

SALT SPRAY TEST

REPORT NO: TI.T.DY.006656

Condition Analysis Unit
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Test Component : Coating System Comparison. Serial Number :- Test Specification : MIL Std – 810F 509.4 Work Order : D26	Test Start Date : Refer to Tables 2 and 3. Test Duration : Four 24hr Exposure Cycles. Customer Ref. No.: - Customer : Babcock.
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Purpose.

To expose the two test pieces, that have differing protective coating systems, to a controlled corrosive aqueous salt atmosphere so as to allow a comparison of performance to be made under these conditions.

Method.

Reference was made to Salt Fog Laboratory Test Procedure MIL Std – 810F 509.4 with visual inspections occurring at the end of the test start and end of the second exposure.

The exposure duration consisted of two cycles only, each of 24 hours exposure to the corrosive aqueous salt atmosphere followed by 24 hours drying at ambient room temperature after each exposure interval. Both test pieces were exposed to the same conditions for the same durations.

It should be noted that the testing was concluded after two exposures only, due to the test results showing clear differences in performance.

Equipment Configuration

Both test pieces were orientated in the Salt Spray Chamber at 45° with the test faces facing upward.

During the drying cycles, both test pieces were also orientated at 45° with the test faces facing upward.

Test Interruptions.

There were no test interruptions during the exposure or drying cycles of these components.

Pre Test Visual Inspection of Sample #1 – International Paints .

International Paint system application on this sample consisted of –

First coat – Interguard 276
Second Coat – Interguard 300
Finish Coat – Interguard 301

This sample was prepared using a three coat system consisting of primer, intermediate and finish coat. The test piece was prepared with three sections of coating consisting of primer coating only, primer/intermediate coating only and primer/intermediate/top coat.

Mechanical damage was intentionally made to the three individual layers of surface coating by use of a cutting blade, so as to allow exposure of the steel substrate to the corrosive aqueous salt atmosphere.

The pre-test inspection of this sample identified no additional mechanical damage / abrasion sites on the surface of the substrate in the test areas.

Photo 1, 2 and 3 in Annex shows Sample #1 prior to testing.

Visual Inspection at end of the Two Exposure and Drying Cycles

After completing two 24hr exposure / 24hr drying cycles the Sample #1 was visually inspected giving the following findings.

1. The intact undamaged protective coating showed no signs of breakdown. No staining was present.
2. Minor ferrous oxide staining was present along the full length of the blade cuts where the coatings had been intentionally damaged.

Photos 7 and 8 in Annex show the Sample #1 after two exposure and drying cycles.

Comments

The intact undamaged coating showed no signs of corrosion initiating at the completion of the two exposure cycles.

Over the full length of the blade cuts, where the coatings had been intentionally damaged to expose the substrate, ferrous oxide corrosion product and staining was present.

Pre Test Visual Inspection of Sample #2. MCU Paints.

MCU Paint system application on this sample consisted of –

First coat – Miozinc
Second Coat – Mastic NS
Finish Coat – Ferroguard

This sample was prepared using a three coat system consisting of primer, intermediate and finish coat. The test piece was prepared with three sections of coating consisting of primer coating only, primer/intermediate coating only and primer/intermediate/top coat.

Mechanical damage was intentionally made to the three individual layers of surface coating by use of a cutting blade, so as to allow exposure of the steel substrate to the corrosive aqueous salt atmosphere.

The pre-test inspection of this sample identified no additional mechanical damage / abrasion sites on the surface of the substrate in the test areas.

Photo 4, 5 and 6 in Annex shows Sample #2 prior to testing.

Visual Inspection at end of the two Exposure and Drying Cycles

After completing two 24hr exposure / 24hr drying cycles the Sample #2 was visually inspected giving the following findings.

1. The intact undamaged protective coating showed no signs of breakdown. No staining was present.
2. There was no noticeable corrosion/staining present along the length of the blade cuts where the coatings had been intentionally damaged .

Photo 9 and 10 in Annex show the Sample #2 after two exposure and drying cycles.

Comments

No corrosion sites were identified during testing of this item, either in the intact areas of coating or where the blade cuts had been made to expose the steel substrate to the corrosive aqueous salt atmosphere.

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Tested by : S. Nixon.



Date : 13/01/17

Technician.

