. Apple

Approved Lu T. Carlson

DBA Results

Recoatability of 8 Month Nutec 6/1201 Panels

Manufacturer: Imperial
New Orleans, LA

Analytical Chemistry Division
Oak Ridge National Laboratory
Date: 11/13/80

System Identification

x Steel panel Concrete block

6/1201 (9 mo)/1201; 6/1201

DBA Test Results

ORNL Master Analytical Manual Method No. 2 0922.
ORNL Log Book No. A 7562; A10-29-80

<u>Sample No.</u>	<u>DBA phase</u>	<u>Comments</u>
6069	spray	Front: coatings intact, no defects. Rear: blisters, #2 medium dense.
6070	spray	Front: coatings intact, no defects. Rear: coatings intact, no defects.
6071	spray	Front: coatings intact, no defects. Rear: single blister, #6.
6072	spray	Front: coatings intact, no defects. Rear: coatings intact, no defects.
6073	spray	Front: coatings intact, no defects. Rear: single blister, #6.
6074	spray	Front: coatings intact, no defects. Rear: single blister, #6.

Evaluated

R. L. Apple

Approved

L. F. Corbin

SUMMARY OF RESULTS

<u>Panel Number</u>	<u>Original System</u>	<u>Age</u>	<u>Surface Preparation</u>	<u>Touch-up System</u>	<u>Results</u>
681(F)*	6/1201	50 Mos.	Solvent wiped	1201	No defects
681(B)*	6/1201	50 Mos.	No prep	1201	Single #6 blister
685(F)*	6/1201	50 Mos.	Hand sanded	1201	No defects
685(B)*	6/1201	50 Mos.	No prep	1201	No defects
3826*	6	31 Mos.	No prep	1201	No defects
6069	6/1201	8 Mos.	Solvent wiped	1201	No defects (front) #2 Medium (back)
6070	6/1201	8 Mos.	Solvent wiped	1201	No defects (both sides)
6071	6/1201	8 Mos.	Hand sanded	1201/1201	No defects (front) Single #6 blister (back)
6072	6/1201	8 Mos.	Hand sanded	1201/1201	No defects (both sides)
6073(F)	6/1201	8 Mos.	Hand sanded	6/1201	No defects
6073(B)	6/1201	8 Mos.	Solvent wiped	6/1201	Single #6 blister
6074(F)	6/1201	8 Mos.	Hand sanded	6/1201	No defects
6074(B)	6/1201	8 Mos.	Solvent wiped	6/1201	Single #6 blister

*Irradiated prior to DBA testing to 1×10^9 rads.

With the exception of the back of panel #6069, all panels exhibited excellent results, regardless of the surface preparation performed. Close inspection of the #2 blisters on panel #6069 revealed that the defects emanated from the substrate and did not result from recoating. Surface profile, steel preparation or possible dry spraying of the original #6 primer is the probable culprit.

DISCUSSION OF RESULTS

The results of this test demonstrate that both Nutec 6 and Nutec 1201 can be topcoated, following indefinite intercoat periods, without the need for special surface preparation methods.

Solvent wiping should only be required to remove visible contaminants on the aged coating - adhered dirt, oil, grease, markings. Only clean, lint-free, undyed cloth should be used.

Sanding should only be required to feather-edge damaged areas or to remove embedded particles or contaminants which can not be handled by solvent wiping.

It is my opinion that the surfaces evaluated in this test represent full cured films and that longer intercoat periods should not react any differently, provided that surface contaminants and/or chalking are not prevalent.