ENCLOSURE (B) 37

STUDIES ON THE PREPARATION OF ANTICORROSIVE CYLINDER OIL

by

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LIST OF TABLES AND ILLUSTRATIONS

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SUMMARY

An anticorrosive cylinder oil having the following composition was found to be satisfactory for practical use, and has been manufactured and used since 1941.

Refined rape seed oil.....75% wt.
Aluminium stearate.....10-12% wt.
Triethanol amine.....5% wt.
n-Butanol.....10-8% wt.

I. INTRODUCTION

A. History

In 1935, it was known from the literature and from the results of the analysis of imported samples that anticorrosive cylinder oils were composed of a fatty oil of comparatively low iodine value, aluminium stearate, triethanol amine and butanol, and a product which had the following composition was brought to practical use.

Lard Oil.....75% wt.
Aluminium stearate.....10-12% wt.
Triethanol amine.....5% wt.
n-Butanol.....10-8% wt.

Since 1940 lard oil had become difficultly obtainable, and refined rape seed oil was substituted for it. It was found to be satisfactory and has been practically used ever since.

II. DETAILED DESCRIPTION

Refined rape seed oil (75% wt.) is charged in the chamber, and heated to about 125°C while being stirred. Aluminium stearate (12% wt.) is then added to it in small increments. Satisfactory stirring is necessary in this step of the process. It is then cooled to 100°C and triethanol amine (5% by wt.) is then gradually added with stirring. The solution is cooled to 50-60°C. Butanol (5-8% wt.) is added finally and stirring is continued. See Figure 1(B)37 and Figure 2(B)37. The resulting product is filtered at 50-60°C using a calico filter. The specifications and properties of a sample product are shown in Table I(B)37. With the object of reducing the use of triethanol amine, a sample having the following composition was prepared:

Refined rape seed oil.....77.5% wt.
Aluminium stearate.....10-12% wt.
Triethanol amine.....2% wt.
Cyclohexyl amine.....0.5% wt.
n-Butanol.....10-8% wt.

The above mixture was satisfactory in laboratory tests, but practical engine tests have not yet been carried out.

III. CONCLUSION

An anticorrosive cylinder oil, having the following composition, was very satisfactory for practical use in aero engine cylinders and was produced on a commercial scale.

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Table I(B)37
SPECIFICATIONS AND PROPERTIES OF ANTICORROSIVE CYLINDER OIL

		Specification	Properties of a Sample Oil
Reaction		Slightly basic	Slightly basic
Viscosity(R.I.)	at 30°C	below 1000	976
	at 50°C	350-420	415
Pour Point °C		below 5	0

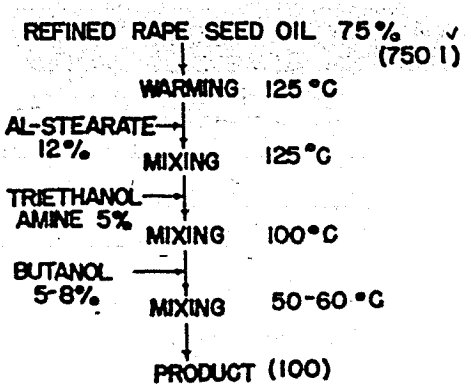

Figure 1(B)37
SCHEMATIC DIAGRAM FOR PREPARING ANTICORROSIVE CYLINDER OIL

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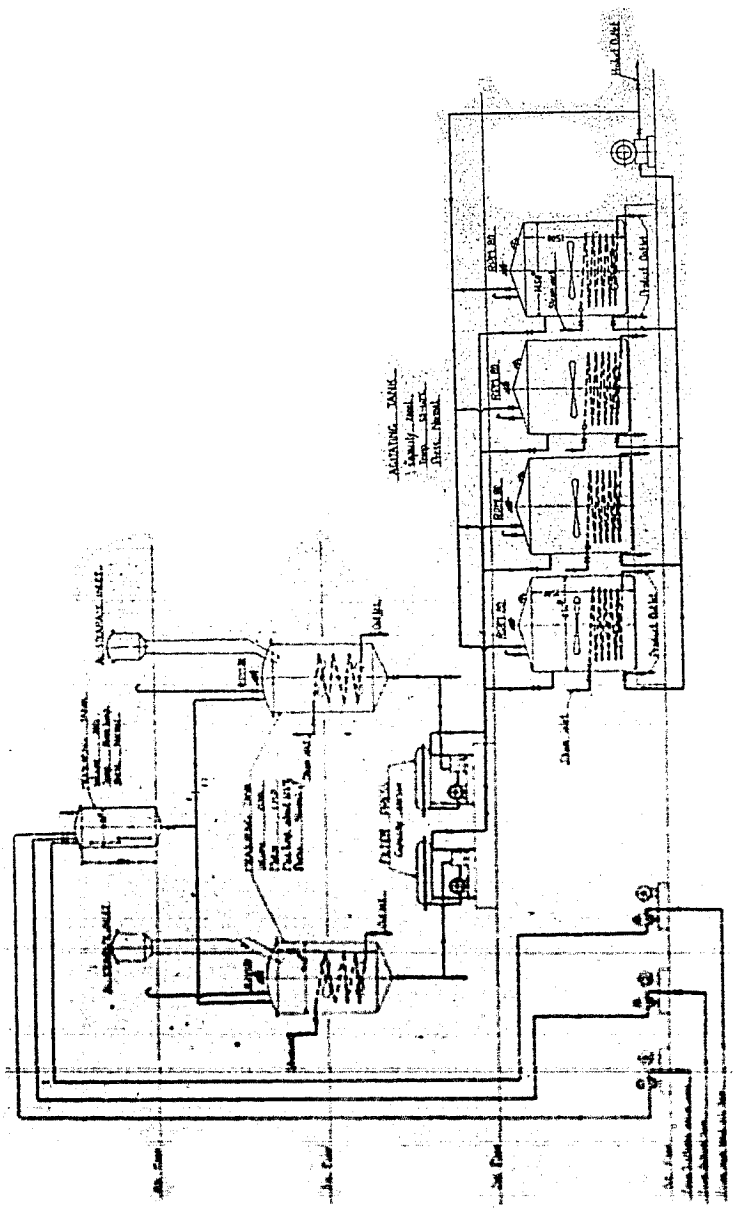

Figure 2(B)37
FLOW SHEET OF PILOT PLANT OF
ANTICORROSIVE CYLINDER OIL

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