Certified by : V. Burley.



Date : 16/1/17

Requirements and Acceptance Manager.

Note: This document may be produced in full, but not in part, without the express permission of the Engineering Manager.

AnnexTable 1. Salt Spray Chamber Salt Fog Exposure Data.

Cycle No.	Start and Finish Date	Duration of Exposure	Salt % Spec. Limits 5% ± 1%	Chamber Temp. Spec. Limits 35°C ± 2°C	Catchment PH. Spec. Limits 6.5 - 7.2	Collect. Rate. Spec. Limits 1-3mls/hr/80cm ²
1	09/01/17	24 hours	5.0	34.9	6.7	2.7
2	11/01/17	24 hours	5.0	34.8	6.8	2.8

Table 2. Drying Conditions after each exposure to Salt Fog.

Drying Cycle No.	Drying Cycle Start Date	Duration of Drying (hours)	Ambient Temp. (°C)	Relative Humidity (%)
1	10/01/17	24 hrs	22	75
2	12/01/17	24 hrs	23	80

Note - 24 hours drying followed each of the three 24 hour exposures to the aqueous salt atmosphere. After the last exposure, the components were dried for a period of 24 hours prior to proceeding with the final visual inspection and water rinse to aid inspection.

Photo 1. Pre Test Condition. International Paints. Test Piece #1.

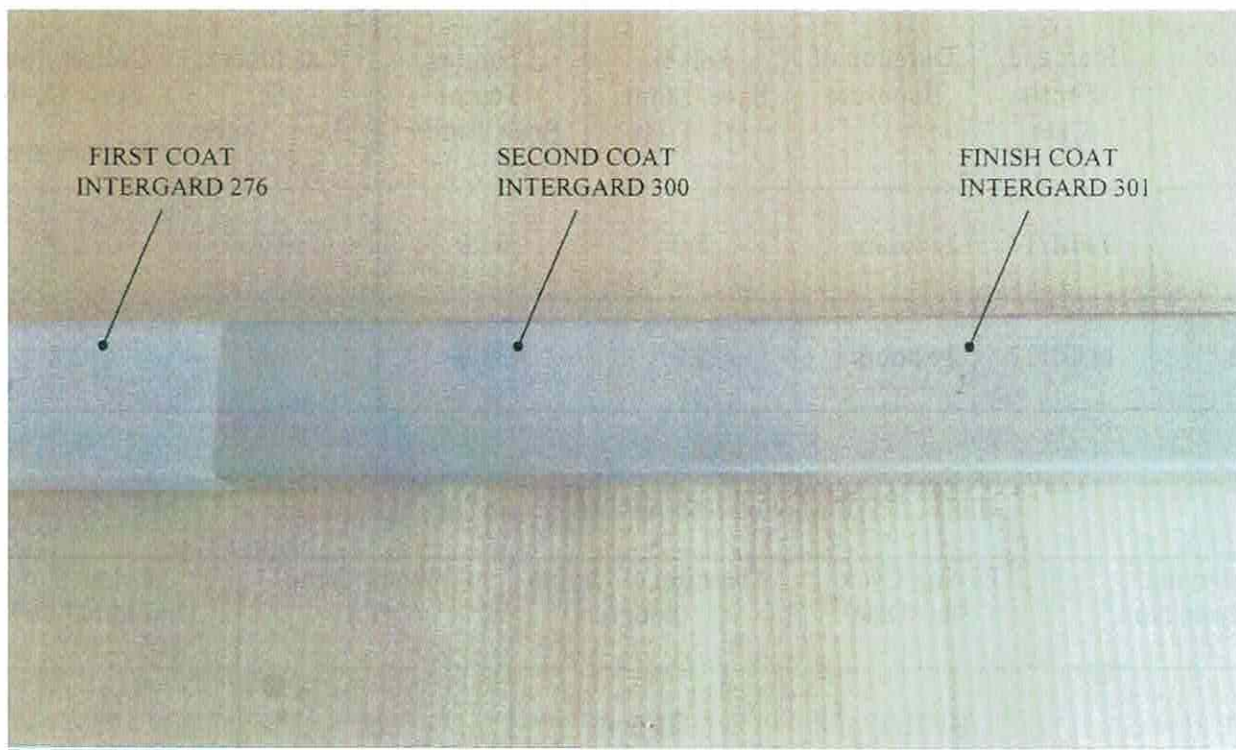


Photo 2. Pre Test Condition. International Paints. Test Piece #1.

