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NEWARK PLANT
PIGMENT COLOR RESEARCH REPORT

Final Report

MINIATURE PANEL EXPOSURE SERIES #64
EVALUATION OF PLANT AND SEPT WORKS BATCHES OF "IMPTOX"
EVALUATION OF SEVERAL IRON PHOSPHATES

Period Covered:

January 1943 - November 1943

FILE:

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EVALUATION OF PLANT AND SEMI WORKS BATCHES OF "IMPEDEK"
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Period Covered: January 1943 - November 1943

SUBMITTED BY: G. Grimm

DATE SUBMITTED: 4-11-44

APPROVED BY: F. E. Bolton

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F. E. Bolton
H-21/44

INTRODUCTION:

The primary objective of exposure series #64 was the evaluation, by miniature panel moisture condensation exposure, of semi works batches of K-1779 and K-1781 and several plant batches of K-1271. In KN-43-175 and KN-43-180 the moisture condensation performance of other semi works and plant batches is reported. Several laboratory samples of "IMPEDEX" having low ferric iron content were also exposed.

The performance of ferrous phosphate and ferric phosphate was compared to that of "IMPEDEX" by the exposure of laboratory samples of iron phosphate, a heat treated "IMPEDEX" and a sample of material (C# 46933) said to be A.F.P. but containing no ammonia.

SUMMARY & CONCLUSION:

The exposure data have been plotted and summarized in tabular form at the end of this report.

The performance of the zinc yellow/ Fe_2O_3 /Jasperine/"IMPEDEX" primers was approximately equal to that of red lead in oil; superior to the zinc yellow/ Fe_2O_3 /Jasperine control; in one case (Lot 96519) the performance was equal to the control probably due to faulty panel preparation as evidenced by poor duplication of identical panels.

The ferric iron content, a factor in the performance of "IMPEDEX" varied in the samples tested, from 1.9% to 10.4%. The performance of the primers did not appear to be affected by variation in that range. A later series, #65 considered the effect of ferric iron content in more detail; no report has been made.

The performance of the several iron phosphate materials varied considerably. A ferrous phosphate precipitated from copperas with disodium phosphate was equal to the control; a similarly prepared ferric phosphate precipitated from ferric sulphate had a deleterious effect on the zinc yellow/ Fe_2O_3 /Jasperine primer. Two iron phosphates returned performances equal to that of the average "IMPEDEX" primers; one sample, C# 46933, an apparently "flopped" batch of A.F.P. manufactured by a competitor, the other, 963-133, a sample of "IMPEDEX" that had been heated to 160°C. The composition of these samples was reported in KN-43-96.

EXPERIMENTAL DETAILS:

Primers:

The paints for this series were ground 48 hours in 1/3 gal. ball mills with steel balls and thinned to 80 KU with mineral spirit. The vehicle was KV-15 (GE-2466 solids/RLO, 50/50).

The red lead control was: Dutch Boy Liquid Red Lead, 30% pig. vol. in RLO (978-27).

Panels:

1" x 3" cold rolled steel panels were sanded and solvent wiped.

Painting Method:

Duplicate panels were painted, using the "Dry Brush Technique" (± 0.2 mil dry film). The panels were edged with a thicker film of the test primer.

Exposure:

After ageing four days in the laboratory the painted panels were exposed in the roof condensation box to moisture condensation at night and to the sun and weather during the daylight hours.

References:

Notebook 958. Experiments 60 and 61.

Panel	Pigmentation	Wt. Ratio	Days Exposure Before Failure progressed to Grade:				Final Condition of Panel Grade	Exposure Days
			10-	9	8	5		
<u>"IMPEDEX" Batches</u>								
958-61B	Y-467-D/Fe ₂ O ₃ /Jasperine/SW5789 (K-1271)	55/10/15/20	80	188	215	249	3+	306
C	" / " / SW6132 (K-1779)	"	80	188	233	306	5	306
D	" / " / SW6145 (K-1781)	"	80	188	274	306	5	306
E	" / " / Lot 96440 (K-1271)	"	80	279	-	-	8	306
F	" / " / Lot 96519	"	51 ^M	80	179	212	3+	233
G	" / " / Lot 96551	"	80	121	205	294	4+	306
<u>Low Fe₂O₃ "IMPEDEX"</u>								
958-61X	Y-467-D/Fe ₂ O ₃ /Jasperine/958-57A (1.96% Fe ₂ O ₃)	"	58	179	273	-	6-	306
J	" / " / 958-57B (5.06% Fe ₂ O ₃)	"	58	141	210	306	5	306
K	" / " / 958-57E (1.92% Fe ₂ O ₃)	"	50 ^M	141	242	296	4+	306
<u>Iron Phosphate</u>								
958-61 L	Y-467-D/Fe ₂ O ₃ /Jasperine/958-59C (ferrous phosphate)	"	38	80	250	219	4	233
M	" / " / 958-59D (ferric phosphate)	"	38	55	80	160	4	179
N	" / " / C#46933 (said to be A.P.P.)	"	58	108	114	293	4+	306
H	" / " / 963-13B (SW6114 heated to 160°C)	"	58	141	220	283	3	306
<u>Controls</u>								
958-61 A	Y-467-D/Fe ₂ O ₃ /Jasperine	75/10/15	61	80	141	233	5	233
O	Red Lead in Oil (30% P.V.)	100	80	270	279	301	4+	306

All primers 40% per.vol. in KV-15 (alkyd solids (NLD 50/50) except as noted.

^M Poor panel duplication.