Trim & Trellis
25 Line "DULUX"
87 " "

Mr. J. B. Bullitt, Lab.
Mr. J. W. Iliff, Lab.
Mr. Stuart Graves, Lab.
Dr. P. Robinson, Lab.
Dr. B. E. Sorenson, Lab.

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MEMORANDUM REPORT #90

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ACYLATED PHENOLIC RESIN AS VEHICLE FOR LONG OIL "DULUX PAINT"

This will place on file the results of a preliminary examination of two acylated phenolic resins developed by Dr. Sorenson as replacements for RC-141 "DULUX" resin as the binder in long oil "DULUX" paint. The paints have been placed on exposure in Series #9309 to determine the durability and retention of appearance.

Summary and Conclusion:

The two resins investigated have the equivalent of 55 and 63% oil lengths respectively. They are somewhat more viscous than RC-141 and give paints of lower solids content. They are satisfactory in other respects and seem to have some advantage in speed of drying and freedom from wrinkling.

The behavior on exposure is the important consideration in this case, and any conclusion as to the future interest of such products will await preliminary results from Series #9309. If the exposure results are satisfactory, it would be of interest to prepare less viscous resin in order to increase the solids content of the paint.

Details:

The two resins are compared with RC-141 in table I. PRC-P-53612 is an example of resin of potentially low cost since it is made with unsubstituted phenol. PRC-P-64219 is a resin which would be more expensive but is expected to have better durability.

Both resins were substituted directly for RC-141 pound for pound of solid resin in 87-103 Trim and Trellis Green and 25-055 "DULUX" Metal Protective Gray. The standard drier concentration was used with the experimental resin. Table II lists the solids content, drying time, gloss and flow of the paint. The flow is measured by the sag test, with the notched Bird applicator.

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Both acylated phenolic resins are superior to RC-141 in resistance to wrinkling. This is judged from the appearance of the thick ridge of paint which is formed in the draw down for the sag test. RC-141 wrinkles badly, while the two experimental resins show no wrinkling.

PHILADELPHIA LABORATORY

WILLIAM F. SINGLETON

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TABLE I - ACYLATED PHENOLIC RESINS VS RC-141

RESIN	COMPOSITION	SOLIDS	BODY	ACID#	SP. GR.	COLOR
RC-141(Specification)	62-linseed glyceride 38-phthalic glyceride	83%in H-200	YtoZ-1	3to4.5	1.027	4 to 5.5
PRC-P53612	55 Linseed acid radical 45 Phenol- formaldehyde	60%in H-287	1/2HT	0.2	.922	3.4
PRC-P64219	60 Linseed acid radical 2.6 adipic acid radical 33.7 Biaphenol-A(diphenylol propane)-formaldehyde	60%in H-287	N	2.8	.907	4 cloudy

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TABLE II

LONG OIL "DULUX" PAINTS FROM ACYLATED PHENOLIC RESINS

CODE	PRODUCT	RESIN	SOLIDS BY VOLUME %	TACK-FREE DRYING HRS.	GLOSS	SAG TEST MM.
P87-P71044	87-103 Green	RC-141	56.9	6-1/2	High	14
P71046	" "	"	57.2	5	"	15
P71060	" "	PRC-P53612	44.0	4	"	16
P71062	" "	PRC-P64219	48.5	5	High-	17
P71064	25-055 Gray	RC-141	58.6	6	Med -	14
P71066	" "	"	57.5	6	Eggshell +	14
P71080	" "	PRC-P53612	45.0	6	"	18
P71082	" "	PRC-P64219	45.0	6	"	18

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