

PROGRESS REPORT

TECHNICAL SERVICES DEPT. - W. G. KRUMMRICH PLANT

JOB NO.

91370:3794

REPORT NO.

3

DATE

1, 12, 67

W.G. KRUMMRICH PLANT

RESEARCH

GENERAL OFFICE

OTHERS

☐ E. L. BOEHM

☐

☒ W.R.Richards

☐ R. E. BILGER

☐ J. E. SMITH

☒ File

☐

☒ D. DANNA (4)

☐ W. R. KELLOGG

☐ J. M. CONNAUGHTON

☐

☐

☐ W. P. DUNLAP

☐ L. C. FUHRMEISTER

☒ J. W. DALTON

☐

☐ C. E. ANAGNOSTOPOULOS

☐ P. W. EDWARDS

General Office

☐ P. E. HEISLER

☐

☐

☐ L. L. FELLINGER

☒ H.C. Carder

☐ J. R. McCLAIN

☐

☐

☐ S. A. HEININGER

☒ R.S. Yates

☐ H. B. PATRICK

☐

☐

☐ D. B. HOSMER

☒ P.G. Benignus

☒ W. J. WILSON

☐

☐

☐ J. A. MULLENDORE

☒ R.H. Munch

☒ H.F. Ray

☐

☐

☐ N. L. SAMPLE

☐

☒ T.E. Greenman

☐

☐

☐ R. E. SODEN

☐

* TO RECEIVE DETAIL SECTION

TITLE: Dept. 246-AROCOR-EXPOSURE OF AROCLOR 1242 TO VARIOUS MATERIALS OF CONSTRUCTION - EFFECT ON ELECTRICAL PROPERTIES

PERSONNEL: J. A. Gloeckner, B. L. Caraway, G. E. Lewis (D. C. Armstrong)

PROBLEM: There will be areas in the new Aroclor Facilities where Aluminum (the material of choice) cannot be used. We need to know the effect on electrical properties of exposure of Aroclor to these materials.

SUMMARY

We found that Aluminum, 304 and 316 stainless steels, Monel and Teflon did not degrade Aroclor quality on exposures at 100°C for up to 60 hours. White Garlock 900 (Ungraphited) degrades Aroclor slowly. Hypalon in totally unsuitable with degradation occurring in less than 12 hours.

J. A. Gloeckner

mt

DSW 310305

COMPANY CONFIDENTIAL INFORMATION

This document is the property of Monsanto Company and the recipient is responsible for its safekeeping and disposition. It contains confidential information of Monsanto Company which must not be reproduced, revealed to unauthorized persons or sent outside the company without proper authorization. Either retain in secure files or destroy.

January 12, 1968

DETAILS

The proposed new Aroclor Facilities at WGK are being designed by C.E.D. Because of availability and temperature limitations, some of the installation downstream of the stills must be of materials other than Aluminum. Aluminum is the preferred material for handling refined Aroclor.

Various materials were exposed to electrical grade Aroclor 1242 at 100°C for periods up to 60 hours. Periodically during the exposure the Aroclor was tested to determine if degradation was occurring. The tests used were Power Factor (60 Hz and 100°C) and resistivity (100°C). The test materials were removed during analysis. The analyses were performed by analytical section personnel using routine procedures.

The test material was immersed in a cleaned electrical property test cell. As a control, Aluminum or Teflon was run in parallel for each material. At the end of each exposure period, both cells were thoroughly flushed with fresh electrical grade Aroclor 1242.

RESULTS

Because of the exposure of the hot test Aroclor to atmospheric contaminants, no absolute values can be placed on the results. These tests should only be considered as indications of suitability since the area of exposure to the Aroclor may vary widely in actual application.

Organic Research, in another project, has also tested the effects of materials of construction, in a similar manner (Org. Research Rpt. 3470 12/6/67).

Our tests showed that 304 and 316 stainless steel, and Monel did not degrade Aroclor electrical properties as compared to aluminum.

Of the non-metallics tested, Garlock 900 (ungraphited) showed a slow degradation. Hypalon rubber degraded Aroclor rapidly and would not be considered suitable. Both of these materials were tested versus Teflon. The Organic Research report mentioned above shows that cork and Buna-N are not satisfactory. Viton A and Silicone rubber both performed well.

Reference:

WGK 1347-48

J. A. Gloeckner

mt

DSW 310306

STLCOPCB4070293

TABLE I

MATERIAL	INITIAL VALUE*		FINAL VALUE**		HOURS Exposure @ 100°C
	<u>Power Factor</u>	<u>Resistivity</u> (ohm/cm x 10 ⁹)	<u>Power Factor</u>	<u>Resistivity</u> (ohm/cm x 10 ⁹)	
304 SS	0.98	8000	0.20	64,800	54
316 SS	1.03	5680	0.41	11,850	48
MONEL	2.31	2350	0.81	5760	36
GARLOCK 900	2.81	1840	>30	120	60
HYPAION	8.58	600	>33	0	12
TEFLON	2.47	2640	0.29	24000	60

DSW 310307

* This is the value obtained before any exposure. The initial values vary somewhat because of atmospheric contamination of the starting material before testing.

** The tests were run until an equilibrium value was obtained or a definite trend had developed. It is characteristic for the electrical properties of quality Aroclor to improve in storage.