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O T T A W A

November 3, 1945.

R E P O R T

of the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 1958.

(Subsequent to Investigation)
(Reports Nos. 1943, 1950 and)
(1954, Sept.-Oct. 1945.)

Corrosion Protection of Exterior Rust-Preventive
Compounds (Hot Application).

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Background:

A letter, dated March 19, 1945, from Dr. D. Wolochow, Secretary, Canadian Government Purchasing Standards Committee, National Research Council, Ottawa, Ontario, requested that the corrosion protection of a number of different rust-preventive compounds be investigated. The letter stated, in part:

"In connection with the work of our Wartime Subcommittee on Petroleum and Associated Products, it has been suggested that the several laboratories, who are equipped for testing rust-preventive compounds to the specifications which we are sending you, be asked to test a number of exchange samples to be supplied by the producing companies."

(Background, cont'd) -

The present report gives the results obtained in the investigation of the corrosion protection of three Exterior Rust-Preventive Compounds (Hot Application), numbered 703-1, 703-2, 703-3. These were tested to Specification D.N.D. 703.

Investigation Procedure:

The above-mentioned Exterior Rust-Preventive Compounds (Hot Application) were tested as follows:

1. Salt Spray Test.

These tests were performed exactly according to Paragraph D-1g(3) of Specification D.N.D. 703, except that the panels were prepared by the following procedure:

After surfacing with the 150 grit wheel, the panels were wrapped in clean white paper. As soon as possible they were degreased in trichlorethylene vapour, scrubbed with a brush while immersed in trichlorethylene liquid, again suspended in trichlorethylene vapour, and, finally, wrapped in clean white paper until the coating could be applied.

This variation was necessary because the procedure outlined in the specification gave unsatisfactory results on very humid days.

2. Protection At High Humidity.

(a) One test on each of the three compounds was performed exactly according to Paragraph D-1g(4) except that the panels were prepared by the new procedure outlined in the preceding paragraph.

(b) Two of the three compounds (703-1 and 703-2) were tested exactly according to Paragraph D-1g(4) except that -

(Continued on next page)

(Investigation Procedure, cont'd) -

(1) The panels were surfaced with a 180 grit belt instead of a 150-200 grit wheel.

(11) Air was passed continually through the humidity cabinet.

In all other respects it was possible to prepare these panels for testing exactly according to the specifications, because there was no trouble with high atmospheric humidity at that time of the year (early spring).

Results:

The results of the investigation were as follows:

Compound No.	RESULTS OF TESTS		
	SALT SPRAY TEST	PROTECTION AT HIGH HUMIDITY	
		Without Air Passing Through The Cabinet	With Air Passing Through The Cabinet
703-1	Failed (see Figure 1).	Passed.	Passed.
703-2	Failed (see Figure 2).	Passed.	Failed (almost passed; see Figure 3).
703-3	Failed (see Figure 4).	Passed.	

Remarks:

1. Sample 703-2 did not give the same results when air was passing through the humidity cabinet as when it was not passing through.

2. The humidity cabinet used throughout this investigation was the one described by Todd in INDUSTRIAL AND ENGINEERING CHEMISTRY, Analytical Edition 16, 394, (June) 1944.

