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MEMORANDUM REPORT NO. M-355

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EXPERIMENTAL PROJECT P-5020
INVESTIGATION OF LOW COST PIGMENTS FOR SPECIFICATION
OLIVE DRABS AND PRIMERS

Introduction:

Experimental Project P-5020 covers the investigation of a number of low-cost pigments to produce olive drab finishes and iron oxide primers at the lowest possible cost in order to establish us in a good sales position to participate in specification finishes business required by the Armed Forces.

This report covers the review of red iron oxides available at a cost which made them of interest in this study. The investigation of the dehydrated iron oxides (ferrite yellows) for use in olive drabs has not been completed and will be reported separately by Mr. Godshalk's group when results are available.

Summary:

From the group of red iron oxide pigments investigated, 3 were of interest from the standpoint of low cost and high Fe_2O_3 content. These were:

<u>Pigment</u>	<u>Fe_2O_3</u>	<u>Cost</u>
#680 Red Oxide-Tamms Industries, Inc.	90.6%	1-3/4¢ lb.
#370-B Red Oxide - Chas. A Wagner Co., Inc.	85-90%	3-3/4¢ lb.
#500-C " " " " " "	85-90%	4-1/4¢ lb.

The #680 Oxide proved the most satisfactory from the standpoint of both cost and viscosity requirements for use in 1063-112 Primer, a large volume item. A permanent code of W-329 was assigned to this oxide and the formula for 1063-112 revised to show its use.

The cost reduction with the use of W-329 in 1063-112 amounted to 17¢ per gallon (cost to Sales). However, during the revision, the formula was changed to include manufacturing leeway and the final saving over the previous formula amounted to only 13¢ per gallon.

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Action:

The use of W-329 Red Oxide should be extended as far as possible to take advantage of its low cost. Chicago is presently investigating its use in freight car paints. Through copies of this report to supervisors, attention is being called to its possibilities for reducing costs of established oxide containing products and for use in new developments.

Details:

The three oxides mentioned in the summary were tested in 1063-112 Primer as a substitute for W-878 and W-895 Oxides. All three pigments returned a lower viscosity than the control formula. However, the #680 Red Oxide looked the most promising, its use resulting in a viscosity of 62" #4 Ford Cup compared to 70" for the control. The two Wagner Oxides produced a viscosity of 50" and 56". By varying the resin ratios, (increasing RC-3082 and decreasing RC-448 on a solids bases) a viscosity of 77" #4 Ford Cup was obtained which not only met the specification requirements but also corrected the low viscosity being obtained on the control formula.

As a matter of record, the grinding cycle was decreased and the productive capacity increased by revising the base formula to "46 Process".

Details of the experimental work may be found in Notebook #3754, pages 34 to 59.

The composition and other data as supplied by Tamms for W-329 is as follows:

Iron Oxide	90.6%
Silica	6.04%
Loss on Ignition	2.66%
Lime	Trace
Fineness	99.5% through 325 mesh
Specific Gravity	4.74
1 lb. Bulks	.0253 gals.
Oil Absorption	18.00 lbs.
Weight per Solid	39.48 lbs.
gal.	

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6/11/51