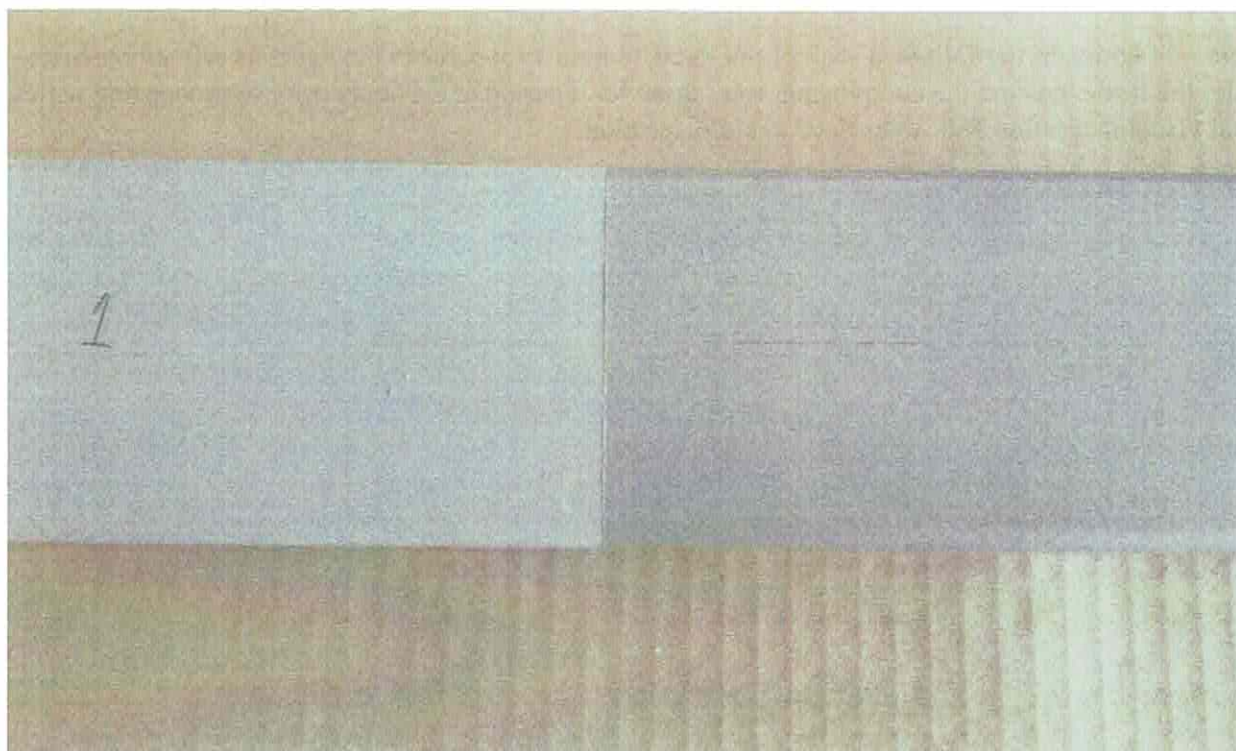


Photo 3. Pre Test Condition. International Paints. Test Piece #1.

