

H-580
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Nat'l. Aniline & Chem. Co.

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Philadelphia Laboratory
May 23, 1946

MEMORANDUM REPORT #M-48

H-580 VISCOSITY CONTROL AGENT

During a study of treated linseed oils, it was necessary to use an inhibitor to stabilize the viscosity of several varnishes. H-580, Chemical ASA, butyraldoxime, from National Aniline & Chemical Co., was used, as it is known to be a good inhibitor with slight effect on dry.

Twenty-five gallon oil length varnishes were made with the various oils and G-83, Pentolyn A. A pigmentation of W-43, Titanium Dioxide/W-154, Zinc Oxide = 95/5 was used in the enamels, at a pigment binder ratio of 90/100, with these varnishes as the binder.

Some varnishes containing no H-580 produced heavier mill bases than similar varnishes containing H-580. Some enamels without H-580 increased in body very rapidly while similar enamels with H-580 decreased in body. This phenomenon indicated that H-580 might be useful as a deflocculating agent. Therefore, a number of experiments were made to further explore this deflocculating effect of H-580 in orthodox varnishes, "DULUX" resins, orthodox mill bases and enamels.

The amount of H-580 used was 1% on the total varnish present in each product. This quantity was arbitrarily selected and our experiments indicate that this amount probably could be reduced.

without changing the deflocculating effect appreciably. In fact, the experiments indicate that it should be reduced to prevent too great viscosity reduction in the enamels with accompanying settling.

Results of our study indicate the following effects obtained by the use of H-580:

1. H-580 stabilized some orthodox varnishes, mill bases, and enamels, when added at the time of manufacture.
2. H-580 reduced the body of some orthodox mill bases and enamels, particularly zinc-containing products, which had either livered or had a very heavy viscosity. This effect was noticeable immediately on stirring H-580 into the products.
3. H-580 did not seem to appreciably retard the dry of the orthodox clears and pigmented products tested.

Although H-580 acts as an inhibitor to retard polymerization in both varnishes and alkyds, it had no effect on gelled varnish clears. Evidence is inconclusive on its effect on varnishes and alkyds which have bodied up on storage. Similarly, the few experiments conducted thus far do not indicate the effect of H-580 on "DULUX" mill bases or enamels.

Although this study is incomplete, the results obtained indicate the advisability of further study to determine the extent to which H-580 can be used as a stabilizer and deflocculating agent and the optimum amount which should be used.

The work so far indicates the following possible uses for H-580:

1. As a doping agent for use by the Sales Department in the field to bring back livered and heavy enamels to useful consistency.
2. As a doping agent for dip tanks to reduce excessive enamel viscosity produced by continued use.
3. As a doping agent in the plant for rework of mill bases or enamels which have livered or have become very heavy.
4. As a doping agent in the plant to reduce viscosity of enamels which body excessively in manufacture.
5. As an inhibitor for general use to prevent excessive bodying in varnishes, mill bases and enamels.

Further details may be obtained from the following notebooks:
Book #2954, pages 120 to 196
Book #3072, pages 2 to 36
Book #3041, pages 17 and 83.

PHILADELPHIA LABORATORY

K. A. WDAY

MAK:719

C. Effect on Clears: 34 gallon G-83/LO Varnish

1. Stability

	PVC-P-41638-A Without H-580	PVC-P-41638-B With H-580
Initial Viscosity	1/4 LR	1/8 HM
Aged Viscosity	1/4 HR	K

This clear was used for a variety of tests and was 5 months old at the start of the above test.

2. Dry

<u>Code</u>	<u>8 Hrs.</u>	<u>24 Hrs.</u>	<u>Remarks</u>
PVC-P-41638-A	VVST-	TF	Control
-41638-B	VVST-	TF	Contained H-580
PVC-P-41679-A	VVST	TF	Control
-41679-B	VVST+	TF	Contained H-580

C. Effect on Clears: 34 gallon G-83/10 Varnish

1. Stability

PVC-P-41638-A
Without H-580

PVC-P-41638-B
With H-580

Initial Viscosity
Aged Viscosity

1/4 LR
1/4 HR

1/8 HM
K

This clear was used for a variety of tests and was 5 months old at the start of the above test.

2. Dry

<u>Code</u>	<u>8 Hrs.</u>	<u>24 Hrs.</u>	<u>Remarks</u>
PVC-P-41638-A	VVST-	TF	Control
-41638-B	VVST-	TF	Contained H-580
PVC-P-41679-A	VVST	TF	Control
-41679-B	VVST+	TF	Contained H-580