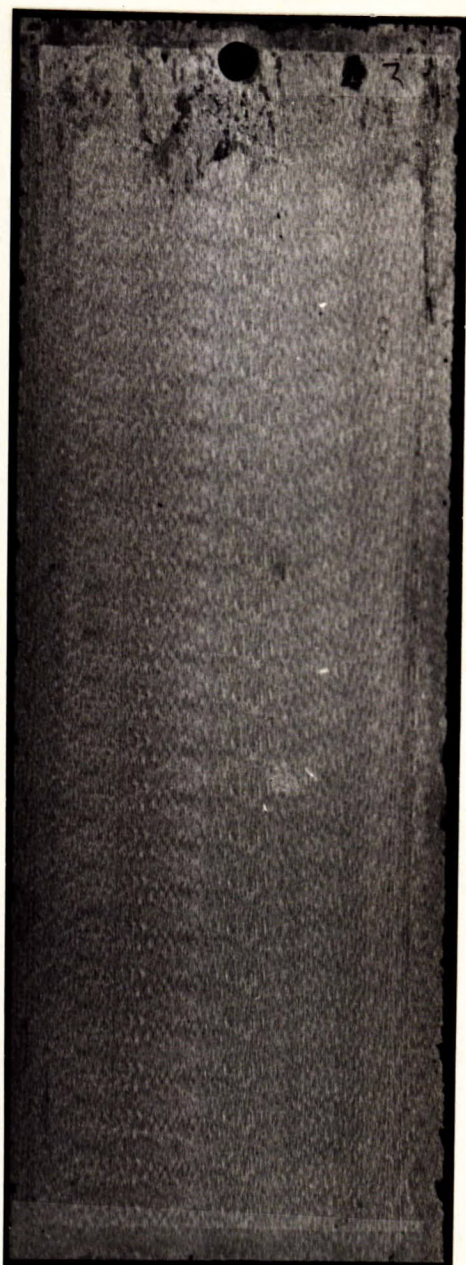
3. Information regarding the results obtained by other investigators would be much appreciated.

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(Figures 1 to 4 follow,
(on Pages 4 to 7.)

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Figure 1.



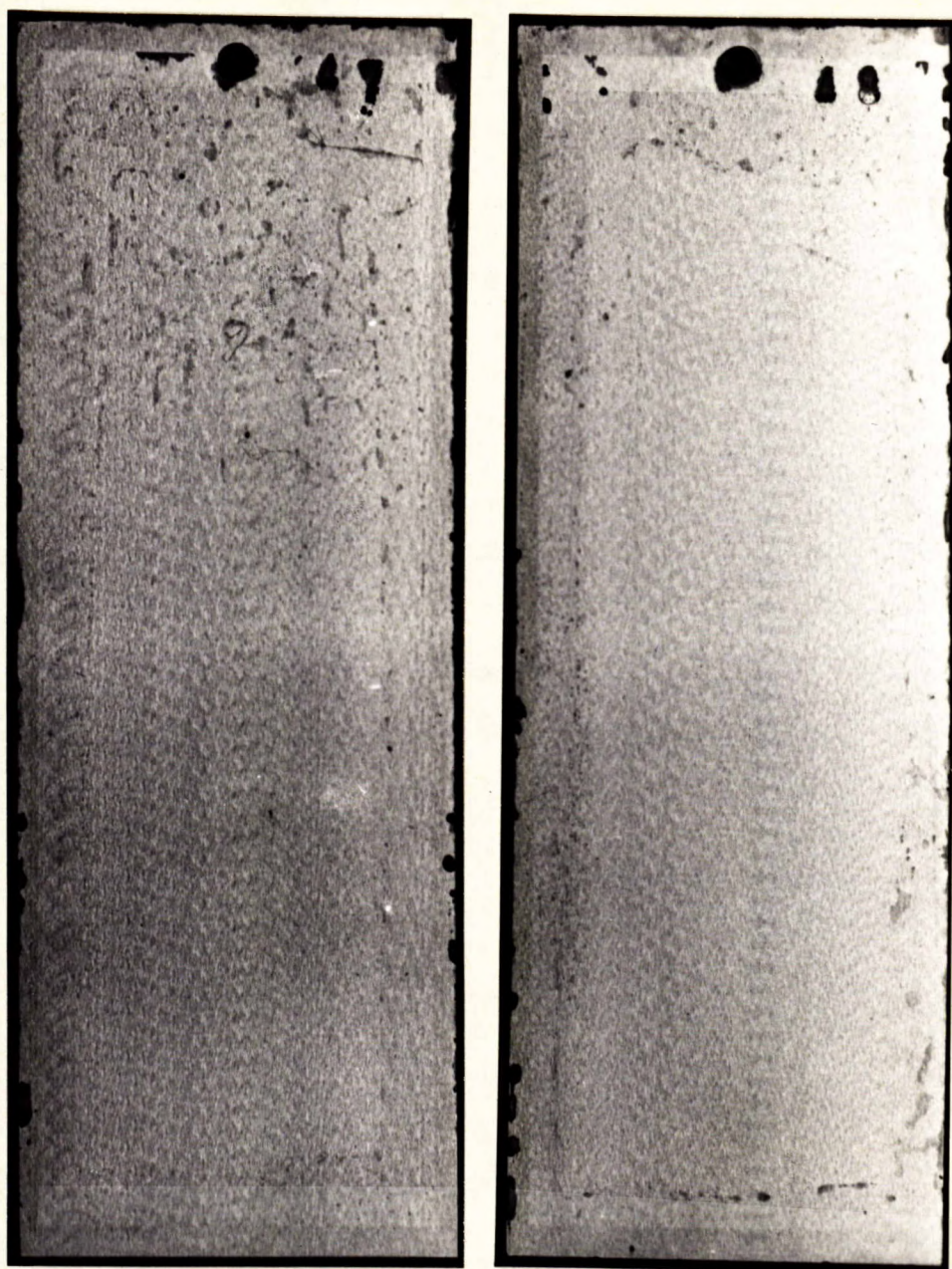
(a)