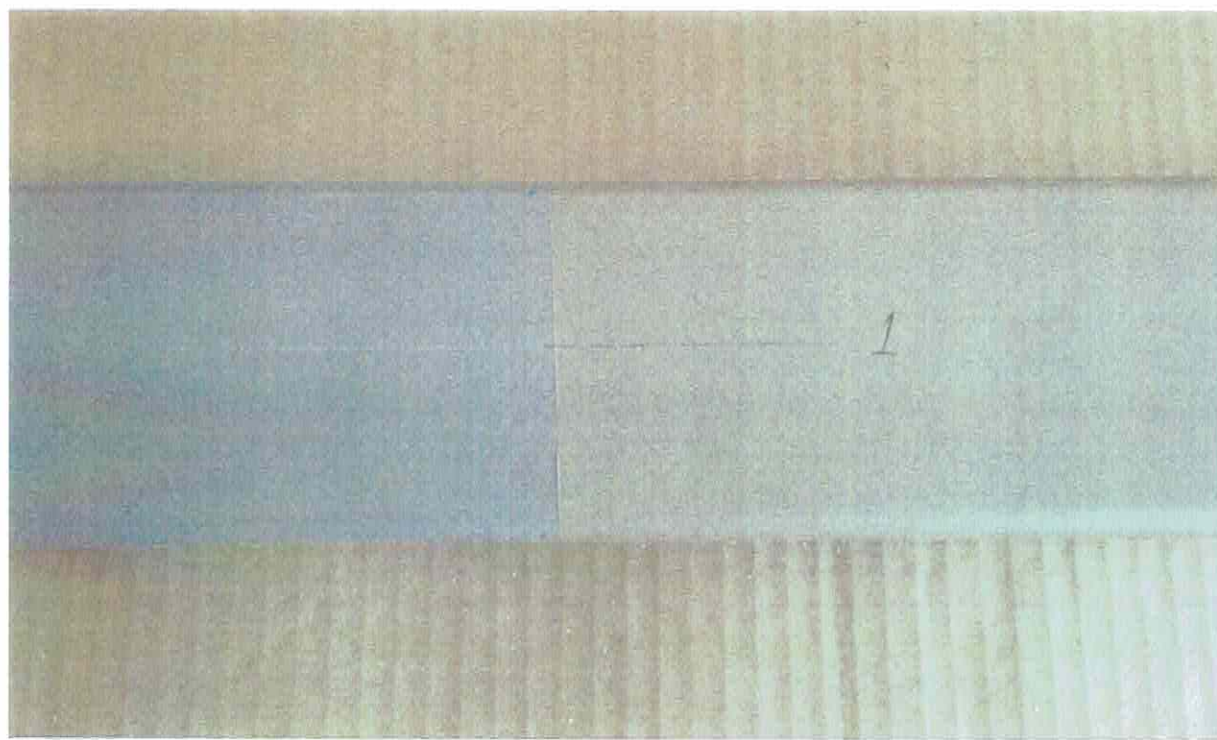


Photo 4. Pre Test Condition. MCU Paints. Test Piece #2.

