DEPARTMENT OF MINES AND RESOURCES

BUREAU OF MINES

CANADA

Ottawa, July 25, 1946.

R E P O R T

of the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 2080.

Corrosive Properties of Polishing Material for Use on Aircraft.

(Copy No. 8.)

Bureau of Mines
Division of Metallic
Minerals
-
Physical Metallurgy
Research Laboratories

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Mines and Geology Branch

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Background:

A letter dated July 15, 1946, (File No. 1027-C-222-AMSO-DAI) was received from Squadron Leader N. S. Spence, for Group Captain A. C. Luke, Director of Aeronautical Inspection, for Chief of the Air Staff, Department of National Defence for Air, Ottawa, Ontario, requesting that the corrosive properties of "Al-Glo", and its suitability as an aircraft polish, be investigated. "Al-Glo" is a polishing material manufactured by Canadian Hanson & Van Winkle Co. Ltd. and it is stated to consist essentially of an oil-water emulsion containing diatomaceous earth. The oil is stated to consist of a mixture of coal oil, turpentine and pine oil emulsified with water by means of triethanolamine oleate. A small amount of free red oil also is present.

Investigation:

The pH and corrosive properties of this material were investigated.

pH

Using Accutint and Hydrion indicator papers, it was found that the pH of the mixture is between 7 and 8.

Corrosive Properties

Samples of aluminium, low carbon steel, magnesium and copper, approximately 4 sq. in. in area, were immersed intermittently in 100-c.c. beakers containing the mixture under test, each complete in-and-out cycle requiring about one minute. The temperature was kept at approximately 95° F. and the relative humidity at approximately 45 per cent.

At the end of about 30 hours the material had changed to a fairly dry powder. The change in weight of the various samples during this time was as follows:

Aluminium	-	0.0007 gram.	gain.
Steel	-	0.0002 "	"
Magnesium	-	0.0008 "	loss.
Copper	-	0.0135 "	"

Conclusions:

It is concluded that:

1. From the standpoint of corrosion, the polish investigated should be quite satisfactory on comparatively flat surfaces of aluminium, steel, magnesium and copper from which it could be removed thoroughly at the end of the polishing treatment.

2. Even if the polish became lodged in small holes and crevices in aluminium, steel and magnesium surfaces, and could not be completely removed after each polishing, there should be no appreciable corrosion.

3. The corrosive effect of the polishing material in crevices and small holes in copper surfaces would be considerably more pronounced than in the case of similar

(Conclusions, cont'd) -

aluminium, steel or magnesium surfaces. Whether this action would actually be dangerous or not would depend largely upon the frequency of polishing and the thoroughness with which the material is removed from all holes and crevices after each polishing.

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