(b)

PANELS COATED WITH COMPOUND 703-1, AFTER
600 HOURS IN THE SALT SPRAY CABINET.

Figure 2.



(a)

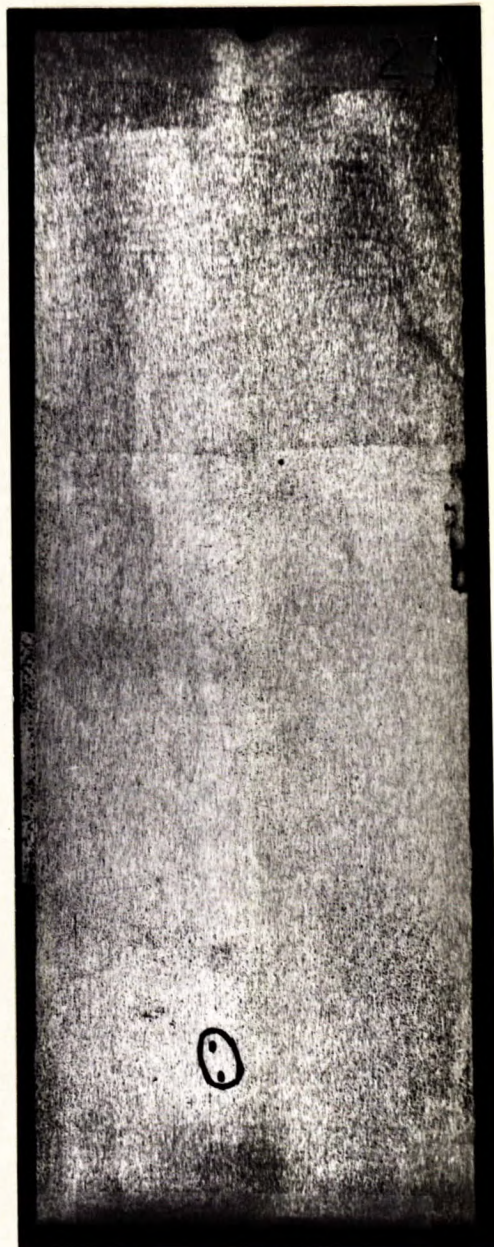
(b)

PANELS COATED WITH COMPOUND 703-2, AFTER
600 HOURS IN THE SALT SPRAY CABINET.

Figure 3.