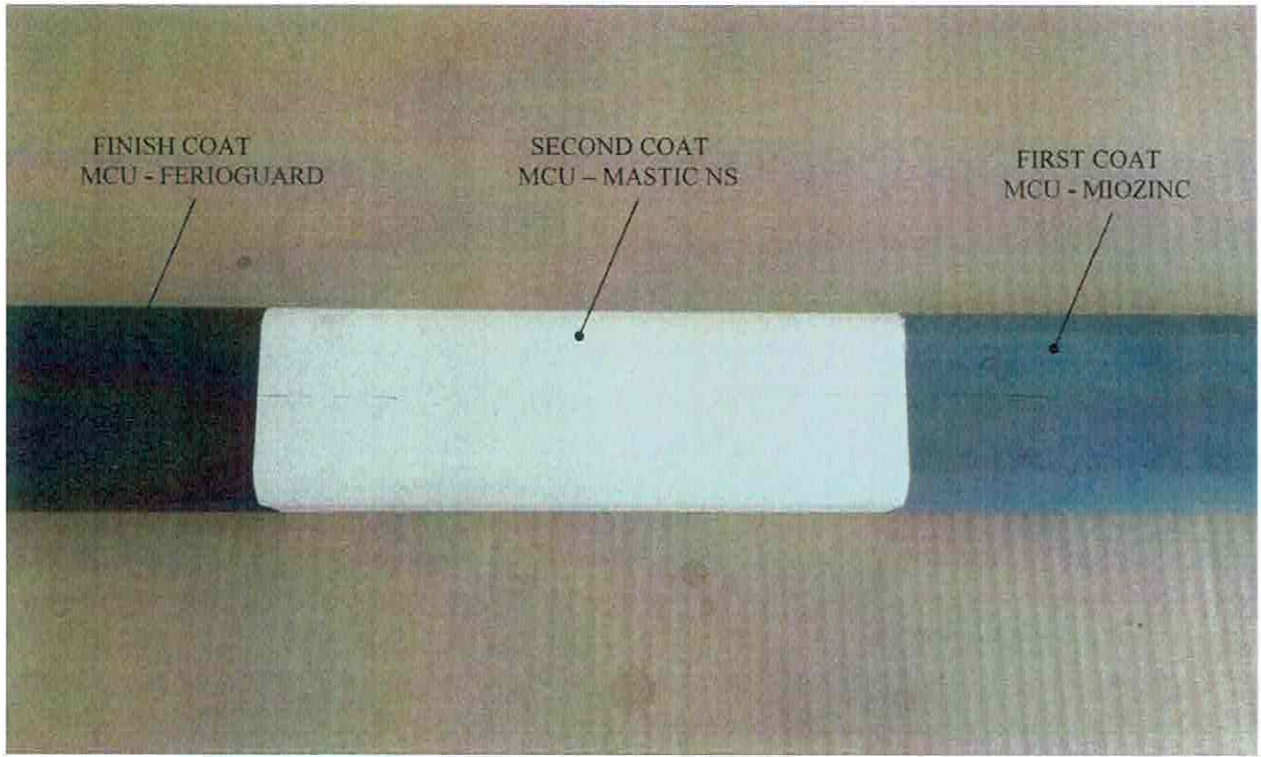


Photo 5. Pre Test Condition. MCU Paints. Test Piece #2.

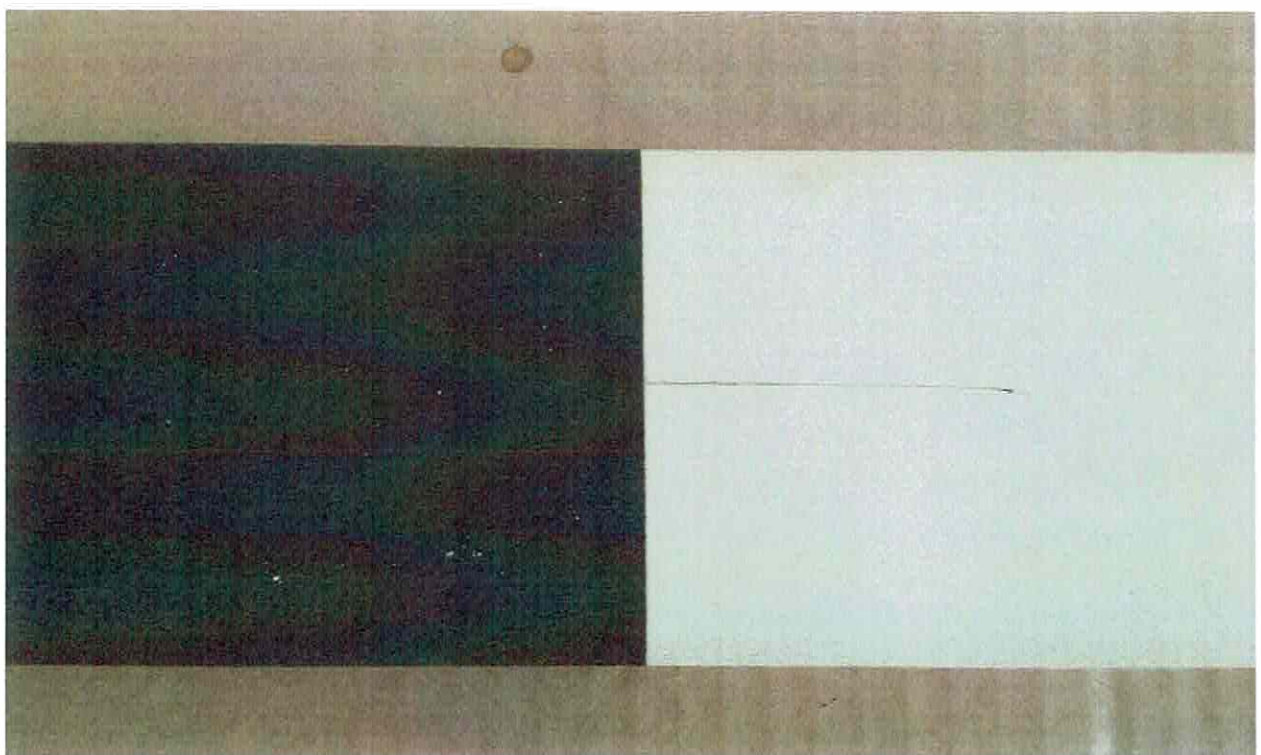


Photo 6. Pre Test Condition. MCU Paints. Test Piece #2.

