

RESTRICTED

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ENCLOSURE (B) 16

S T U D I E S O N A L C O H O L - P R O O F P A I N T S

by

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SUMMARY

Investigation of a suitable paint, lacquer, or varnish for the protection of rusting and corroding of the inside of drum-cans by ethyl alcohol was undertaken.

Synthetic resin varnishes of vegetable oil base have the best qualities, and are especially resistant to ethyl-alcohol.

Other paints or lacquers are not suitable for the above purpose, even though they are not attacked by alcohol, since the drying temperature is so high that it is necessary to use a large scale drying apparatus in industrial practice.

INTRODUCTIONA. History of Project

The object of this investigation was to find a suitable varnish or paint for the inside of drum-cans which would prevent corroding of the can and contamination of contents when filled with ethyl-alcohol.

B. Key Research Personnel Working on Project

Chem. Eng. Lieut. M. OKAZAKI

II. DETAILED DESCRIPTION

A. The only apparatus used in the test was an air bath and a large scale drying apparatus.

B. Test Procedure

1. Seven paints, selected from the twelve previously examined oil-proof paints and considered to be resistant to ethyl-alcohol, were examined in the same manner as in the previous studies on oil-proof paints.

2. The three varnishes which showed good qualities for use with ethyl-alcohol were painted on the inside of drum-cans which had been used once. After drying at 150°-160°C. in a large-scale air bath, the cans were filled with ethyl-alcohol and allowed to stand in the open air for 40 days. At the end of this period, the condition of the varnish and contamination of the alcohol was observed.

C. Experimental Results

1. The three materials observed to be the best were varnishes composed chiefly of vegetable oils, such as linseed oil or paulownia oil, and synthetic resins. Although these varnishes had the best qualities in regard to resistance to ethyl-alcohol, the drying temperature is high.

2. These varnishes must be dried at high temperature to get good qualities. They can be dried at lower temperatures but the qualities are not satisfactory under these drying conditions.

3. Lacquers composed of cellulose acetate or nitrate and paints were unsatisfactory.

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III. CONCLUSIONS

Varnishes composed of vegetable oils and synthetic resins were found to be the most suitable materials for protecting the inside of drum-cans against rusting and corroding by ethyl alcohol.

The supply of raw materials for these varnishes is not scarce, but their drying offers difficulties in industrial practice, since they should be dried at 150° - 160°C. It would be necessary to prepare a large scale drying apparatus of large capacity.

Practical application of this project is not easy now, since there are many problems to be investigated, such as the components of the varnishes and the method of drying.