

File  
FILE COPY

O T T A W A

May 10, 1945.

R E P O R T

of the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 1865.

(Further to Report of )  
(Investigation No. 1839, )  
( dated April 16, 1945. )

Corrosion Protection Afforded to Steel by a  
Typical Organic Silicon Oxide Polymer.

=====

(Copy No. 10.)

O T T A W A

May 10, 1945.

R E P O R T

of the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 1865.

(Further to Report of  
Investigation No. 1839,  
dated April 16, 1945.)

Corrosion Protection Afforded to Steel by a  
Typical Organic Silicon Oxide Polymer.

Background:

Information concerning the properties of some of the new organic silicon oxide polymers was submitted to Commander (E) G. Taylor, of the British Admiralty Technical Mission, Ottawa, Ontario, in a letter dated February 26, 1945, and in Investigation Report No. 1839, dated April 16, 1945.

The present report gives further information, requested verbally by Commander Taylor, regarding Dow-Corning Fluid No. 500 (viscosity of 50 centistokes at 25°C.) and the oil now being used in buffer cylinders for certain gun mountings (Aeroshell Fluid No. 1). The Aeroshell Fluid No. 1 was submitted by Commander Taylor.

Tests Performed:

1. The specific gravity of Aeroshell Fluid No. 1 was found to be 0.85.

2. The specific gravity of Fluid No. 500 is 0.95.

3. The electrical conductivity of water distilled in the ordinary way was found to vary from that of an aqueous solution containing 0.1 part per million of sodium chloride to that of an aqueous solution containing 4 parts per million of sodium chloride. The value depends upon the length of time the distilled water has been standing and upon the type of container.

4. The electrical conductivity of Aeroshell Fluid No. 1 was found to be much less than that of an aqueous solution containing 0.1 part per million of sodium chloride. The exact value could not be determined accurately on the instrument which was available.

5. The electrical conductivity of Fluid No. 500 was found to be much less than that of an aqueous solution containing 0.1 part per million of sodium chloride. In this case also, the exact value could not be determined accurately.

Conclusions:

1. The greater specific gravity of the Fluid No. 500 would give it a certain advantage over the Aeroshell Fluid No. 1 for certain purposes.

2. The Aeroshell Fluid No. 1 and the Fluid No. 500 both have a much lower electrical conductivity than distilled water. In other words, judging by conductivity values only, it would be more difficult for electrolytic corrosion to take place in the presence of the Aeroshell Fluid No. 1 or the Fluid No. 500 than in the presence of distilled water.

3. Salts which might be present under service

(Conclusions, cont'd) -

conditions probably would dissolve in distilled water, thus increasing its electrical conductivity. Such salts probably would not dissolve in the Aeroshell Fluid No. 1 or in Fluid No. 500.

oooooooooooo  
oooo  
oo

RRR:CP.