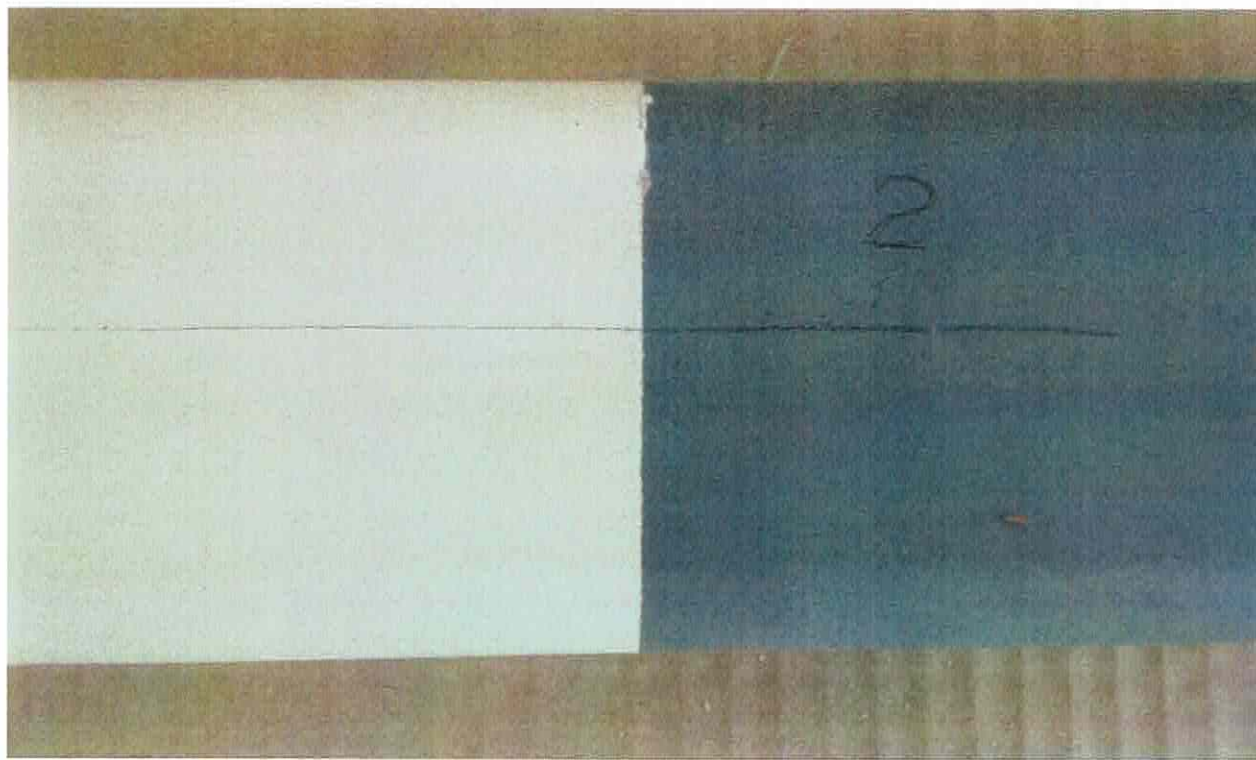


Photo 7. Condition after Two Exposure Cycles. International Paints. Test Piece #1.