(a)

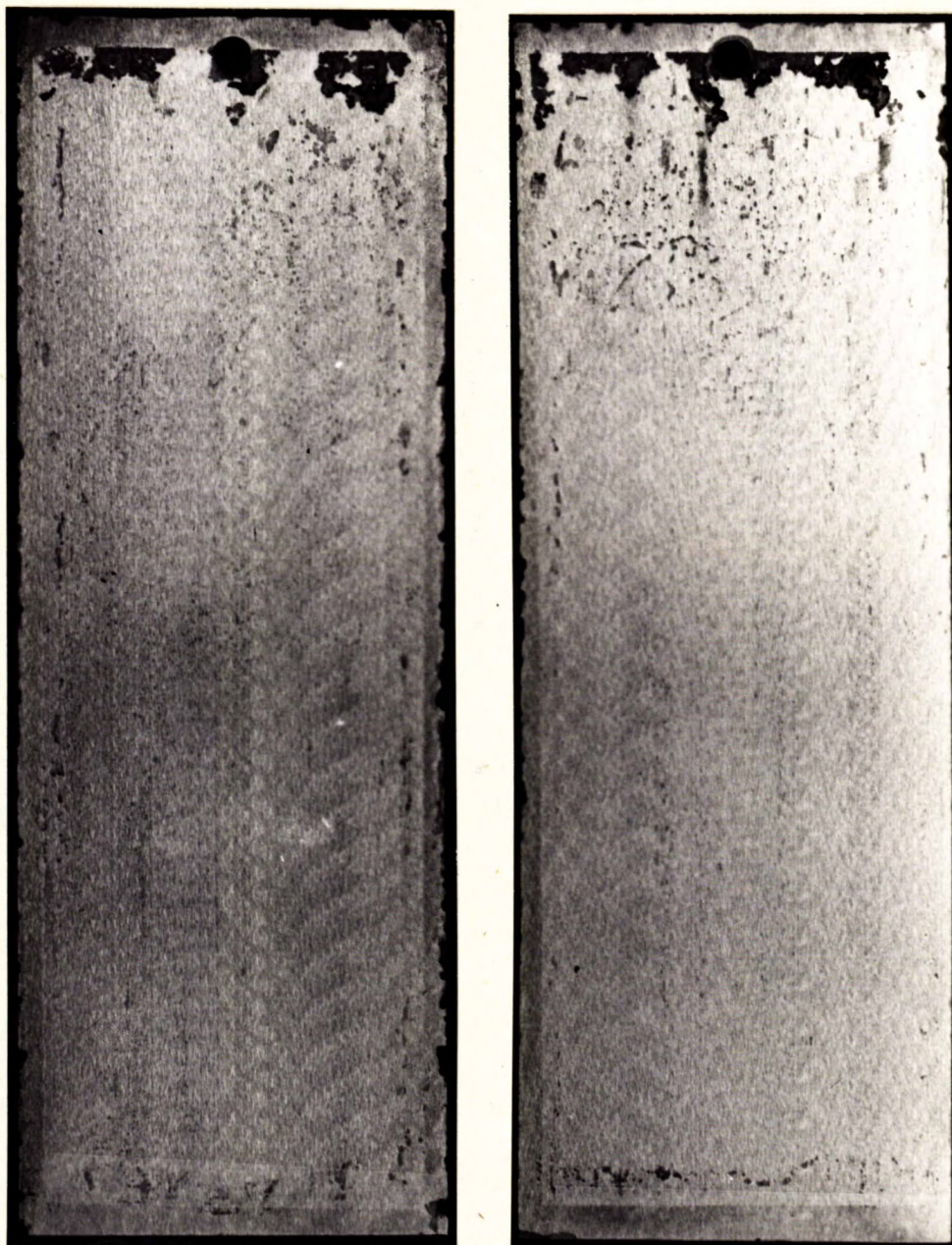


(b)

PANELS COATED WITH COMPOUND 703-2, AFTER
7 DAYS IN THE HUMIDITY CABINET
WITH AIR PASSING THROUGH.

NOTE: The encircled spots in Figure 3(b) are not
a result of this test.

Figure 4.



(a)

(b)

PANELS COATED WITH COMPOUND 703-3, AFTER
600 HOURS IN THE SALT SPRAY CABINET.

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