

Cross Reference:

700 Line General
Refrigerator Finishes
Washing Machine Finishes
Stove Finishes
Alkyd Resins
Urea Formaldehyde Resins
Melamine Formaldehyde Resins
Competitive Resins

"INDEXED"

6/2/63

Mr. J. B. Bullitt, Lab.
Mr. J. W. Iliff, Lab.
Mr. C. R. E. Merkle, Lab.
Dr. Paul Robinson, Lab.
Mr. R. L. Selby, Lab.
Mr. S. L. Godshalk, Lab.
Dr. P. B. Evans, Lab.

Philadelphia Laboratory
July 27, 1948

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MEMORANDUM REPORT NO. M-208:

COMPETITIVE RESINS IN 700 LINE

Introduction:

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Continuing our investigation of new offerings by competitive resin manufacturers, a group of nine resins has been evaluated. These resins may be classified as non-oxidizing alkyds, semi-oxidizing alkyds, oxidizing alkyds, ureas and melamines.

The recommendations of the resin supplier have been used in formulating these resins into our corresponding products.

This report supplements Memorandum Reports No. M-143 and M-178. A research report is being prepared to include work covered by Memo reports M-143, M-178 and this report M-208.

Conclusions:

The attached chart shows the general type formula used and in a condensed manner the significant results obtained.

Our evaluation indicates that of the nine competitive resins evaluated, only 3 resins showed outstanding performance in one or two properties and a usable balance of remaining properties suitable for use in our 700 Line products. The melamine resins evaluated showed no improvements over our standard G-78.

The following alkyd and urea resins have been found to be equal or superior to our resins;

1. Araplas 1311, a non-oxidizing non-phthalic alkyd, manufactured by H. K. Industrial Chemicals, imparted a decided increase in gloss and adhesion as compared to our standard RC-305. However, this non-phthalic alkyd, was slightly deficient in humidity and grease resistance.

2. Araplas 945, a semi-oxidizing alkyd of medium oil length, effected no improvement in all properties except humidity cabinet performance.

3. Uformite (UR-232-B, a urea formaldehyde resin, which was put in isopropyl alcohol, imparted a definite increase in gloss and adhesion. Nevertheless, it was somewhat deficient in gloss retention in over bake and in grease resistance.

Proposed Program:

It is proposed that Aroplaz 1311, Aroplaz 945 and Uformite UR-232-B be re-examined for further use in our standard products. A qualitative analysis should also be conducted on Aroplaz resins, to determine the exact oil used and the resin constants.

Discussion:

The competitive alkyd resins were substituted on the equal oil length basis to our corresponding resins in 700 Line enamels, thus varying the UF/alkyd ratio.

The urea and melamine formaldehyde resins were substituted on the solids basis for our standard nitrogen resin.

The test and exposure used in this program are as follows:

A - Long Time Test

1. Florida - 45°S. - exposed for 12 months
2. Yellowing in the Dark - exposed for 2 years
3. Yellowing in the Light - exposed for 2 years

B - Short Time Test

1. General Film Properties
2. Humidity Cabinet - 30 days
3. Grease - 10 days
4. Stain - 3 days
5. Soap - 8 days
6. Heat - 2 hours at 400°F.
7. Over Baking - 600 units at 325°F.

The Resimene resins, melamine formaldehyde type prepared by Monsanto Chemical Company, were substituted for G-78 in our standard washing machine and stove finishes. Our investigation indicates that these competitive resins are generally deficient in alkali and heat resistance as compared to G-78. Although a slight increase in gloss was noted with the use of the Resimene resins, the remaining film properties were inferior thus making them unsatisfactory for formulation in our products.

The other resins evaluated did not show as uniform a balance of properties as did the control resins; however, reformulation may produce a better balance of properties. Exposure Series #9815 has been

proposed to obtain durability information on the competitive resins
evaluated.

References:

Formulations and detailed gradings may be found in Notebook
#3405 and Exposure Series #9815.

PHILADELPHIA LABORATORY

H. L. Costenader

H. L. COSTENADER

HLC:PP

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WATER-BASED SPRAY - SERIES 40815

<u>DS Number</u>	<u>Designation</u>	<u>Type Resin</u>	<u>% Oil & Solids</u>	<u>Solvent</u>	<u>Body</u>	<u>Field No.</u>	<u>Recommended Uses</u>
<u>KONSARCO CHEMICAL CO.</u>							
DS-10099	Resinene 377	Melamine Formaldehyde	-	H-12/VARSOL #2-1/1	H-M	-	Substitute for C-78
DS-10500	Resinene 378	Melamine Formaldehyde	-	H-12/H-224- 70/30	H-L	-	" "
DS-10508	Resinene 881	Butylated M F	-	H-12/H-583- 1/1	J-P	-	" "
<u>RESINOUS PRODUCTS & CHEMICAL CO.</u>							
DS-10604	Urethane QR-232-B	Urea Formaldehyde	-	H-84	P-L	5-7	" " NO-718
<u>U. S. INDUSTRIAL CHEMICALS</u>							
DS-18655	Aroplaz 905	Non-oxidizing Alkyd	31	H-47	Q-S	6-12	Refrigerator Tunnels
DS-18656	Aroplaz 945	Semi-oxidizing Alkyd	51	H-583	W-Y	4-7	Baking Enamels High Temp.
DS-18454	Aroplaz 1130	Oxidizing Alkyd	40	H-583	Z3-Z5	4-8	Washing Machine & Refrigerator
DS-18453	Aroplaz 1133	Oxidizing Alkyd	40	H-583	Z3-Z5	6-10	Appliance Finishes
DS-18657	Aroplaz 1311	Non-oxidizing Non-pthalic Alkyd	50	Petroleum Aromatic	S-V	25-30	Appliance Finishes

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