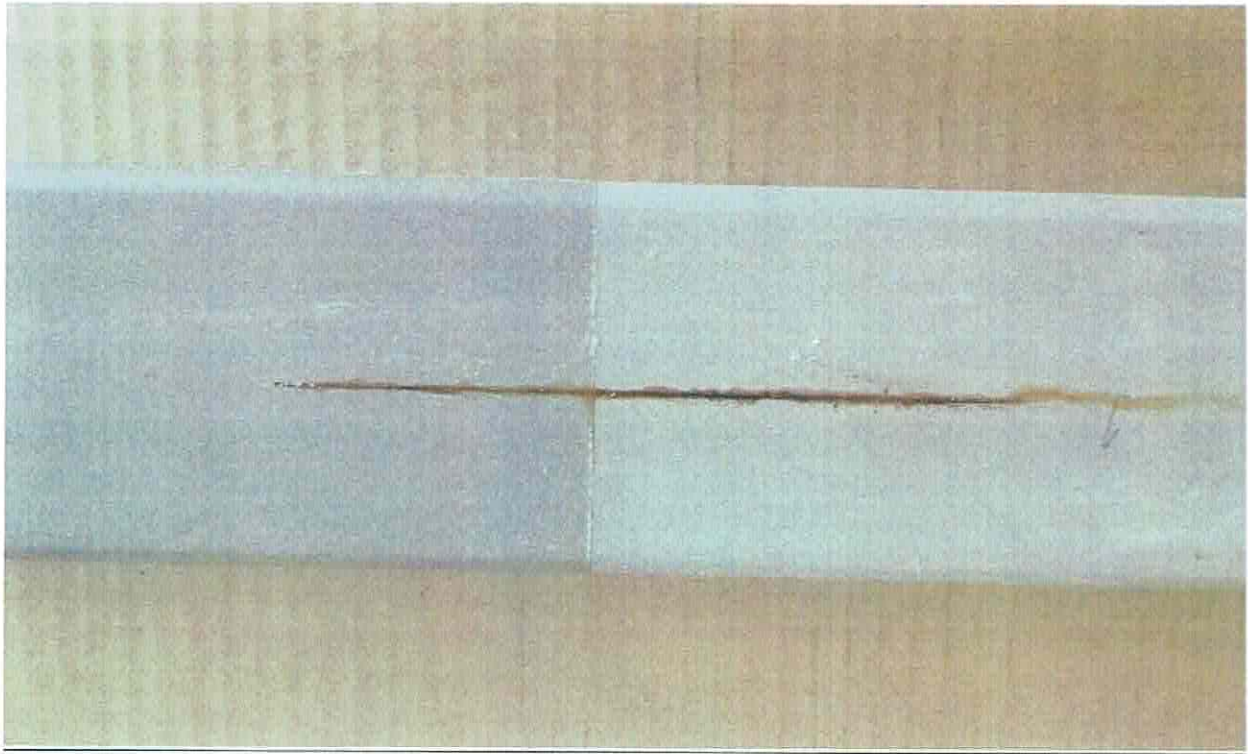


Photo 8. Condition after Two Exposure Cycles. International Paints. Test Piece #1.

