File

O T T A W A May 31, 1945.

R E P O R T

of the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 1882.

Protection Afforded by a Corrosion-Preventive Compound for Aircraft Engines (Specification DND C-27-587).

(Copy No. 10.)

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Background:

In a letter (File No. 832-33C-11 (AMSO DAI)), dated April 21, 1945, from A/C A. L. Johnson, Director of Aeronautical Inspection, for the Chief of the Air Staff, Department of National Defence for Air, Ottawa, Ontario, it was requested that the anti-corrosion performance of a sample of corrosion-preventive compound for aircraft engines be investigated. The procedure outlined in Specification DND C-27-587 was to be followed.

According to the letter, "this particular lot . . . was tested by the University of Manitoba. That laboratory found that the material did not result in the test panel being acceptable after the humidity test."

Tests Performed:

The compound to be tested was mixed with a sample of Green Band (Imperial Oil Limited) lubricating oil (Specification 3-GP-4) in ratio of 1 to 3. The mixture was given the "Protection" and "Hydrobromic Acid Neutralization" tests as outlined in Specification DND C-27-587.

Results:

The appearance of the panels at the end of the "Protection" test is shown in Figures 1a and 1b. The encircled dark spots on Sample 23 and the reverse of Sample 25 were caused by other panels touching the surface during the test, and should be disregarded.

The spots along one side of Sample 25 were within approximately 1/8 inch from the edge, and should be disregarded. In addition, there were a few quite small, scattered, corroded spots and some areas covered with a light tarnish.

The appearance of a typical panel at the end of the Hydrobromic Acid Neutralization test is shown in Figure 2. Many small corrosion spots are to be observed.

Conclusions:

1. Although the samples were not corroded in the "Protection" test as badly as the one which came from the University of Manitoba laboratory, the corrosion-preventive compound cannot be accepted if the specification is to be strictly adhered to.

2. The behaviour of the corrosion-preventive compound with regard to Hydrobromic Acid Neutralization definitely is poorer than that required by specification.

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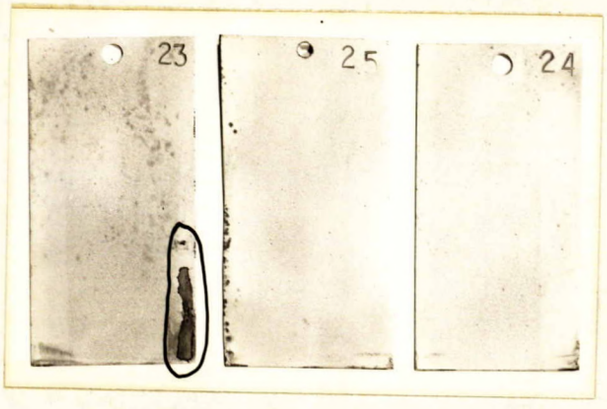
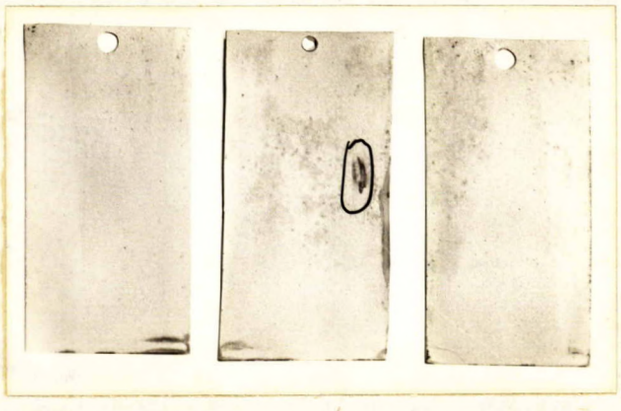
Figure 1.



(a)



(b)

STEEL PANELS COATED WITH COMPOUND-LUBRICATING OIL MIXTURE, AFTER 150 HOURS IN THE HUMIDITY CABINET.

(Magnification, X 0.6)

Note: Dark encircled areas were due to other panels touching the surface during the test and should be disregarded.

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Figure 2.

TYPICAL STEEL PANEL AFTER THE HYDRO-
BROMIC ACID NEUTRALIZATION TEST.

(Magnification, X 0.75)

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