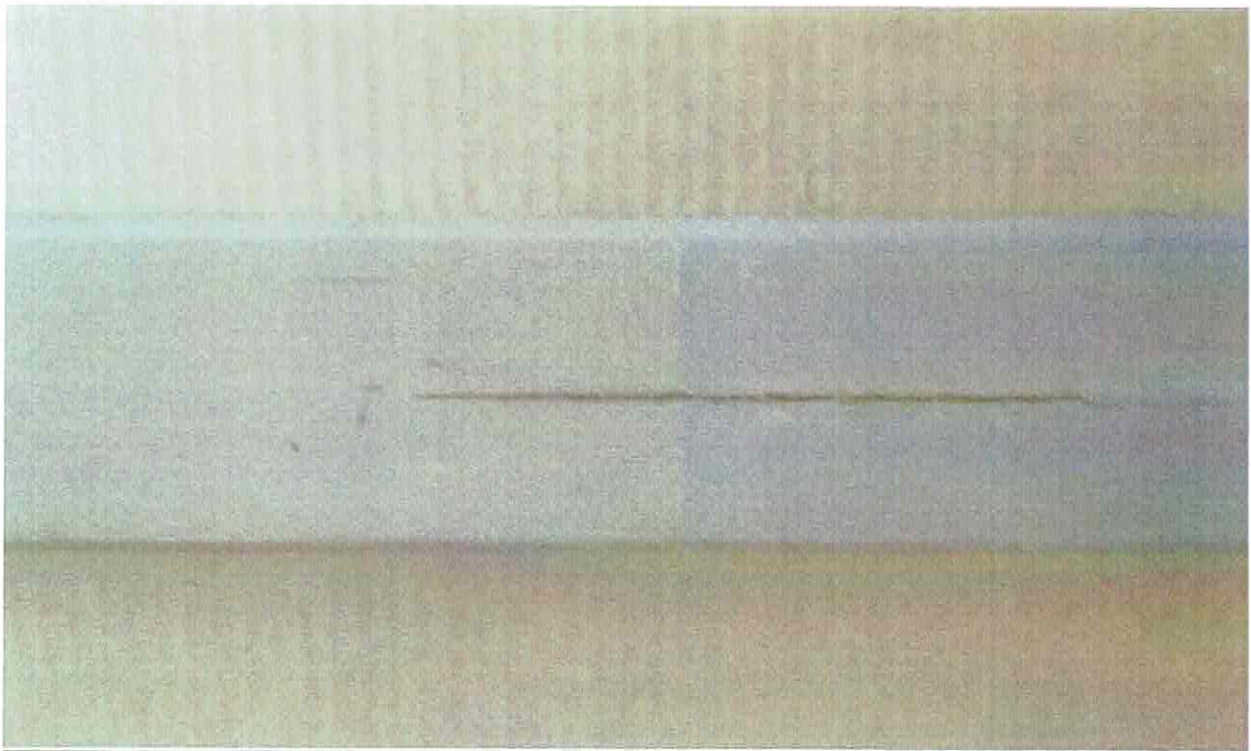


Photo 9. Condition after Two Exposure Cycles. MCU Paints. Test Piece #2.

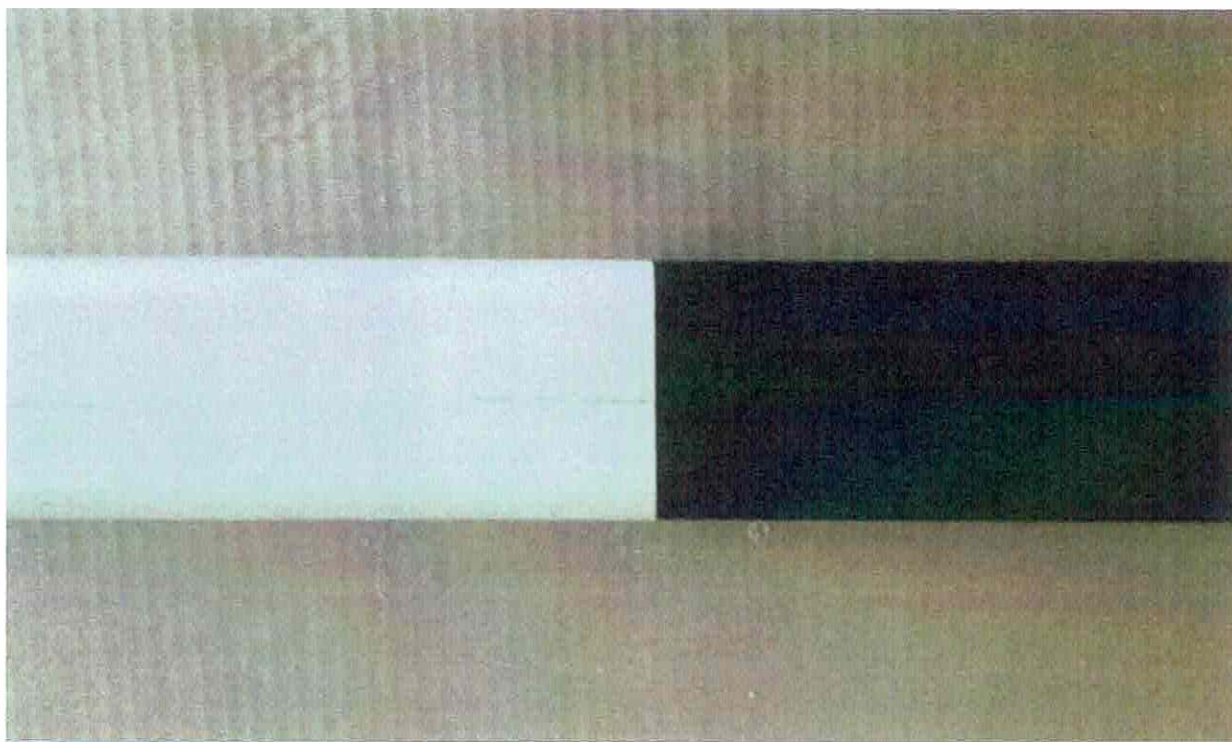


Photo 10. Condition after Two Exposure Cycles. MCU Paints. Test Piece #2.

